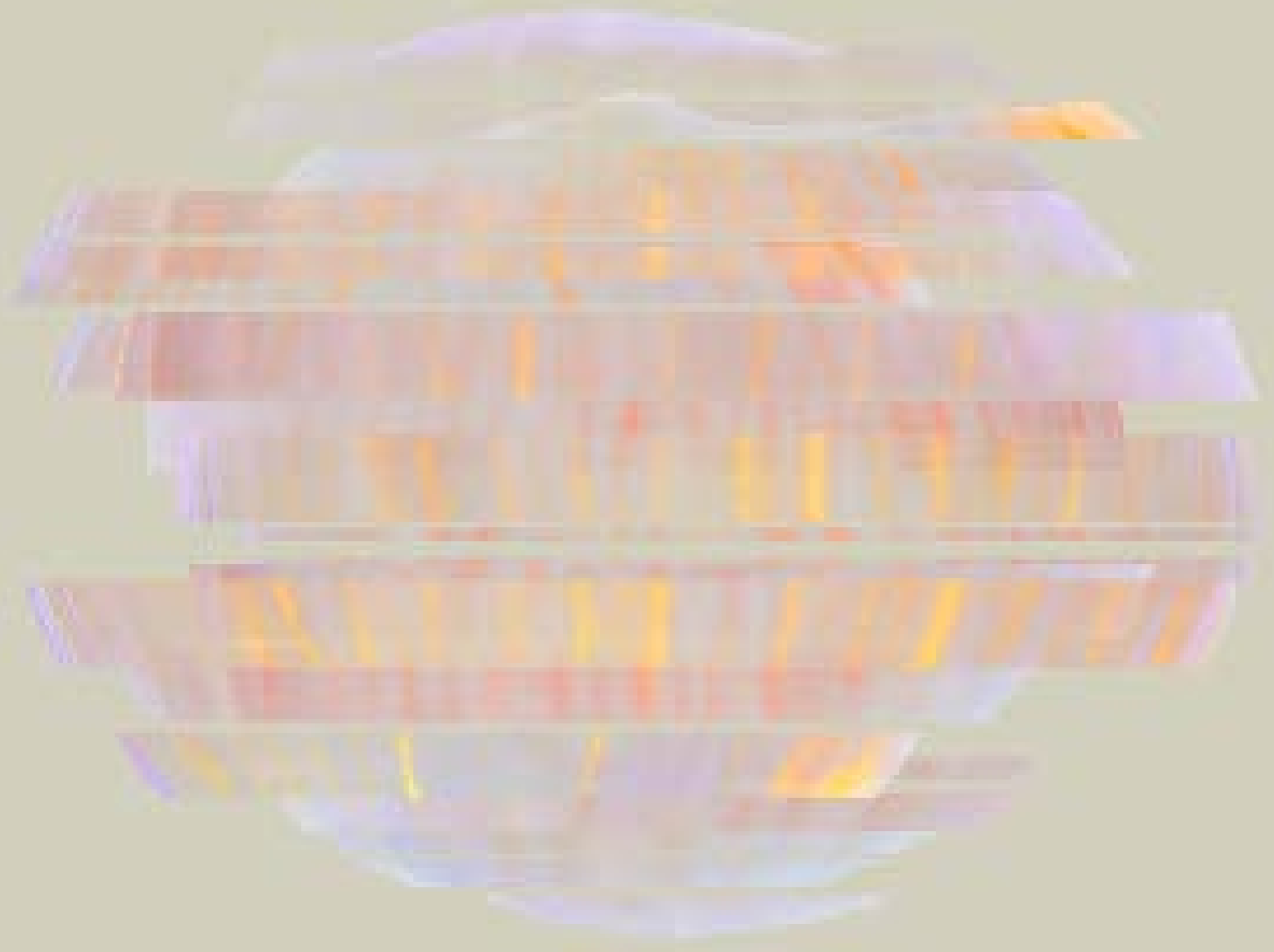
Reconnect



Includes

The 12 Week Step-by-Step

Reconnect Program™

Isabella Richter, MD, DMD

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Book Cover by Isabella Richter
Macro photograph of onion, digitally edited

Illustrations by Vivian Richter

This book does not replace the advice of a medical professional. Consult your physician before making any changes to your diet or regular health plan. I recommend getting in touch with a functional medicine practitioner.

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This is a love song to the Earth
You're no ordinary world
Heaven's poetry to us
Keep it safe, keep it save, keep it save
Cause it's our world

Paul Mc Cartney "Love Song to the Earth"

Introduction

As amazing as the experience was to put together “Reconnect”, as challenging and time consuming the project was and more than once I was on the verge of throwing in the towel. What kept me going was a strong need to finish and publish this book because despite the numerous available books about plant-based diets, there was something essential missing- a simple, holistic and practical guide on how to implement a healthy plant-based lifestyle. A step by step guide, that can be easily put into practice by readers without any prior knowledge.

I found it necessary to outline the most important physiological and pathological reactions different foods have on our body. My medical background allowed me to go into biochemical details, although I tried to keep the explanations as simple as possible. I wanted the reader to appreciate the scientific facts and use them as the foundation for their lifestyle change.

While putting the finishing touches to the book, it occurred to me what it is really about- empathy. Once we feel connected to ourself and the world around us we can care for others as well as our environment.

For myself and my family, the journey began after watching the documentary “Forks over Knives” more than a decade ago. It prompted my husband, also a scientist, and me to sift through the existing scientific literature to read up on the negative impacts of a traditional Western diet versus the benefits of a whole-food plant-based diet. Neither of us had been taught any of these facts at medical school. Consequently, we decided to switch to a whole-food plant-based lifestyle more or less overnight. Little did we know that this step only marked the beginning of the most rewarding and exciting journey of our lives.

Living a long and happy life includes more than a healthy diet. It is knowing how to properly prepare ingredients as well as learning to enjoy the present, to develop a positive and healthy mindset, to be active and connected to ourselves and the world around us. Early on, I wanted to share my own experiences and started a blog featuring whole-food plant-based recipes for the whole family. Several books followed and I discovered my passion for photography and art. In the wake, I have met the most interesting and dedicated people and worked on projects I never could have imagined.

My promise to you is that by reconnecting to yourself and the world around you, by taking care of yourself and the world around you, you will feel happy and fulfilled and doors might open up that you never thought existed. Enjoy your journey!

"Before you heal someone,
ask him if he's willing to give up
the things that make him sick."

Hippocrates

The first part of the book, called **Disconnected**, describes how we have become disconnected not only from our food but from our environment, ourselves and the people around us and the consequences we are facing as a result.

Part II of the book, called **Reconnect**, provides evidence based solutions, strategies and everyday tips which are useful before diving into the **Reconnect Program™**.

Part III features the 12 week step by step **Reconnect Program™**, which entails manageable goals to successfully integrate healthy changes into your life. The individual goals cover the following three aspects: nutrition, mindset and physical activity.

Last but not least, **The Reconnect Cookbook** offers easy, family proven, nutritious recipes based on the concepts that were presented in the book.

Part I

Disconnected

Chapter 1

Food

"With the wrong diet, no medicine can help.
With the right diet, no medicine is necessary"
Ayurveda

One of the most prominent figures of ancient medicine, the Greek philosopher and physician Hippocrates, realized as early as 460 B.C. just how much our overall health depends on the foods we eat. He considered nutrition one of the main tools that a physician can and should use. To this day, his views on nutrition are still reflected in the original Hippocratic Oath every physician has to take which includes the promise "I will apply dietetic and lifestyle measures to help the sick to my best ability and judgment".
Sadly, the perception that our food choices profoundly affect the health of our body and our mind has been widely ignored by modern Western medicine. Today, more than 2000 years after Hippocrates, his quotes such as ***"Let food be thy medicine and medicine be thy food"*** have never been more relevant. We are now able to scientifically support his understanding with a rapidly growing body of evidence. Undeniably, nutrition plays the most fundamental role in the prevention and treatment of disease and provides the basis for a long and healthy life. If we fill diesel into a gasoline driven car, it will stop running. The same principle applies to our body. Certain foods constitute the "right fuel" and protect and nurture us, while others promote inflammation and set pathologic processes in motion that affect every part of our body.

My grandmother grew up very differently than me. When she was a kid, there were no supermarkets, most meals were created by using seasonal vegetables and fruits,- most of them grown in their own backyard or locally sourced. Meat and egg consumption was usually limited to weekends, holidays and celebrations. Cakes were considered Sunday treats and cheese and yogurt was consumed in moderation. Sweets such as cookies, ice cream or candy were only enjoyed as special treats on rare occasions. Apples, potatoes, onions and alike were stored in the cold basement of the house. During harvest season fresh ingredients were pickled, fermented and cultured, frozen, cooked and stored for the upcoming winter months. Most foods were organic, nothing was genetically modified, they were fresh and whole instead of packaged and processed and didn't contain unpronounceable ingredients. Food additives, preservatives, thickeners, stabilizers and the like didn't exist. There were no sugar substitutes and protein powders. And above all, people ate less. There were usually quite a few mouths to feed and times of food scarcity were not unusual. According to recent studies, calorie restriction has been shown to slow down aging and promote a long life (read more on page…).
For example, during the Second World War, food shortages forced the British Government to introduce a strict program of rationing meat, cheese, sugar, butter, jam and tea. Due to white flour scarcity, bread was mostly made with whole grain flour. Vegetables were never rationed and people were encouraged with the *"Dig for Victory"* program to grow their own vegetables in their backyards. Despite the overall lack of food, rationing proved to be beneficial to the people's overall health.

During my childhood in Europe, things had already started to change. Although my mother would still prepare our meals from scratch, just like her mom used to do, the food composition had shifted from a primarily plant based nutrition towards a heavily animal based nutrition. As a result, my family consumed Schnitzel, meatballs, cheese, sausages, ham, milk, butter and eggs on a daily basis. Salads were largely considered overrated and served- with a boring and unattractive dressing- on the side. A lot of emphasis was- and still is- placed on sweet desserts, which we got to enjoy on a regular basis. Eating out was - at least in my family- a rare and expensive treat. Fast food restaurants had just started to open their- for us exotic looking- doors. The trend towards an animal based and processed diet marked the beginning of profound changes in our

Western diet and deeply affected our food production and supply systems.

Our food choices have changed at an ever increasing pace. Not only are we consuming more animal products than ever before but we have also started to embrace completely new types of foods (one might argue whether in some cases the term “food” even applies)- namely highly and ultra processed foods. These products, appropriately called convenience foods, can be found anywhere and everywhere. But who can blame us for choosing processed, precooked, ready to eat meals when we are juggling so many things at the same time? Keeping up with the overwhelming pace and demands of today’s world, taking care of our families as best we can while at the same time succeeding at work keeps us more than busy. For many of us, organizing their daily meals has dropped to the bottom of their to-do lists and planning meals, shopping and cooking is quite often considered a nuisance. Only 10% of Americans say that they still love cooking while 45% say they outright hate it. It's easier than ever to dine out, order in or just warm up microwavable meals. Not surprisingly, the number of food delivery startups and meal kit subscriptions have steadily grown. Even breakfast can be relatively painless if it involves pouring cereal from a carton into a bowl and splashing it with a bit of milk.
Food manufacturers do everything in their power to make us feel good about buying their processed foods by enriching their products with fiber, vitamins and other nutrients. Creating new packaging to better disguise a food as natural and healthy and using deceptive catchy phrases to make us think that their latest products are healthy are just a few tricks up their sleeve.
But if these foods are really good for us, how could we have turned into a population of overweight and sick people?

The Diet of Our Ancestors

Let’s take a closer look at what our ancestors ate and find out what humans are physiologically meant to eat. The only people in the world that still adhere to an ancestral lifestyle are the Hadza people of Tanzania. They are the last full- time hunter gatherer society, living off plants particularly berries, tubers, honey, the baobab fruit and the occasional game. The Hadza only get meat less than half the time they go out hunting with bows and arrows. Instead, they get more than 70% of their calories from plants. For our ancestors, it was even harder to hunt down an animal without having these types of weapons. The dietary analysis of fossilized feces, among other methods, has shown an incredibly high fiber content, which are undigested plant remains. Such studies strongly suggest that for over 99% of our existence, we ate whole plant foods, which turned out to be the most reliable food source. It appears that the natural diet of our species resembles that of a fruit eater like monkeys, chimps and certain birds. It is important to note that what we are able to eat is not necessarily what we are designed to eat. The ability of humans to adapt their dietary habits to changing conditions and to avoid competition with other primates helped us to survive. Just because we are able to digest other foods besides plants doesn’t make us fit for their consumption and it certainly doesn't mean that these are the foods our bodies are thriving on.
Our anatomical and physiological make up reveals what we truly are- fruit eaters, also called ***frugivores***, like most other primates. And indeed, as we will cover later on, the ideal diet for human thriving seems to be mostly plant-based.

The following characteristics clearly distinguish us from carnivores such as cats:

- We have blunt canines and flat molars
- We can move our jaws to the sides and forward which is needed for grinding and chewing our food
- We have a relatively small mouth opening
- We have big salivary glands which secrete an alkaline saliva with ptyalin
- Our stomach acid is weaker
- We depend on fiber to stimulate peristalsis
- Our intestine is about 9 times our body length and we take 12-18 hours to complete digestion
- In contrast to carnivorous animals, our bodies are not able to produce our own Vitamin C

The Rise of Chronic Diseases

The causes of deaths in a population reflect the overall lifestyle of its inhabitants and provide us with valuable information regarding general trends and potential problems within the society.
At the turn of the 20th century, the three leading causes of death in the Western world were pneumonia, tuberculosis and gastrointestinal infections. These are all acute, infectious diseases. With the discovery of bacteria, improved hygiene and the introduction of antibiotics we were able to prevent, successfully treat and even eradicate communicable (infectious) diseases.

What are the leading causes of death today?

According to the WHO, ***more than 40% of all deaths in developing countries*** are caused by ***acute infectious and parasitic diseases.*** The reasons are multi factorial including poverty, poor education, lack of infrastructure, and geographic and environmental factors such as limited access to clean water.

In *developed countries*, on the other hand, things look quite different. Only about 1% of deaths occur as a result of infectious diseases.
In contrast, the ***top three causes of death in the Western world are cardiovascular disease, cancer and lung disease.*** These are all chronic diseases, which are caused by our lifestyle and are largely preventable.

For women, the most common cancers include breast, lung and colon cancer.

For men, the three most common cancers are prostate, lung and colon cancer.

But another cancer is on the rise. According to recent studies, ***liver cancer is now the fastest-increasing cause of cancer death in the United States.*** Besides Hepatitis B and C, caused by viral infections, the behaviors and conditions that increase the risk of getting liver cancer are obesity, heavy drinking, smoking and non- alcoholic fatty liver disease. From 2008 through 2011 body weight was associated with about 36% of liver cancer cases.

Excess weight leads to higher risk of chronic diseases overall. In 2001, the US Surgeon General released a report raising concerns about the growing obesity epidemic. This report was the first to note that obesity and obesity-related diseases might soon overtake smoking as the leading cause of preventable death in the United States. We only need to take a look around us to realize that there is a significant problem. According to the World Health Organization (WHO), obesity has nearly tripled since 2015.

Today, ***two- thirds of Americans are overweight and one in three is obese.*** It is even more concerning to witness the same changes in our children. The prevalence of overweight and obesity among children and adolescents between the age of 5 and 19 has risen from just 4% in 1975 to just over 18% in 2016. For the first time in human history obesity among six months old babies has been reported. Experts warn of the overall acceptance of overweight and obesity, which threatens to undermine the pursuit of reducing risk factors for chronic lifestyle diseases.
The predictions of this trend are indeed alarming. It is estimated that ***half of Americans will be obese by 2030***. Beside the fact that carrying around too much weight can pose a tremendous emotional burden on the individual, the real threat are the chronic health disorders associated with it. Overweight or obese people are at a much greater risk of developing cardiovascular disease such as heart disease and stroke, type II diabetes, bone and joint problems, cancer and many other chronic diseases.

Body Mass Index and Waistline Circumference

To determine a person's weight category, doctors routinely use the ***Body Mass Index (BMI)***, which is defined as an individual's weight in kilograms divided by the square of height in meters (kg/m2). A BMI index below 18.5 is considered underweight, 18.5-24.9 is normal, 25-29.9 is overweight and 30 or above is obese. A BMI may be accurate for a large part of the population, but it has a major drawback- it does not distinguish between fat and muscle tissue. Muscle tissue weighs more than fat, which is why a bodybuilder can have the same BMI as an overweight person.

A better risk assessment for chronic diseases is the ***Waistline Circumference Index (WCI)*** , which takes into account how

much belly fat a person possesses. Excess belly fat relates to the amount of fat deposits around our organs, a type of fat called visceral fat. This metabolically active “bad” fat surrounding heart, kidneys, liver, digestive organs and pancreas is closely associated with heart disease, stroke, type 2 diabetes, Alzheimer’s and the metabolic syndrome. The consensus group of the International Diabetes Federation defines the metabolic syndrome as central obesity plus any of the two following conditions: elevated blood pressure, raised triglycerides, reduced “good” HDL cholesterol (see page…), and raised fasting glucose levels. The metabolic syndrome has become a major public health challenge which currently affects about 22% of Americans.

To assess your own risk, calculate your BMI and follow the steps below to determine your waistline circumference index:
Find the top of your hip bones and the bottom of your ribs.
Place a tape measure midway between these points and wrap it around your waist while breathing normally.
Check your measurement.

Associated disease risks:

Clinical Classification	**BMI**	**WCI** Women **35in/ 88cm or less** Men **40in/ 102cm or less**	**WCI** Women **> 35in/ 88cm** Men **> 40in/ 102cm**
Underweight	< 18.5	-	-
Normal	18.5 - 24.9	-	-
Overweight	25 - 29.9	Increased	High
Obesity I	30 - 34.9	High	Very high
Obesity II	35 - 39.9	Very high	Very high
Morbid Obesity	40+	Extremely high	Extremely high

Are we at risk even if our WCI and BMI are within normal limits?

Being slim doesn’t automatically mean that we are healthy because unlike subcutaneous fat, visceral fat is not necessarily visible. In fact, *diabetes rates have gone up faster than obesity rates.* While about 80% of people with diabetes are overweight or obese, thin people are affected by chronic diseases as well. In fact, they may display as much visceral fat deposits around and within organs (e.g. liver) as an overweight person. These visceral fat deposits can only be detected by CT or MRI scans. Thin people with this excess amount of visceral fat are also referred to as ***TOFI- thin outside, fat inside***- or also as ***MONW, which stands for metabolically obese, normal weight.*** These individuals may look healthy but are nevertheless at risk for chronic metabolic diseases including diabetes and heart disease.

Most noncommunicable diseases start very early on in our lives, sometimes even ***before we are born***. Mounting evidence suggests that events happening before birth influence the development of diabetes, cardiovascular disease, asthma, cancers, osteoporosis and neuropsychiatric (brain) disorders. Babies, for example, who are born to obese mothers already show thickening of the wall of the aorta, the body´s largest artery. These babies are three times more likely to develop type 2 diabetes later in life. Chronic inflammatory processes in arterial walls continue throughout childhood. Signs of atherosclerosis and hypertension can be detected as early as age 3. By the age of 17-21, about half a million Americans are eligible for lipid- lowering medication such as statins. Autopsies performed on soldiers who died in the Korean and Vietnam War showed a higher prevalence of atherosclerotic changes in young, asymptomatic American soldiers compared to Asian soldiers. Although the mean age of the soldiers was just 22.1 years, about 77% had "gross evidence of coronary arteriosclerosis”.

Despite these profound changes in arterial walls, years or even decades can go by without any symptoms. Even if we experience indicators of a disease they are frequently misunderstood or attributed to other causes such as aging. Being unaware of pathologic symptoms makes it very unlikely to seek medical attention. As a consequence, events like heart attacks, strokes and cardiac arrests seem to be coming out of the blue and have been referred to as *“silent killers”*. And deadly they are indeed.
Every 40 seconds, an individual in the United States suffers a heart attack.
Every single minute, more than one person in the United States dies from a heart disease related event.

Shift in Diseases

Besides the fact that the rate of chronic diseases has gone up dramatically within the last decades, the ***spectrum of chronic diseases has significantly changed as well***. Diseases limited to a small fraction of our population including neurological diseases such as Alzheimer´s, dementia, depression and anxiety have started to affect an increasing number of people of all ages.

- Between 2005 and 2014, the number of adolescents suffering from clinical depression has grown by 37%.
- Alzheimer related deaths have increased a stunning 145% between 2000 and 2017. One out of three seniors is dying from Alzheimer's or dementia, making *Alzheimer's disease the 6th leading cause of death* in the United States. And it will get worse- researchers are predicting that the number of people suffering from Alzheimer and dementia will double by 2060. In 2020, the estimated cost of caring for and treating people with Alzheimer's disease was $305 billion. By 2050, these costs are projected to be more than 1.1 trillion US dollars.

Over the last decades, we have also experienced a ***significant increase of allergic diseases***, such as respiratory, skin and food allergies. Surveys show that food allergies have risen as much as 50%, 340 million people globally suffer from asthma and 400 million from allergic rhinitis.

The prevalence of ***autoimmune diseases (AI)*** including systemic lupus erythematosus, type 1 diabetes and multiple sclerosis is on the rise. In some cases, AI diseases are three times more common now than they were a few decades ago. These changes are neither due to increased recognition of these disorders nor to altered diagnostic criteria. The reality is simply that more people are contracting AI diseases. Our immune system is a vast network of cells and organs which protects us from foreign enemies such as bacteria, viruses and also cancer development. If our immune system detects a threat an immune response is being initiated to neutralize the enemy. The main cells involved in immune reactions are called *lymphocytes*. Before we are born, B- lymphocytes produce billions of specific antibodies, which are able binding to viruses and microbial toxins, thereby inactivating them. These antibodies, collectively called immunoglobulins, are among the most abundant protein in the blood, constituting about 20% of the total plasma protein by weight. In autoimmune diseases, our immune system mistakenly attacks the very tissues it was designed to protect, including blood vessels, joints, muscles, skin, endocrine glands such as the pancreas and the thyroid, or connective tissue. Normally, B-lymphocytes which produce antibodies against our own cells are eliminated before we are born. The organ responsible for this mechanism, called programmed cell death or *apoptosis*, is the thymus gland. Recently, is has been shown that immune cells directed towards our own tissues are being eliminated in this way throughout our lives, mainly in our bone marrow. Usually in adults, apoptosis is used to get rid of cells that have been damaged beyond repair.
Although we have not recognized the urgency of this autoimmune epidemic, the number of people affected is staggering: the National Health Institute (NHI) estimates that up to 23.5 million Americans have an autoimmune disorder. In comparison, cancer affects up to 9 million and heart disease up to 22 million people. The American Autoimmune Related Disease Association comes up with an even larger number of 50 million people due to the fact that the NHI included only 24 of the estimated 80-100 AI diseases in their report.
An example of a rapidly growing AI disease is type 1 diabetes, which usually has its onset during childhood. Between the years 2001-2009 alone, a 21% increase in prevalence of type 1 diabetes in Americans under the age of 20 was observed.

Target groups

Besides the shift in the spectrum of chronic diseases, the ***target groups have shifted as well.*** Certain chronic disorders which used to develop later on in life are now frequently diagnosed in children. Type 2 diabetes, which used to be called adult onset diabetes, now accounts for about 15% to 45% of all newly diagnosed cases of diabetes in children and teenagers.
Non-alcoholic fatty liver disease (NAFLD), a disease just recently classified, is now increasingly seen in children. This condition is characterized by the build up of fat in the liver (steatosis), which causes inflammation. Inflammation leads to formation of excess fibrous connective tissue (fibrosis), and ultimately liver failure (cirrhosis). NAFLD has so far been associated with chronic alcohol intake in adults and was therefore called ***alcoholic fatty liver disease (AFLD)***. Non-alcoholic fatty liver disease carries with it a significantly increased risk of liver cancer and is a predictor of diseases including Type 2 diabetes. Some experts even believe it may be the cause of type 2 diabetes. NAFLD is now the most prevalent form

of chronic liver disease, affecting 10%-20% of the general pediatric population, particularly overweight and obese children. According to recent studies, NAFLD is present in nearly ⅓ of obese boys, ¼ of obese girls and about ⅓ of adults. Within the next ten years it is expected to become the leading cause of liver disease, liver failure and liver transplantation in childhood and adolescence in the Western world. NAFLD is linked to a number of metabolic risk factors including obesity, lipidemia (excess fat in the blood), diabetes and insulin resistance as well as cardiovascular disease.

A Global Problem

Chronic diseases are no longer limited to Western countries. People in the developing world are increasingly adopting our Western lifestyle. As a result, most countries in Latin America, Asia, Africa and the Middle East have experienced a shift in their overall dietary patterns. Once considered a developed country problem, more than 80% of noncommunicable disease related deaths are occurring now among people in low and middle income countries, particularly in urban settings. Worldwide, approximately 1.5 billion people are overweight or obese and at risk of developing type 2 diabetes, cardiovascular disease and other metabolic and inflammatory disorders. In Africa alone, the number of overweight children under five has increased by nearly 50% since 2000. In 2016, nearly half of Asian children under five were overweight or obese. Globally, the number of overweight and obese children under the age of 5 has risen from 32 million in 1990 to 41 million in 2016. The reason for the current surge in metabolic and cardiovascular diseases seems to be the combination of under-nutrition in early life and over-nutrition in later life. It seems that countries that are undergoing swift and fundamental economic and nutritional transitions like India, are particularly affected.

Besides the ***devastating emotional and physical toll*** chronic diseases take on patients and their families, health care professionals are also feeling the burden of chronic diseases: the feeling of being powerless, overworked and ill prepared for the emotional strain of dealing with chronically ill patients without being able to cure them are all reasons why half of all physicians experience burnouts. Furthermore, 90% feel that medicine is on the wrong track and 83% have thought about quitting their job altogether. Their dire situation directly affects our entire population. More than ever, we need well trained, dedicated and motivated doctors. According to new data published by the Association of American Medical Colleges the overall demand of physicians will continue to grow faster in the coming years than the supply. In 2022, the WHO revealed that Europe and central Asia are already facing severe challenges related to the health and care workforce with 40% of medical doctors aged 55 years and older. The COVID-19 pandemic contributed to this already serious problem.

Chronic diseases are also taking a ***huge economic toll on our society.*** The combination of rising medical costs and declining worker productivity due to illness increasingly places a strain on the economy. The multinational American investment bank Morgan Stanley showed in their report *"The Bittersweet Aftertaste of Sugar"* the massive economic impact of American sugar consumption due to high healthcare costs combined with low productivity. The U.S. Social Security System is based on a pyramid shaped structure, which assumes that a lot of healthy younger people are paying for the few elderly sick people. Declining fertility rates and increasing life expectancies are causing the U.S. population to age. Today, 12 percent of the total population is aged 65 or older, but by 2080, it will be 23 percent. Additionally, the number of chronically ill people under the age of 65 is raising. Similar scenarios are happening all over the world with equally devastating financial predictions. According to a study by the World Economic Forum, the global economic impact of the five leading chronic noncommunicable (non- infectious) diseases could reach 47 trillion US dollars over the next 20 years, Keeping in mind that non communicable chronic diseases are largely preventable, just imagine how these incredible sums could be invested in other areas such as education, research and infrastructure.

Drugs

Our answer to the overwhelming healthcare crisis seems to be prescribing more and more pills. Americans take more prescription drugs than ever before- 42 % of adults over the age of 65 take five or more prescription medications. By far the biggest benefactors from chronically ill patients are pharmaceutical companies. Lipid lowering statins, for example, are projected to approach $1 trillion in sales by 2020.
Prescription drugs are far from harmless. Few of us seem to be aware of the fact that prescription drugs are- together with strokes- the 4th leading cause of death in the United States. The odds of dying from an accidental opioid overdose are more

likely than dying in a motor vehicle accident. Apart from misprescription, overdoses, or self-prescription, properly prescribed drugs cause almost 2 million hospitalizations and about 128,000 deaths every year. New prescription drugs have a 1 in 5 chance of causing serious reactions, even though they have been approved by the FDA. According to a study of all drugs approved between 2001 and 2010, the FDA (Food and Drug Administration) announced alerts, warnings, or recalls on about one-third of them in the years after their approval.

No one will dispute the fact that interventional medicine and drugs are essential in saving the lives of millions of people. If we get hit by a car, we definitely want to be diagnosed and treated with the most sophisticated techniques and advanced medical procedures possible. Physicians are incredibly good at fixing broken bones, reattaching limbs and stitching us back together. Invasive procedures and medication can help us survive acute life threatening episodes like cardiac arrests, heart attacks, strokes, hypertensive and blood sugar crises, cancer, infections and many more.
However, as vital as these approaches are in treating acute medical problems, they are certainly not the best way to treat chronic diseases, simply because they don't address the underlying cause of the disease.
Recent statistics suggest that ***more than 85% of chronic diseases are caused by environmental and lifestyle factors including diet, behavior and environmental toxins.*** Reducing dietary and lifestyle risk factors could prevent most cases of coronary artery disease, stroke, diabetes, and many cancers.
These scientific findings are fundamentally important, because they show us that chronic diseases are not inevitable consequences of our modern society. However, their prevention requires us to actively change our lifestyle. Additionally, we as a society need to invest in education, change food policies, and provide urban infrastructure to support and encourage these changes.

"It's in My Genes"

What determines our fate? This is probably the most fundamental question. For the longest time we assumed that our genes determine our health and lifespan. We believed that the DNA, which is kept inside the nucleus of every cell, controls the function of our cells and thereby our body. To really understand the role of our genes, the ***Human Genome Project*** was undertaken with the goal to decode our DNA. Scientists hoped that the sequencing of the DNA would not only reveal but also provide insight into how our genes determine our life expectancy and find genes that cause diseases. Being able to analyze DNA could provide the basis for personalized therapy- at least that was the assumption. In 2001, human DNA was successfully sequenced, but the outcome was a complete surprise and raised more questions than could be answered.

- Only about *21.000 genes* were isolated *which are coding for about 100 trillion cells in the human body*, all of which can look and function completely differently. In fact, we have roughly the same number of genes that are found in frogs and worms. How is that possible?
- Another conundrum was related to individual variation- the question of how genetically identical organisms still display a different phenotype- all the observable characteristics. Identical twins, for example, look strikingly similar in appearance yet they display subtle differences.
- In the absence of "disease genes", where do diseases originate from? And why do some individuals with a genetic predisposition not express the disease, while others do?

Since 2001, we have been able to answer a lot of these puzzles. One of the key findings was the astonishing fact that **if the nucleus containing the DNA is removed from a cell, the cell continues to live and function for several more weeks.** Clearly, the DNA, who we thought of as the master commander, can't be in charge after all.

Before we continue, let's take a brief look at how cells function. Don't worry, this won't be a boring biochemistry lesson but some very exciting, interesting and crucial information!

Cells are surrounded by a double layered membrane whose structure may remind you of a peanut butter jelly sandwich. Think of the membrane as the skin of the cell. Its surface isn't smooth like our skin, but rather bumpy. These bumps are caused by **proteins** which are built into the membrane. There are different types of proteins. The proteins of one category are called ***receptors***. They have antennas like the ones we have on our roofs to detect radio waves. These receptors scan

the environment and convert signals through several mechanisms to the inside of our cells. It's like a Domino effect which ultimately enables the cell to function. This process is so important that it can't be emphasized enough: **Protein receptors on the surface of our cells convert environmental stimuli in behaviors of cells.** Naturally, to receive different signals, a cell has to be covered with an incredibly large number of distinct receptors. These respond to nutrients, hormones such as insulin, toxins, histamine, fat, vitamins, basically everything that floats around in our bloodstream. When receptors bind to a signal, they change their shape (configuration) which enables them to bind to other proteins inside the cell membrane, called ***effectors***. Effectors can be *channels* which open up and let a substance enter the cell such as the insulin enabling glucose to be taken up by a cell. They can be specific enzymes which accomplish certain tasks or they can be part of the *cytoskeleton* which enables the cell to change its shape and move around. When we perceive input such as smell, visual input or touch through our sensory organs, which are our eyes, ears or skin, the incoming signals are converted into chemical signals. These chemical signals are being transported by our blood to cells throughout our body, where they bind to receptors. Once you have understood these mechanisms, it is easy to comprehend that different perceptions trigger different behaviors of our cells. **Without environmental stimuli our cells are frozen like statues.** Further along in the book we will discuss how *not only environmental stimuli influence the chemistry and actions of our cells but also our beliefs*.

As explained in the last paragraph, primary signals cause a certain behavior in a cell via protein mediators. At this point, our DNA comes into play. Our genes basically constitute the blueprint of our body, they contain every single information of our build up. It can be compared to drawings that architects use to plan new buildings. If a cell runs out of a protein, a copy of the specific gene sequence that codes for the protein is made. In order to do that, the genes have to be uncovered, because they are surrounded by a protein sleeve. ***About half of the nucleus is DNA and the other half is protein.*** For the longest time, scientists only extracted the DNA and threw away the protein. Until they found out that the protein is actually controlling which parts of the DNA are being exposed. **The DNA is the blueprint and the protein is the remote.** In order for a sequence of the DNA to be copied (replicated), first the protein "sleeve" has to come off, thereby exposing the genes. Although all our cells share the same DNA, different genes are being expressed to give them their specific function and structure. For example, one of the main tasks of the liver is the removal of toxic substances from the bloodstream such as alcohol. In order to do this, liver cells express genes that code for a specific enzyme called *alcohol dehydrogenase*. This enzyme converts alcohol into non-toxic molecules. In contrast to liver cells, neurons in our brain are not designed to remove toxins from our body. For that reason, neurons keep the genes coding for this enzyme "turned off". Similarly, liver cells don't send signals using neurotransmitters like neurons do and therefore, neurotransmitter genes remain "turned off". Whatever signals our cells detect through their receptors will change the expression of genes inside their nucleus, resulting in the products that are being built and ultimately the overall behavior of the cells.

What about so called cancer causing genes, such as the breast cancer genes. These genes are inherited mutations of the BRCA1 or BRCA2 gene. In normal cells, these genes help make proteins that repair damaged DNA. Mutated versions of these genes can lead to abnormal cell growth, which in turn can lead to cancer. Just like in normal cells, genes that cause disease such as cancer genes will only be expressed when the gene is exposed once the protein sleeve has come off as a result of environmental stimuli. This chain of reactions has been shown impressively by T. Colin Campbell, who was able to turn on and switch off cancer cells with different nutrients. **So what is really controlling our fate is the environment, not our DNA!** This understanding automatically implies that **we are not helpless victims of our genetic makeup but very much in control of our own destiny.** Particularly during early human development and other sensitive periods in life, our lifestyle and exposure to environmental factors strongly influence our health and our susceptibility to disease.

This is a truly revolutionary understanding of DNA. Contrary to Darwin's theory of "random mutations" that cause evolution, researchers first introduced the term **"adaptive mutation"** in the prestigious scientific journal *Nature* in 1988. They proved that genetic mutations are much less random and more purposeful than traditionally thought.

Epigenetics

Epigenetics is the overall term to describe **environmental influences on the expression of genes** as discussed in the last paragraph. For a long time it was debated if epigenetic modifications can cross the border of generations and be passed on to our children or even grandchildren. Since then, researchers have been able to provide robust evidence that not only the inherited DNA itself but also the inherited epigenetic instructions contribute in regulating gene expression in our offspring. So yes, *we do pass on more than our genes- the molecular mechanisms that control how genes are expressed.*
In other words, things like diet, physical activity, and stress levels can change not only our own health, but that of our chil-

dren, grandchildren, and other descendants.

One of the most striking examples is the *Agouti mouse project*: A certain gene, called the Agouti gene, was inserted into the DNA of genetically identical mice. This gene controls the amount and distribution of pigmentation in the mammalian coat and results in *fat and yellow offspring*. By changing the mothers diet, the expression of the Agouti gene was inhibited, kept in the “off” position and as a result, most of her offspring looked *lean and brown*. In the yellow obese mice, however, the Agouti genes were "turned on”, meaning that the protein sleeve came off and the genes were expressed. Further studies proved that other dietary and environmental triggers such as certain chemicals also affected the expression of the Agouti gene. For instance, feeding the pregnant mother mice folic acid resulted in more brown offspring, whereas the industrial chemical BPA (bisphenol) resulted in more yellow offspring.
Similar results have been shown in humans. Studies suggest that dietary habits of parents can alter their children's genetics, potentially setting them up for obesity or type 2 diabetes when they grow older.

The comprehension that we are more than just the sum of our genes is such a powerful understanding. Instead of being helpless victims of our genes we have tremendous influence on our wellbeing and our lifespan. And not just our own; Our very own behavior and our lifestyle choices influence the future of our children. We can build the basis for a healthy life or provide conditions that will promote the development of chronic diseases. Poor lifestyle choices, stress, environmental factors and poor nutrition will increase the chances of pathological developments, not only in ourselves but also in our offspring. To give you a practical example: Individuals with chronically elevated blood lipid levels express genes which suppress certain fat burning enzymes. As a result, less fat gets burned and more fat is being stored. In contrast, ***a balanced whole-food plant-based lifestyle decreases the chances of expressing disease promoting genes***.

Foods That Negatively Affect Us

The more we understand how certain foods negatively influence our organism through biochemical actions, the more sense it makes to avoid them. Although I spent years going through medical and dental school, none of the following information was presented to me. It took me a lot of time and effort to put all the pieces together. In the United States, medical students are spending less than 20 hours on nutrition over the course of 4 years. In European medical schools, according to a small scale survey published in the prestigious journal Nature, on average, 23.68 hours of nutrition education was required. I strongly believe that the ever mounting independent scientific evidence of the impact of food on our health should be an integral part of medical education. This vital information should also be presented to the public by our governments and the media, and it should definitely be taught at school.

Before we dive into the details, I want you to realize that for the past decades, we have fallen victim to two major misconceptions. Firstly, we have applied a **reductionist approach** when analyzing nutrition. Reductionism is a scientific approach to tackle a larger problem by splitting it up into individual small parts. There is nothing inherently wrong with this approach, in fact it is even vital for understanding biochemical reactions and interactions. The problem seems to be that we have been caught up so much on details that we have forgotten to look at nutrition as a whole. How many times have we heard that olive oil is beneficial for us? Yet olive oil is just one small puzzle piece of a complex diet and it matters what you combine it with. Pouring olive oil over your salad when the rest of your meal consists of mostly processed foods won't keep you healthy. Just as a vitamin supplement will not make us any healthier if the rest of our diet lacks nutritional value.
The second misconception is that we *don't specify enough when we are referring to macro nutrients*. All fat is not the same and all carbs are not the same. You may think that a carbohydrate is a carbohydrate is a carbohydrate. But not all carbs are created and metabolized equally. A discussion about a low carb diet should prompt us to ask “Which carbs are we talking about?” And then inquire what these carbs are supposed to be substituted with. The same applies to fat. “Low fat” isn’t enough information, as it lacks the definition of the nature of these fats. Are we talking about saturated or unsaturated fats, saturated animal or plant fats? What are they swapped with? Sugar? What type of sugar- sucrose or fructose? Fructose being part of whole fruits or added fructose?

Nevertheless, for the sake of understanding the complex biochemical pathways and effects that different foods have on our body, we will split them up and focus on the three macronutrients individually. Later on, we will zoom out again and focus on diet as a whole.

Let us start with something that most of us consume everyday, something that looks innocent but has the capacity to kill us. Something that is called a gateway drug due to the fact that it can be as addictive as cocaine or alcohol. Something white, sweet and addictive. Sugar.

Sugar- What You Haven't Been Told

During the 1960s in the U.S., a heated debate was going on among scientists whether sugar or fat was causing the growing health problems, in particular cardiovascular disease and obesity. In the end, team sugar won and saturated fat was presented as the dietary arch villain and driving force behind the developing health care crisis. Consequently, Americans were strongly encouraged to reduce their fat intake. And indeed, as word got out that a reduced intake of saturated fat would be beneficial for our health, especially heart health, people jumped on the low-fat bandwagon.
Fat greatly contributes to the texture, aroma and flavor of a wide variety of foods. Once you take out the fat, food loses its taste and so the industry had to replace it with something- **unsaturated vegetable oils** (which increase the levels of dangerous trans fats, but that's another story) **and sugar**. Sugar has two advantages- it adds texture and makes low-fat or no-fat foods highly palatable. Sure enough, the typical low-fat product tends to be high in carbs, might contain trans fats, and has a similar calorie count than the original product. As a result of the low- fat campaign, sugar consumption has increased dramatically from 4g/day to 125g/day, which amounts to the **equivalent of 10 tablespoons a day**!

The food industry has focused on creating specific formulas for so-called ***"hyper- palatable" foods***. The following three food combinations deliver synergistic effects for maximum palatability:

- Fat + sodium (e.g. hot dogs, bacon)
- Fat + simple carbs/sugar (e.g. ice cream, cake)
- Simple carbs/sugar + sodium (e.g. crackers, pretzels)

Alarmingly, most foods consumed in the U.S. meet the above criteria. By the way, these kinds of food- or shall we rather call them products- have been on a steep rise all around the world, not just the U.S.

Since fat was claimed to be the driving force behind obesity and cardiovascular disease, the incidence of these diseases was expected to drop once people cut down on fat. Instead, the opposite happened- obesity and heart disease skyrocketed. How could we have gotten it all wrong? Clearly, saturated fat was not the culprit- at least not the sole culprit- after all. As it turns out, the discussion about saturated fat was not based on objective research. What really happened a few decades ago is deeply disheartening. Newly released historical documents prove that the sugar industry paid renowned scientists to downplay the link between sugar and heart disease and blame saturated fat as the culprit. The documents show that a trade group called the *Sugar Research Foundation*, known today as the *Sugar Association*, paid three renowned scientists the equivalent of about $50,000 in today's dollars to publish a review article on sugar, fat and heart disease in 1967. Review articles are based on existing scientific articles and summarize the existing literature on a certain topic in order to present the current state of understanding. The studies included in the review article were handpicked by the sugar group. The article was published in the highly prestigious New England Journal of Medicine and downplayed the link between sugar and heart health. To this day, the dietary guidelines of US government recommendations regarding saturated fats are still largely based on this 50 plus year old review article. Today, such a review article would be considered an expert opinion and rank among the lowest levels of evidence based medicine.

Let´s be very clear- **sugar is not a food but rather an additive**, like salt or caffeine. We may be addicted to our daily cup of coffee, which at larger quantities has the capacity of accelerating our heart beat and making our hands tremble, but coffee is not a toxic substance.
Sugar, on the other hand, is a completely different story. When we refer to sugar, we usually refer to table sugar (sucrose). Table sugar is a carbohydrate, made up of **equal parts glucose and fructose** (fruit sugar). Although glucose and fructose are both simple sugars (also called monosaccharides= one sugar unit that cannot be broken down anymore) and have a similar biochemical structure, they are metabolized very differently in our bodies. To understand the far reaching implications of these sugars on our body, let us follow their different metabolic pathways and compare them to another carbohydrate, alcohol. If you stay with me on this, you´ll soon understand why I included alcohol.

Glucose

Glucose comes from the Greek word for "sweet." Glucose is primarily produced by plants during the process of photosynthesis from water and carbon dioxide. This simple sugar is naturally found in foods like grains, potatoes, fruits and vegetables and represents the most important energy source for all organisms. When we eat rice, for instance, glucose is being absorbed in our small intestine. Glucose rich blood then travels via the portal vein to the liver, which removes harmful particles before they can get into our systemic circulation and metabolizes nutrients as the first major . In response to the rising sugar levels in the blood, our pancreatic cells produce and release insulin. Insulin is a hormone that allows glucose to enter cells and be used as a source of energy.

- **About 80% of glucose is taken up and used by cells all over our body, either used immediately or being stored for periods without food intake.** Blood glucose concentration has to be kept within narrow limits to survive and stay healthy and food is generally supplied in larger meals. Therefore, most of the glucose is stored in skeletal muscle cells as glycogen. When glycogen stores in skeletal muscles have been exceeded, glucose is turned into fat ("de novo lipogenesis", see below).
- **About 20% of glucose is being taken up by liver cells,** which store most of it as glycogen. Endurance athletes take advantage of this energy storing mechanism and "carb load" before a prolonged or intense workout, building up their glycogen depots. Once they run out of glucose during intense workouts, glycogen is turned into glucose.
- **Only a small amount of glucose is used by the liver cells as fuel and another small fraction is turned into fat.**

When we consume more glucose than our cells can use or store, these extra calories will be converted into fat and stored in our body (as **visceral fat** and **liver fat**). The more fat is stored, the more weight we gain and the less sensitive our muscle, fat and liver cells become to insulin, causing insulin resistance.

The process of turning sugar into fat is called ***"de novo lipogenesis",*** which basically means "from scratch" . These newly built triglycerides are combined with proteins, which serve as transport vehicles for fats such as cholesterol and triglycerides. The combination of fast and proteins are called ***lipoproteins***. Triglycerides are packaged into so called ***very low density lipoproteins (VLDL)*** and shipped off into the systemic circulation. From there, they are either being taken up and used by cells as a source of energy or stored in fat cells.

VLDL can be considered the very bad guys, because they are critically involved in the development and progression of the metabolic syndrome (the five conditions which lead to heart disease, stroke and diabetes: high blood sugar, high blood pressure, low levels of HDL, high levels of triglycerides, large waist circumference). Despite their crucial role in the development of chronic disease, VLDL have been widely overlooked by the medical community. Your latest blood test probably lists your HDL, LDL and triglyceride levels, but not your VLDL.

A second group, the ***low density lipoproteins (LDL)***, are also members of the ***"bad guys club"***, because they carry cholesterol to our arteries, where they may contribute to plaque formation, also known as atherosclerosis. But it is getting even more complex because there are two different types of LDL:

- ***The large, buoyant type of LDL:*** Because they are light, big and float they are not able to undermine the lining (epithelial cells) of arteries and don´t initiate plaque formation.
- ***The small dense LDL:*** These are the LDL that start atherosclerotic plaque formation by getting underneath the epithelium of arteries.

When our LDL levels are measured with a blood test, usually no distinction is made between the two types. The only way we can distinguish whether we have more large or small LDLs is by looking at our triglyceride level:

Large LDL are associated with ***low triglyceride levels and high HDL levels***

Small "bad" VLDL are affiliated with ***high triglyceride levels and low HDL levels***

Compared to LDL, ***VLDL contain even more triglycerides*** than LDL, which makes them much more dangerous. These high levels of triglycerides are not only linked to the buildup of hard deposits (plaques) in our arteries but also to the devel-

opment of fatty liver disease and the metabolic syndrome.

As opposed to the first two groups, the third group called ***high density lipoproteins (HDL)***, is regarded as the ***"good" guys***, because they carry cholesterol from other parts of the body back to the liver for recycling or disposal. HDL particles patrol blood vessels, snatching cholesterol from circulating LDL (see below) as well as from atherosclerotic plaques that line the walls of arteries.

Alcohol

Alcohol is formed as a byproduct during the fermentation of sugar. Most of us are well aware of its toxicity and have most likely experienced some effects of *acute alcohol intoxication* in their lives. Severe acute alcohol intoxication can kill people by depressing brainstem functions. It can also prove fatal as a consequence of alcohol related accidents, primarily car accidents. In fact, one-third of all accidental deaths can be attributed to alcohol intoxication. Some of us are suffering from *chronic alcohol poisoning*, which we refer to as alcoholism. As opposed to acute alcohol intoxication, chronic alcohol poisoning slowly kills its victims primarily due to liver disease and ultimately liver failure. According to the 2018 National Survey on Drug Use and Health (NSDUH), 6.6 % of Americans reported that they engaged in heavy alcohol use in the past month and 26.45 % of people ages 18 or older reported that they engaged in binge drinking in the past month. Because of its toxicity, commerce of alcoholic beverages has been regulated and relatively highly taxed.

Even though alcohol is also a carbohydrate just like glucose, it's metabolic pathway differs significantly:

- **10% of ethanol** is immediately taken up by our **digestive system**.
- **10% crosses our blood brain barrier**, causing the typical dose dependent symptoms like difficulty walking, blurred vision, slowed reaction time, and compromised memory.
- The remaining **80% (4 times more than in the case of glucose!) end up in the liver** where they are mostly converted into aldehydes and acetates, both of which cause serious damage in our bodies. Aldehyde cross links protein which damages liver cells, ultimately leading to liver cirrhosis. Acetate ultimately ends up in our bloodstream as very low density lipoproteins.
- **A small fraction** of ethanol is turned into **free fatty acids (FFA**), which cause muscle insulin resistance. In this state, muscle cells stop responding to insulin, glucose can´t enter muscle cells and as a result, blood glucose levels rise.
- **Another small fraction** of alcohol is **stored in the liver** as small fat droplets, which cause inflammation of the liver.

Fructose

From an evolutionary standpoint fructose is a unique carbohydrate which has enabled living beings to survive times of food scarcity, droughts and climate change. When we think of fructose, we usually picture delicious ripe fruits. Fruits (and I am referring to whole fruits, not fruit juice) contain more sugar than most other natural foods and are packed with a huge variety of important vitamins, minerals and antioxidants. Fruits are also loaded with *fiber* which provides them with a significant chewing resistance. Consequently, it takes a while to consume them. Additionally, *fiber slows down the absorption of fructose* in our intestine which prevents sugar spikes in the blood.

Let´s compare the effects of small amounts of fructose in our body to a high fructose meal.

1. **Low fructose intake**

   Most of us feel satisfied after eating one large apple, which contains about 23 grams of sugar, with more than half of the sugar molecules being fructose. After passing the stomach, fructose get absorbed by epithelial cells lining the wall of the small intestine. Fiber accompanying fructose slows down its absorption. Most of the fructose gets converted into glucose and organic acids.

2. **High fructose intake**

   High doses of fructose (≥1 g/kg) overwhelm the intestinal fructose absorption and clearance. As a result, fructose crosses

the intestinal wall- probably causing injury to the intestinal barrier- and ends up in the liver via the portal vein. Although some organs besides the small intestine, including the kidneys, our brain and the islet cells of the pancreas are able to metabolize small amounts of fructose, **most fructose is taken up by our liver cells**. After all, the liver is the first organ that nutrients pass after the gut.

How does the liver deal with fructose?

In short, fructose depletes the liver cells of energy and shifts the organism towards storing of fuel (fat or glycogen).

Why?

To provide energy and water at a later date. Fructose also reduces oxygen demands to aid survival in situations where oxygen availability is low.

How?

As soon as fructose enters the liver cell, an enzyme attaches a phosphate molecule to it, a process called *phosphorylation*. These phosphate molecules are being removed from *adenosine triphosphate (ATP)*. ATP is an important molecule found in all living things. Think of it as the "energy currency" of the cell. Under normal circumstances, depleted ATP is being restored in the mitochondria by a process called *oxidative phosphorylation* ("oxidative" refers to the fact that these reactions depend on the presence of oxygen). The substrates for these reactions the mitochondria use the nutrients we eat. ***Fructose inhibits oxidative phosphorylation, essentially depleting the cells of energy.***

The remaining adenosine molecules, stripped of their phosphates, undergo further degradation into ***uric acid***. Uric acid and its derivatives are very important metabolites because they act twofold. Firstly, they promote the ***synthesis of fatty acids*** ("*de novo lipogenesis*" from citrates) and secondly, they ***inhibit the conversion of fatty acids into ATP*** ("*beta oxidation")*. Some of the produced fat, primarily triglycerides, remains in the liver where it is stored as liver fat, causing inflammation. The majority of these fats are packaged and sent off into the bloodstream in the form of the previously mentioned **very dangerous very low density lipoproteins (VLDL)**.

The effects of our modern fructose rich foods and beverages

During the last decades, we have moved away from fructose as part of natural, ripe fruits. Our consumption of fructose, primarily in the form of table sugar (50% fructose) and high fructose corn syrup, has increased dramatically. High fructose corn syrup is a liquid sweetener made from cornstarch. First, the starch is converted into glucose, resulting in corn syrup. With the help of an added enzyme called *glucose isomerase* glucose is being converted into fructose. The most common forms of HFCS contain either 42 percent or 55 percent fructose.

Food and beverage manufacturers benefited from the invention of HFCS in multiple ways. Primarily, because the manufacturing process of HFCS is significantly cheaper than the manufacturing process of sugar. Additionally, the free monosaccharides in HFCS provide better flavor enhancement, stability, freshness, texture, color, pourability, and consistency in foods in comparison to sucrose. Epidemiological studies indicate a strong correlation between high fructose intake and obesity, non-alcoholic fatty liver disease, type 2 diabetes, kidney dysfunction, and cardiovascular disease. High fructose corn syrup (HFCS), also known as glucose-fructose syrup or corn sugar, was first marketed in the early 1970s and has since found its way in almost every product on supermarket shelves, whether it's sodas, salad dressings, bread, ketchup, candy, yogurt, processed foods and so forth. North America is the world´s largest consumer of HFCS. The average American consumes about 44 pounds (20kg) of HFCS per year. Nearly 11% of the average American's caloric intake comes from HFCS.

The downward spiral of a high fructose diet is a dose dependent- the more fructose we consume, the worse the effects are. Studies have indeed confirmed that *the more fructose humans consume the more is being absorbed* in the intestine. The metabolism of fructose is fundamentally different from that of glucose yet very similar to that of alcohol. The only difference to alcohol is that fructose doesn't cross the blood brain barrier, so we don't experience any brain related symptoms. Hence, there is no natural limit to its consumption. Even the accumulation of fat in the liver goes mostly unnoticed due to the lack of symptoms. Up until a few decades ago, fatty livers were only seen in alcoholics, hence the name *alcoholic fatty liver.*

The buildup of fat in the liver not caused by alcohol is called ***non-alcoholic fatty liver disease (NAFLS)***. Currently, 20–30% of Americans and 90% of obese type-2 diabetic patients suffer from NAFLD. It is estimated that ***50% of all Americans will suffer from NAFLD by 2030.*** Non-alcoholic fatty liver disease in children has not been reported until 1983. Today, it is the ***most common chronic liver disease among children and adolescents***, affecting 5-11% of children in the US. Fatty liver disease, both alcoholic and non-alcoholic, can ultimately result in liver failure.

Once we understanding how sugar gets metabolized in our bodies we come to realize that a high sugar diet is essentially

a high fat diet. When we eat sugar, we are basically eating fat.

Fructose dependent changes outside of liver cells

- Fructose raises blood pressure by retaining sodium. Recent studies in rodents demonstrate that increased dietary fructose intake stimulates salt absorption in the small intestine and kidney tubules, resulting in a state of salt overload, thus setting in motion a variety of events that cause hypertension (***fructose-induced hypertension***). This is aggrevated by the fact that excess fructose has also been found to activate vasoconstrictors, inactivate vasodilators, and over-stimulate the sympathetic nervous system. These events presumably helped survival in the setting of dehydration or salt deprivation. High blood pressure (over 140/90 mmHg) is a major cause for stroke, heart failure and kidney disease. Starting at 120/80mmHg, there is a linear relationship between increase of blood pressure and disease risk. The older we get the more sensitive our bodies are to salt in relation to blood pressure. Studies have also found that high intake of salt stimulates endogenous fructose production by activates the polyol pathway, thereby raising blood pressure. Potato chips or French fries are perfect examples of such foods high in glucose and salt.
- Free fatty acids which circulate in our bloodstream as a result of high fructose consumption clog up insulin receptors in muscle cells, thereby causing ***insulin resistance*.** Insulin resistance is a condition in which the cells don't adequately respond to insulin. As a result, glucose cannot enter cells and builds up in the bloodstream. High plasma glucose levels are a signal for the islet cells in the pancreas to produce more insulin. High insulin levels raise our blood pressure and lead to more fat storage and weight gain. At the same time, ***uric acid,*** through various mechanisms, raises our blood pressure even more (for example, it directly inhibits nitric oxide, which causes dilation of blood vessels, and indirectly by promoting inflammatory processes).
- But that's not all. To top it off, another substance comes into play- ***leptin***. Leptin is the most abundant hormone produced by fat cells in response to food uptake and is crucially involved in the regulation of appetite. Leptin signals to the brain that cells have enough energy and no more food intake is needed. Fructose as well as high insulin levels interfere in the regulatory feedback mechanism, causing ***leptin resistance***. Leptin resistance is a condition in which *the brain is unable to detect leptin*. As a result, we are stuffing ourselves with more and more doughnuts. Leptin also acts on our **reward center**, which is located in the brain. If leptin levels are low or are perceived as low, food feels more rewarding. Especially high caloric energy dense foods like doughnuts, ice cream etc feel particularly rewarding. In this perceived state of starvation, in order to preserve energy, our body automatically tries to avoid any kind of physical activity while trying to increase food uptake.
- In contrast to glucose, fructose does not suppress ***ghrelin***, a hunger hormone released in our stomach. As a result, we feel hungry even when we are full. So even though we just downed a can of soda, we order a meal at a fast food place, because we still feel hungry.
- Fructose damages cells by causing *oxidative stress* resulting in damaged proteins, tissues and organs.
- Skin ages prematurely. Too much sugar can stop the repair of *collagen*, leading to reduced elasticity and premature wrinkles.
- Effects on the brain: High fat and/or high fat/high sugar diets have been associated with increased oxidative brain stress and neuroinflammation. Fructose can act either on specific areas of the brain involved in the regulation of food intake, motivation and reward mechanisms or on critical regions for learning and memory, influencing synaptic plasticity and cognition, with the hippocampus being one of the most affected. As a result, excess dietary fructose might also promote the onset of mechanisms related to neurodegeneration.
- Fructose damages mitochondria by oxidative stress. As a result, mitochondria become smaller in size and number and are less good at producing ATP, which results in fatigue and is also seen as a sign of aging. The mitochondria of young people and athletes are more resilient and less vulnerable to oxidative stress. Mitochondria dysfunction
- As mentioned before, **fructose has the capacity to brown tissues**. It is the reason for meat turning brown on the grill when coated with a sweet sauce. This reaction between sugar and protein is called the **"Maillard reaction"**. Similar changes occur in our bodies, including the color change. But in our case, our arteries turn brown. Sugar molecules bind to protein, a process called **glycation** during which hydrogen peroxide is released. This powerful oxidizing agent causes major damage to our cells, a process we call aging. In addition, so called advanced ***glycation end products (AGE's)*** seem to ***facilitate the development of atherosclerosis and the pathogenesis of cardiovascular disease.*** Additionally, AGEs cause ***functional and structural damage to our cells,*** thus contributing to aging. **Fructose is 7 times more likely to form dangerous AGE's than glucose**. AGEs may also *inhibit*

the activity of nitric oxide, a compound essential for the elasticity of arterial walls. Stiff arteries increase the load on our heart, lead to high blood pressure and are positively associated with coronary artery disease, stroke, heart failure, atrial fibrillation and chronic kidney disease.

The biochemical understanding of these complex reactions caused by a high fructose intake helps us understand the behavior of overweight or obese people. Stuffing themselves with high caloric foods and being physically inactive is the result of pathological biochemical processes, not a lack of willpower. ***We need to realize that it´s not a question about calories but the activation of completely different chemical pathways, which initiate and promote a vicious cycle of consumption, addiction and disease.***
The only way to get out of this vicious cycle is to drastically reduce or eliminate fructose consumption, which will enable leptin and insulin to function again properly. But we need to keep in mind that our bodies are able to convert glucose into fructose through a series of reactions called the ***"polyol pathway"***. This endogenous production of fructose is initiated by uric acid. Therefore, overweight and obese individuals who want to loose weight not only need to avoid unnatural fructose rich foods but also foods with a ***high glycemic index***. The glycemic index is a value assigned to foods based on how quickly and how high those foods cause increases in blood glucose levels. Foods who fall into this category include white potatoes, white bread and white rice.
The food industry has made us believe that all calories are the same, no matter whether they came from a fruit, a vegetable, a burger, a cookie or a can of soda. They want us to believe that getting fat and sick is our own fault because we are taking in more calories than we can burn. According to them, we should simply eat less and burn more. Because of this presumption, many of us have been dragging ourselves to the gym, sweating during a fat burning class in the hope of losing weight. Many of us have repeatedly tried calorie restricted diets, felt miserable and ended up with more weight than before. All our efforts leave us frustrated and disappointed. **The only healthy way of long-term weight loss is to avoid the unnatural foods that mess up our biochemistry and replace them with natural, whole plant foods.**

After all this theory, let´s look at the following two practical scenarios:
A person eats one giant cupcake:

Inside the child's body, glucose and fructose are being absorbed by epithelial cells in the small intestine. Most fructose is turned into glucose. Glucose is then released into the bloodstream. In response, the pancreas secretes insulin, which directs the muscle and fat cells to take in glucose. As a result, fat cells release leptin, which causes the brain to activate the excitatory (sympathetic) nervous system to burn off the excess energy. The result is a hyper active, bouncing off-the-walls person.

What happens ***when a person continuously consumes cupcakes, sweets and other high fructose processed foods:***

The story begins the same. Glucose and fructose enter the body through the small intestine. This time, the capacity of the epithelial cells to deal with fructose is overridden and glucose as well as glucose are transported to the liver. Continuous high levels of glucose as well as the "starvation mode" mechanism of fructose lead to *insulin resistance*, which prompts the pancreas to produce even more insulin. High insulin levels as well as fructose itself block the brain from noticing leptin (*leptin resistance*). Simultaneously, high fructose intake leads to accumulation of fat and weight gain. And despite the already high fructose levels, additional glucose is converted into fructose. As a result, this person doesn't bounce off the walls anymore. Therefore, instead of activating the sympathetic nervous system, it does the opposite and activates the vagus nerve, which is part of the parasympathetic nervous system. The brain believes to be in starvation mode, limits movement to preserve energy and makes the individual crave even more energy rich foods.

The reason I have chosen to describe the metabolisms of alcohol before fructose is to show how similar these substances behave in our bodies. The main difference between fructose and alcohol is that alcohol is able to cross our blood brain barrier, affecting our central nervous system. This process protects us from overconsumption of alcohol, at least in most cases. Fructose, on the other hand, doesn't have this self limiting factor and therefore poses an immense threat to the health of people all ages. Both alcohol and fructose are per definition toxic substances, which change our behavior and which can lead to addiction. Although the consumption of alcohol has been regulated, fructose is readily available to everyone, including the most vulnerable members of our society, our children.

The food industry has made us believe that all calories are the same, no matter whether they came from a fruit, a vegetable,

a burger, a cookie or a can of soda. They want us to believe that getting fat and sick is our own fault because we are taking in more calories than we can burn. According to them, we should simply eat less and burn more. Because of this- completely wrong- presumption, many of us have been dragging ourselves to the gym, sweating during a fat burning class in the hope of losing weight. Many of us have repeatedly tried calorie restricted diets, felt miserable and ended up with more weight than before. All our efforts leave us frustrated and disappointed. **The only healthy way of long-term weight loss is to avoid the unnatural foods that mess up our biochemistry and replace them with natural, whole plant foods.**

Simple is Not Always Better

The low carb trend made lots of people stay clear of carbs in general. Some people even became true "Carb-o-phobes". It is vital to distinguish between the different types of carbohydrates, because they behave vastly differently in our body. In general, carbohydrates are molecules made of carbon, hydrogen and oxygen. Carbohydrates differ in the length of their chains and are divided into monosaccharides, disaccharides, and polysaccharides.

Simple carbs such as ***glucose, fructose and galactose*** consist of just one molecule and are called *monosaccharides*. *Disaccharides*, such as sucrose, consist of two molecules. These simple sugars are found in a variety of natural food sources such as fruits, vegetables and nuts yet always in combination with fiber and other nutrients. Simple sugars are also present in unnaturally high amounts in processed and ultra processed foods and beverages.

During processing, the best components of whole foods like fiber, vitamins and minerals are taken out. At the same time, a variety of chemicals are added including unhealthy fats, sweeteners, salt, preservatives, flavorings and colorings. Ultra- processed foods, the most manipulated type of food, including candy, soft drinks, chips, chocolate, candy, ice-cream, sweetened breakfast cereals, packaged soups, chicken nuggets, hot dogs, fries and many more, undergo multiple chemical processes. The final products have nothing in common with the food they originally came from. But exactly these high caloric foods are the ones that got us hooked and their consumption has increased rapidly over the last decades. Of all calories consumed in the United States between 2009 and 2010, nearly 60% came from ultra-processed foods, almost 10% from processed foods and almost 3% from processed culinary ingredients like oils, flour and pasta (). That amounts to nearly 85% of our daily calorie intake! If a low carb diet refers to cutting down on fructose and sugar in processed, unnatural foods, I am all for it. If it means replacing carbs with protein, not so much and I will explain later on why not.

The Sugar Roller Coaster

Simple carbs are very quickly absorbed in our intestine and cause rapid spikes of blood sugar levels, resulting in an instant energy boost. In response to the increase in blood sugar, the pancreas releases large amounts of insulin into the bloodstream. This insulin surge enables our cells to take up glucose, which lowers our blood sugar level. Our cells either use/burn or store the glucose. The inherent problem with simple carbs is that the blood sugar level drops below its original level, leaving us feeling tired, weak and craving calorie dense fat and sugary foods like a cookie or a doughnut. This state, which we refer to as a **sugar crash**, feels very uncomfortable. Therefore, we quickly grab the next available sweet treat, which gets us on the next roller coaster ride. These blood sugar ups and downs are probably the only roller coaster not worth a ride. Riding it day in day out can be extremely exhausting for our body and has an enormous impact on our health and well-being. Unstable blood sugar is one of the most common causes of fatigue, difficulty focusing, mood swings, hormone disruption, intense food cravings, weight gain, and sleep disturbances.
Chronically elevated insulin levels eventually lead to insulin resistance, a condition in which cells in our muscles, fat and liver stop responding to insulin. As a result, the beta cells in our pancreas produce more and more insulin. At some point though, they get worn out and can't keep up with the increased production of insulin and our blood glucose level rises, leading to prediabetes, type 2 diabetes and a variety of other health problems, including heart attacks, strokes and cancer. One in three Americans, including half of those age 60 and older, have this silent blood sugar problem known as insulin resistance.

The biochemical development of insulin resistance is extremely complex. At the core seem to be inflammatory processes which interrupt the insulin signals. Interestingly, the first organ that is affected appears to be our **brain**. **Within just 24 hours after a meal high in saturated fats and/or and excess calories, inflammation occurs in the hypothalamus.** This small area at the base of our brain receives satiety signals from the gut and the blood. Inflammation interferes with the communication between insulin, leptin and hypothalamic cells. The second organ that is affected within three days of starting a

diet high in saturated fat (HFD) is the liver. After two weeks on a HFD, insulin resistance starts affecting our **muscle cells**.

The following little quiz will help you determine whether you are already on board the sugar roller coaster. If you answer some of the questions with yes, you are most likely a passenger.

Does your energy vary a lot over the course of a day?

Do you tend to crash mid-morning or mid-afternoon?

Do you drink coffee or tea to perk you up?

Do you wake up in the middle of the night on a regular basis?

Do you feel shaky, irritable or anxious if you go too long without eating?

The sugar roller coaster starts even before we are even born

During times of pregnancy and breastfeeding, most mothers are particularly conscious about their food choices, try to eat healthier and avoid potentially harmful foods. Most of us are aware of the fact that everything we eat eventually ends up in the baby's organism, either directly via the placenta or via mom's breast milk. Naturally, mothers are advised to stay away from alcohol, nicotine, drugs, raw meat and fish and limit their caffeine consumption to keep their babies safe.

In the past, studies have primarily focused on the relationship between **under nutrition** and disease susceptibility in adulthood. Our current global health crisis of overweight and obesity has prompted researchers to examine perinatal over nutrition and specific nutrient excesses. And indeed, mounting scientific evidence supports the fact that exposing infants to higher amounts of fructose or artificial sweeteners during the critical phase of growing and development can produce problems with cognitive development and learning as well as create lifelong risk for obesity, diabetes, fatty liver disease and heart disease. If the mom eats a doughnut and drinks a sweet beverage, the baby does too. **The earlier we are exposed to sugar and the more exposed we are to sugar, the higher the absorption of sugar**, a mechanisms called **upregulation**.

The critical period for most of our organs and systems takes place during intrauterine development. This process is highly influenced by our environment and can permanently change the function and/ or structure of an organ or system, which is called ***"programming"***. In most cases, programming of organs and bodily systems is essential for the survival and health of an organism. Let's take a look at an example. We all have a similar number of sweat glands at birth, but they are essentially nonfunctional. The environment during the first few years of life influences the number of glands that become functional; the hotter the conditions, the more functional sweat glands we exhibit. After childhood, this process is completed and the number of functional sweat glands is fixed for life.
Similarly, as demonstrated by the previously described Agouti mouse experiments, dietary changes influence gene expression in the offspring via epigenetic mechanisms. In humans, intrauterine exposure to high sugar diets and/or high blood sugar levels (***hyperglycemia***) has been found to increase the risk of developing the metabolic syndrome later in life. Studies also found that over-nutrition in the fetal or neonatal period can result in permanent changes in body fat mass and in the brain's neuronal circuits which regulate appetite. *High sugar consumption during pregnancy is associated with a twofold increased risk for delivering small for gestational age infants*. Pregnancies complicated by maternal diabetes, in any form, place the offspring at risk for developing obesity and glucose intolerance. In a study of 18- to 27-year-old women born to diabetic (gestational diabetes or type 2 diabetes) mothers, the risk of overweight was doubled in the offspring of diabetic mothers as compared with offspring from a background population. Moreover, the risk of the metabolic syndrome was increased 4-fold for offspring of mothers with gestational diabetes and 2.5-fold for offspring of mothers with type 1 diabetes. These findings indicate that intrauterine exposure to hyperglycemia contributes to the pathogenesis of the metabolic syndrome, thus offspring of diabetic mothers are risk groups for this condition. We basically program our kids to become chronically sick addicts.

Mother's milk is still considered nature's perfect food for our children- as long as the mother adheres to a healthy diet. Fructose does not naturally occur in human breast milk. Today, high amounts of fructose are routinely found in human breast milk due to the sugary foods breastfeeding mothers consume.
Baby formula has been designed to mimic mother's milk as closely as possible. As incredible as it is, fructose has found its way into the most popular baby formulas, basically turning them into baby milk shakes. When fed with formula, babies get their first fructose hits. The result of our sweet lifestyle is an epidemic of obese babies.
It is alarming that something as important as our infant's food contains fructose, a substance known to be extremely harm-

ful. Research shows that the earlier children are exposed to added sugar, the more they are hooked on it, the more they crave it and the heightened their response to sweetness is later on in life. The addiction process starts even before babies are born. The more sugar the pregnant mother consumes, the more fructose the fetus is exposed to. The late Dr. Benjamin Spock, considered by many to be the most influential American pediatrician of all time, revolutionized the way we raise our children. Author of the bestselling book "Baby and Child Care", which was the second best-selling book after the bible throughout its over 50 years, Dr. Spock was one of the first pediatricians to study psychoanalysis to understand children's needs. In his latest revision of the book, edited just before he died at the age of 94, Dr. Spock insisted on the publication of his updated recommendation that **all children should be raised on an all-plant based diet.** Dr Spock himself had switched to a plant-based diet in 1991 after a series of illnesses that left him weak and unable to walk. Following his dietary change, he lost 50 pounds, regained his ability to walk and enjoyed another few years of his life.

Menopause

After talking about pregnancies and babies I would like to refer to another critical phase in the life cycle of women- menopause. Generally, younger women have a certain advantage compared to older women due to the fact that estrogen increases the excretion of uric acid. Naturally, a high intake of fructose can override this system´s capacity. Ovarian estrogen production begins to decline 1 or 2 years before menopause and reaches a stable low level about 2 years after the final menstrual period. This relationship between uric acid and estrogen may explain the often experienced weight gain of menopausal/ post-menopausal (the time after menopause, when a woman hasn't experienced a period for over a year). It also puts them at a higher risk for developing obesity, diabetes, heart disease and the metabolic syndrome.

Complex Carbs

Complex carbs are an extremely important food source for us. They provide us with long lasting energy, aid digestion, feed microorganisms living in our gut, optimize our weight and our metabolism, help us to relax, sleep well, think clearly and influence our mood positively.

Complex carbs are made up of glucose molecules that are strung together in long, complex chains. Complex carbs such as starches are present in whole foods including whole grains, legumes and vegetables. These long polysaccharides take longer to be broken down and absorbed. As a result, our blood sugar level rises more slowly over a longer period of time.

Fiber is also a polysaccharide, consisting of long chains of carbohydrates which are connected by complicated bonds. Fiber is part of every plant food. Due to their makeup and unlike starches, fiber cannot be digested by our body. So why are they such an important part of our diet? Well, due to their structure, fiber makes it all the way to our large intestine, where *beneficial microbes feed on them*. When fed properly, these microorganisms produce powerful anti-inflammatory substances and compounds that protect us from infections. Fiber is actually not feeding us but our microbes! Fiber also makes us feel full after eating, thereby *limiting our food intake*. As vital as dietary fiber is to our overall health, we see a nationwide deficit which nutritionists call ***"the fiber gap"***. Our ancestors used to consume between 100g- 300g of fiber a day, tribe members from modern hunter gatherer societies consume between 100-150grams of fiber a day, but Americans only consume about 20g a day. *Only 5% of American adults meet the American Heart Association recommendation* of just 25-30 g/day (from proper food sources, not supplements). *9 out of 10 children fail to achieve the Institute of Health's recommendation for fiber intake.*

Where did all our fiber go?

Firstly, we have actively taken the fiber out of our foods by processing and refining whole foods. Food companies have removed fiber in order to increase shelf life, ship their products around the world, shorten cooking time and make food freezable. A typical Western diet is basically a high fat, high sugar, low fiber diet. Not a single food item at a fast food restaurant has more than 1g of fiber in it, except the salad, which comes with a processed dressing. At the same time as we have actively taken the fiber out of foods, we have dramatically reduced our overall plant food intake and replaced natural foods with processed foods.

It always surprises me that our massive fiber deficiency doesn't draw more attention, even though *dietary fiber has been shown to decrease the risk for developing Type 2 diabetes, metabolic syndrome, cardiovascular disease, obesity, and various cancers as well as lowering cholesterol and blood sugar levels and high blood pressure.*

A fiber rich diet has been linked to a 30% reduced risk of death from coronary heart disease, 22% reduced risk of stroke

and 16% lower risk of diabetes and colorectal cancer. Given our alarmingly low fiber intake, it is not surprising that fiber is listed as a nutrient of concern by the Dietary Guidelines Advisory Committee.

Hidden Sugars

Don't be tricked by fancy names and so-called "healthy" sugars. There are at least 64 different names for sugar listed on food labels. Besides the most common names sucrose and high-fructose corn syrup, you can find barley malt, corn sugar, dextrose, maltose, rice syrup and many more. Food and beverage manufacturers have created an abundance of different names to distract us from the fact that the ingredient in question is simply sugar. Some of the so-called *healthy sugars like agave syrup contain even higher amounts of fructose than high fructose corn syrup* (HFCS). To produce agave syrup, natural occurring *fructanes*, which are a chain of fructose molecules, are broken up into individual fructose molecules with the help of added enzymes and heat. This step elevates its fructose content to the incredible amount of 85%. In comparison, the most common forms of HFCS contain either 42% or 55% fructose.

Sugar- a Gateway Drug

We all know that sugar is not good for us, so why is it so difficult to stop eating it?
According to Daniel Lieberman, evolutionary biologist at Harvard University, sugar is a deep ancient craving. Millions of years ago, apes survived on sugar rich fruit. They evolved to choose the riper fruits because of their higher sugar content, which supplied them with more energy. The fact that fructose is metabolized into fat far more rapidly than any other sugar was essential for survival in times of inconsistent meals and food scarcity. The release of the "feel good" hormone dopamine in the brain triggered by sugar consumption makes complete evolutionary sense, since our hunter- gatherer ancestors had a better chance of survival when feeding on high energy dense foods.
Even though humans have evolved culturally and technologically, our genome has pretty much stayed the same over the last 10.000 years. And so even today, in times of food abundance- at least in developed countries- our brains are still programmed to crave high caloric foods to prepare for times of food scarcity. Yet these times never come.
Mounting evidence suggests that highly processed foods and beverages interfere with the biochemistry in our brains and have the potential to significantly influence our behavior. These foods exhibit addictive potential like any other addictive substance (e.g. marihuana, cocaine, opioids) by tapping into our pleasure-seeking circuits. Upon consumption, ***sugar triggers the release of opioids and dopamine in our brains, just like any other drug of abuse.*** According to The American Psychiatric Association addiction is defined as "a brain disease that is manifested by compulsive substance use despite harmful consequences." In other words, addiction involves intense cravings for something, loss of control over its use, and continuing involvement with it despite adverse consequences.

Drugs of abuse share the following characteristics:

- **Binging**: episodes of uncontrolled eating and overeating
- **Cravings**
- **Tolerance**: a person no longer responds to the drug in the same way that person initially responded and as a consequence needs a higher dose to achieve the same result
- **Withdrawal**: unpleasant physical and mental side effects upon quitting sugar including anxiety, depression, cognitive issues and changes in sleep patterns
- **Cross-sensitization:** a person becomes sensitized to other drugs of abuse, e.g. chronic opioid exposure is associated with increased sugar intake. The repeated ingestion of sugar, particularly in high concentrations, may lead to "gateway effects", leading to an increased use of other drugs of abuse including alcohol, opioids or cocaine. (Is Sugar a Gateway Drug?; Sugar-dependent rats show enhanced intake of unsweetened ethanol.).
- **Cross-tolerance:** a person tolerates more of another drug
- **Cross-dependence:** one drug is able to suppress the withdrawal signs and symptoms of another drug. Not surprisingly, newly sober addicts and alcoholics suffer intense sugar cravings during early recovery and are at risk of becoming sugar addicts.
- **Reward and opioid effects:** feeling less pain and more pleasure.

We don´t need a gateway drug, we already have a problem. The Center of Disease Control (CDC) reported a third wave of opioid overdose deaths which began in 2013.

Sugar and Our Brain

Because of their developing brains, ***children seem to be particularly vulnerable to the effects of sugar.*** Even though this may seem logical, the influence of sugar on children's behavior is a highly debated topic among pediatricians with little consensus. But have you ever seen a child throw a tantrum in the fruits or vegetables section of a supermarket? On the other hand, I have witnessed countless uncontrolled fits in front of the candy selection, always cleverly placed at our children's eye level just before the checkout counter.
Apart from infants and young children, we should be particularly concerned about the well being of our teenagers and young adults. They are the biggest consumers of high-energy, sugary and fat-laden junk foods and sweetened beverages. Their minds and bodies undergo critical developmental changes, which puts them at a high risk of developing diet-induced chronic diseases and impairs their cognitive functions such as decision making. During adolescence, the heightened metabolism and rapid pubertal growth can protect kids from gaining weight and becoming obese. It doesn't protect them from the underlying inflammatory processes. *Regular and excessive consumption of high-calorie low-nutrient junk food damages areas of the brain essential for learning and memory.* Neurons in brain areas like the hippocampus, that encode memories, no longer work efficiently. To illustrate the detrimental effect of even sporadic amounts of sugar on the brain, let's have a look at an experiment conducted at the University of New South Wales, Australia: One group of mice was fed with high-calorie low-nutrient foods, containing mostly sugar and saturated fat. The other group was fed a healthier diet but was periodically allowed to have sugared water, similar to a soda. Just one week into the experiment, the first group of mice showed significant deterioration in the brain area related to memory. Truly disconcerting was the fact that the second group of mice displayed a decline almost as severe as the first group.

Other studies showed that special *immune cells in the brain called microglia or hydrangea cells become inflamed after the consumption of high-calorie low-nutrient foods.* Researchers discovered that those meals increased the appetite of mice resulting in more intake of food and ultimately led to significant weight gain. They concluded that our brain's immune cells may drive overeating and weight gain.
Even just one week on a junk food diet seems to have a detrimental effect on our cognitive abilities resulting in ***impaired memory and brain inflammation***. The authors of this study were particularly "surprised about the speed with which the deterioration of the cognition occurred," and very concerned about the fact that their "preliminary data also suggests that ***the damage is not reversed*** when the rats are switched back to a healthy diet."

Nutrition affects the function of our brain at every age. As we grow older, the prevention of cognitive decline becomes more important. Worldwide, about 47 million people are currently affected by dementia, of which 60-75% suffer from Alzheimer's disease. Every strategy that prevents or at least delays the onset of dementia will have a profound impact on public health. However, a recent systematic review shows that the use of pharmacological treatments does not prevent cognitive decline in persons with normal cognition or with mild cognitive impairment. On the other hand, a multifactorial intervention including a heavily plant based diet, physical activity and cognitive training proved to be most effective.

Sugar and Our Skin

Teenagers may not be particularly thrilled to hear about the negative health impact of most of their favorite foods, but they may be interested in how diet and skin are related. After all, it is estimated that 85% of teens develop acne, with a typical onset about age 11 for girls and age 13 for boys. Just between the years 2006 and 2016, the *prevalence of acne increased by 10%*. Having acne can feel devastating for a teenager and can take a significant toll on their emotional well being. Acne is positively associated with anxiety, depression, low self esteem, poor self- image, decreased quality of life, and a feeling of loneliness. Acne is not limited to adolescents, but can persist or occur later in life.
Acne is caused when hair follicles, basically tiny holes in our skin, get clogged. The process starts with an excess production of skin oil (sebum) and an overgrowth of the cells that line the ducts that carry this oil to the skin surface. These ducts become subsequently blocked, oil collects under the skin and becomes infected with skin bacteria. This highly inflammatory mixture produces the characteristic appearance of acne.

One of the key chemicals in the development of acne seems to be ***insulin like growth factor 1*** (IGF-1). IGF-1 is a growth hormone which stimulates cell growth and inhibits the death of cells that are no longer needed. It closely interacts with insulin and reproductive hormones, resulting in increased androgen hormone activity throughout the body.

The following factors greatly influence the outbreak of acne:

1. **Diet.** Certain foods promote inflammation, raise IGF1, insulin and androgens (hormones with testosterone-like effects) and change the composition of our gut flora.

- Dairy products including whey protein powder and chocolate: milk and dairy products contain steroid hormones like estradiol, IGF1, raise insulin levels, promote inflammation and boost sebum production
- Refined carbs, sugar and processed foods: they raise insulin levels as well as IGF1 levels and promote inflammation
- Animal based foods: they promote inflammation (see page…protein)
- Foods some people are sensitive to: gluten (see page…), certain food intolerances (e.g. raw foods of the nightshade family like raw tomatoes, raw peppers, eggplant, white or yellow potatoes) and food allergies
- Excess caffeine consumption: triggers release of stress hormones such as cortisol, which stimulates the sebaceous glands in your skin resulting in an increase in sebum production

2. **Hormones and stress**
3. **Skin care products and makeup**, which can clog up pores.

Despite the mounting evidence that dietary factors greatly influence the outbreak and progression of acne, when it comes to the treatment of acne, too little emphasis is placed on nutrition. Most physicians still prescribe *antibiotics, retinoids or isoretinoids*, all of which come with serious side effects. Among those undesired effects are changes in the gut flora, anxiety and depression. Systemic administration of retinoids or isoretinoids, which are synthetic derivatives of vitamin A, is frequently associated with mucocutaneous side effects such as dry lips, skin and nose or mucocutaneous inflammation, liver toxicity and abnormalities of serum lipid profiles, which may be related to an increased risk of coronary heart disease. These drugs are classified as teratogens, which implies that they pose a risk to normal fetal development. Furthermore, the use of retinoides in children may limit their growth. Considering their toxicity, retinoides should only be prescribed after careful consideration of the benefit to risk ratio for each individual. The majority of acne can be managed successfully with a balanced whole-food plant-based diet and an overall healthy lifestyle.

Other skin conditions including **rosacea, eczema and psoriasis** have increased in the last decades as well.
What we eat also profoundly affects aging processes in our skin. During inflammatory events, chemicals are produced which cross link collagen and break down collagen and elastin. These two proteins work together to create strength, firmness and shape of our skin. Their breakdown results in deeper wrinkles, more fine lines, and an early onset of signs of aging. Drinking large amounts of black tea or coffee facilitates this process by dehydrating the skin and promoting inflammation. The healthiest diet for our skin are anti-inflammatory and protective foods. High glycemic foods, processed foods and animal foods promote inflammatory processes and oxidative stress and should be avoided.

Not All Fructose Is Bad

Nature provides us with the right, perfectly packaged amounts of fructose. In whole plant foods, fructose is always combined with fiber. Fiber is the part of plants that cannot be completely broken down by our digestive enzymes but nevertheless, serves us in a myriad of ways. Soluble and insoluble fiber form a web that coats the inside of our intestine and slows down absorption of various foods like sugar, preventing blood sugar spikes and making us feel full.
Let’s look at an example. How many whole oranges can each of us eat in one go? Most likely one, probably not more than two. In contrast, it takes 3- 4 whole oranges to make 1 cup of orange juice, which means that we are taking up 3- 4 times the amount of fructose if we drink a cup of OJ instead of eating an orange. Furthermore, our serving sizes generally exceed one cup. The most important difference between the whole orange and the juice, is that the latter is missing fiber, the white staff between the peel and the flesh. But this fibrous skin is the perfect wrap for fructose, slowing down and reducing the amount of fructose that ends up in our bloodstream. In addition, fiber causes more food to travel down to the large intestine,

feeding the millions of microorganisms that inhabit this part of our body. When bacteria are breaking down fiber, which is basically a fermentation process, they produce protective **short chain fatty acids** (SCFA) which play a crucial role in our overall health. Additionally, fiber speeds up transit time through the digestive tract and sends a satiety signal to our brain. Fiber also detoxifies our body, binding to toxins which facilitates getting rid of them. Fiber less orange juice, on the other hand, is a high glycemic food that causes our blood sugar to spike. Juices are generally heavily promoted as being vitamin rich health foods. Most commercial juices have a high fruit content and are basically sugar rich fiber lacking refined products. Therefore, juices should only be consumed in small amounts, and ideally in combination with vegetable juices. Just to give you an idea of the sugar content in fruit juices: a glass of freshly squeezed orange juice contains the equivalent of 2/3 of a soft drink. Apple juice contains even more sugar- 1 cup of apple juice is the equivalent of 1 cup of a soft drink.

The Other Two Major Players- Fat and Protein

We have talked extensively about the far reaching effects of sugar on our body and the differences in the metabolism of different carbohydrates. Let's look at the other two macronutrients we consume on a daily basis- fat and protein.

Fat

The media is bombarding us on a daily basis with contradictory dietary messages and so it isn't surprising that most people are confused. Is butter beneficial or detrimental for us? What about vegetable oils and olive oil- good or bad? Are saturated fats inherently bad? Should eggs be an essential part of our diet? In this overall confusion low-carb diets such as the Keto or the Atkins diet became quite popular. Advocates of low carb diets suggest that our current dietary guidelines are incorrect and that our weight and health problems can be successfully managed by swapping carbohydrates for protein and fat, including saturated fats. Are they right?
To be able to make informed decisions, we must understand how fat and protein are metabolized in our body.
Fats are the most nutrient dense foods and healthy fats play a vital role in our overall well being. Fats are part of cell membranes and nerve sheaths, they facilitate the absorption of important vitamins including vitamins A, D, E, and K, are essential for blood clotting, muscle movement and are involved in inflammatory processes. Fats also help regulate our cholesterol levels.
But not all types of fat behave the same. While having a similar chemical makeup, fats differ in length and shape of their carbon chains as well as their number of hydrogen atoms that are bound to carbon atoms. Being able to distinguish between beneficial and harmful fats helps us to add healthy fats to our diet.

Unsaturated Fats

Unsaturated fats are healthy fats which are liquid at room temperature and can be found primarily in vegetables, nuts, seeds. They lower our "bad" cholesterol and raise our "good" cholesterol.

Monounsaturated fats, which contain only one double bond in their chemical structure, can be found in larger quantities in avocados, nuts and seeds and olive oil.

Polyunsaturated fats, which contain two or more double bonds, are essential fats. Essential means that our body can't produce them. The two main types of polyunsaturated fats, which have become quite popular in the last decade, are ***omega-3 fatty acids and omega-6 fatty acids***. To make it even more complicated, there are three different types of omega-3 fatty acids: the "parent" omega-3 fatty acid **ALA** (alpha-linolenic acid) and its derivatives **DHA** (docosahexaenoic acid), and **EPA** (eicosapentaenoic acid). Omega-3 fatty acids are part of cell membranes, making them particularly important for the health of vital organs such as the heart and the brain. They help fight inflammation and dementia, promote bone health, support infant brain development and overall mental health and decrease dangerous liver fat. Nuts and seeds (e.g. chia seeds, hemp seeds, pumpkin seeds and flax seeds) are naturally rich in ALA. Seaweed and fish are rich in the biologically active forms DHA and EPA. Recent studies have shown that the overall importance of ALA has been underestimated and that is seems to be a potent neuroprotective agent with anti-inflammatory properties and may, among other benefits, reduce stroke risk. Omega-3 fatty acids are usually the first answer of most people when asked why they eat fish. Parents keep telling their children that eating fish is "important for their brain development". What most of us don't realize is that fish get their omega-3s from plants, specifically from algae. It's also important to mention that most commercially available fish is

now farmed and the chances they are eating a natural diet are negligible. Fish farms that feed their fish grains and soy will produce fish with high amounts of omega 6 and virtually no omega 3 content. By skipping the fish and going straight to the algae we avoid harmful chemicals and protect our environment (see page).

DHA and EPA can also be created in our body from ALA in a series of complex reactions. It takes three chemical reactions alone to convert ALA into EPA and another four reactions to change EPA into DHA. These conversions depend on adequate supplies of B3 and B6 vitamins, magnesium, and zinc as well as specific enzymes. The activity of the specific enzymes is subject to considerable individual variations and depends on genetics, age, health, and diet. Generally, the rate of conversion from ALA to EPA and then DHA is not great. Apparently, women are better at converting it than men with women converting on average 21% of ALA to EPA and 9% to DHA, men have a conversion rate of 8% to EPA and only 4% to DHA. Therefore, **regular consumption of DHA and EPA in the form of algae is strongly recommended**. You can add a spoonful of spirulina or chlorella to a smoothie, consume nori sheets or seaweed salads or purchase algae derived DHA and EPA supplements.

Omega-6 fatty acids are present in large amounts in seed and vegetable oils and meat, both of which are a big part of Western diets. The "parent" omega-6 fatty acid is called **linoleic acid (LA)**. Our body converts LA into ***gamma linolenic acid (GLA)*** which has potent anti-inflammatory properties and is used in female hormone balancing. It is also converted into ***arachidonic acid (AA)***, which we only need in small amounts. ***Arachidonic acid*** acts as an inflammatory agent and can contribute to chronic inflammatory diseases such as arthritis and cardiovascular disease. All too often, omega- 6 fatty acids are regarded the same and are being equally demonized. We have to keep in mind though that GLA is a powerful anti- inflammatory agent which plays an important role in cardiovascular disease, lung function, autoimmune conditions and metabolic abnormalities. Also, it is the imbalance of omega-3 and omega-6 fatty acids which sets in motion the inflammatory process implicated in most killer diseases of our modern world.
Despite the fact that the overall intake of saturated fats has declined during the last three decades, the intake of omega-6 fatty acids has steadily increased in Western diets. As a result, our omega-6/omega-3 ratio increased from 1:1 during evolution to 20:1 today or even higher. This change in the balance of fatty acids parallels the significant increase in the prevalence of overweight, obesity and metabolic syndrome. A healthy balance would be a **1:1 up to 1:4 omega 3: 6 ratio**. By consuming less omega- 6 fats such as those found in processed foods and vegetable oils we naturally decrease our omega 3- needs due to the fact that both fatty acid groups compete for the same enzymatic pathways. Evidence suggests that a rich and varied diet including algae, plenty of nuts and seeds as well as superfoods should cover all of our omega bases. Hemp seeds, by the way, have the perfect ratio of omega- 3 to -6 and have often been referred to as "natures perfect food".

Saturated Fats

In contrast to unsaturated fatty acids, fatty chains in saturated fat are "saturated" with hydrogen atoms, meaning that the maximum possible number of hydrogen atoms are attached to every carbon atom. These fats are solid at room temperature and are most commonly found in animal products. Many high- fat foods including pizza, fried foods, processed foods and baked goods contain lots of saturated fats. For the last decades, saturated fats have been blamed for causing coronary heart disease (CHD) by raising total cholesterol and dietary guidelines still recommend restricting their intake. However, CHD is only modestly associated with the amount of total cholesterol. Although studies have shown a direct correlation between the intake of saturated fats and cardiovascular disease, the fact that saturated fats are usually accompanied by sugar has not been taken into account. Nobody would dream of snacking on isolated saturated fatty acids. In our typical Western diet these fats are a part of our meals, and are commonly combined with refined carbohydrates- think of doughnuts. It is crucial to understand that ***arteriosclerosis is an inflammatory disease***. Besides sugar, other harmful and inflammatory fats are associated with these foods including carnitine, choline, omega-6 fatty acids etc. A recent study found that ***higher intake of plant-based saturated fats was associated with a 16% lower risk of dying from any cause.*** In contrast, higher intake of ***animal-based saturated fats was linked to a 21% higher risk of dying from any cause***. Because of the fact that saturated fats always come packaged with other substances, we need to look into diet as a whole instead of singling out one specific substance.

Cholesterol

Cholesterol is a type of fat, a waxy substance which cannot mix with or dissolve in the blood. Therefore, in the liver, cho-

lesterol is bound - together with triglycerides- to proteins, which act as carriers. These are the before mentioned lipoproteins. Humans don't need any dietary cholesterol because our bodies are able to synthesize all its required cholesterol Cholesterol is part of every human cell membrane and plays a vital role in cell biology. It is needed for the production of hormones such as testosterone and progesterone as well as Vitamin D and is necessary for the formation of bile acids. In comparison to plants, humans as well as animals are able to produce all their necessary cholesterol. There is a great inter individual variation when it comes to the effects of dietary cholesterol. Although the intake of cholesterol may lead to elevated serum cholesterol in some individuals, others don't seem to be affected.
But even if dietary cholesterol alone does not raise serum cholesterol levels, it always comes in a combination with saturated fats, choline, carnitine, and often times sugar, all of which are major atherosclerosis promoting factors.
Excess cholesterol in our blood promotes the building up of plaques in arterial walls. As a result, the vessels become clogged up and blood flow to vital organs such as the heart is reduced ("*stenosis*") or even completely blocked. Surgical interventions including coronary artery bypass grafting or angioplasty can address severe coronary stenoses of larger blood vessels. However, **85% of heart attacks are now known to be caused by the rupture of smaller and unstable plaques, many of which are not even visible on angiograms**.
The richest dietary sources of cholesterol are eggs, liver, fish and fish oil, fast food, red meat and processed meat.

Trans Fats

Trans fats are the worst type of fat. Most trans-fats occur during processing when healthy oils are turned into solid fat to prevent them from becoming rancid. Artificial trans fats, also known as partially hydrogenated oils, were developed to replace butter. Trans-fats create inflammation, offer no health benefits and have therefore been banned in the US as well as many other countries. Replacements for trans fats include vegetable oils like canola, palm oil or corn, options that are neither healthy for us nor for our environment. Besides artificial trans-fats, natural trans-fats can be found in animal products such as beef, lamb and dairy products such as butter. Contrary to artificial trans fats, these natural trans fats have not been included in the trans fat ban.

Fat Storage

Dietary fat is stored in fat cells, called **adipocytes**. These cells act as an energy reserve and help conserve body heat. In times of energy need (e.g. exercise) or lack of adequate energy intake (e.g. fasting), adipose cells release fatty acids, which can be used by muscles and other tissues as a source of energy. Contrary to long- standing assumptions, body fat is more than just an inactive mass. It is a highly specialized and dynamic organ and critically important for our health and longevity. Fat cells communicate with the rest of the body via hormones and other substances.
Fat can be stored underneath our skin (***subcutaneous fat***), around our organs (***visceral fat***) and in the ***liver***. Visceral fat and particularly liver fat have been shown to cause serious health problems and contribute to chronic diseases such as type 2 diabetes, high blood pressure, heart disease, and cancer. Although both visceral fat as well as liver fat are more prevalent in obese people, thin people can be affected just the same (see page 12 TOFI). Recent research even suggests that fat tissue might actually be the cause of chronic diseases, rather than the liver and the pancreas.
The more fat we consume, the more is being stored and the bigger our fat cells get. Even though fat cells are the only cells that can safely store fat, they do not have an unlimited capacity to do so. Despite the fact that adipose tissue contains an extensive network of blood vessels, the over-expansion of fat cells can lead to a lack of oxygen. The resulting inflammatory reaction promotes the development of insulin resistance within fat cells. In the wake of inflammation more free fatty acids (FFA) are released into the bloodstream. These FFA + large amounts of dietary FFA prevalent in a high fat diet + FFA produced by the liver in response to a sugar rich diet are taken up by other organs, such as the **liver and skeletal muscles**. These organs are unable to safely store large amounts of fat and as a result also develop insulin resistance.
As mentioned before, insulin resistance in response to inflammation initially affects our brain, followed by the liver, then muscle tissues. While inflammatory reactions can be detected in the hypothalamus within 24 hours after a high fat meal, it takes about 12–14 weeks to see similar inflammatory changes in adipose tissue.

Protein

Modern humans seem almost obsessed with meeting their daily protein demands. When speaking about protein we usually

refer to animal based protein. However, **it is pretty much impossible on any diet that provides us with sufficient calories to develop a protein deficiency.** Humans only need a small amount, about 45 grams of protein, a day. Currently, the average American consumes about twice as much, mostly in the form of animal protein. Only 3% of the US population cannot cover their protein demand due extreme calorie-restricted diets or because of inadequate food intake.
When asked why they think eating meat is important, most people respond with the statement "because of its protein". How is it then that the largest, the tallest and the strongest species on our planet such as elephants, rhinos, hippos and gorillas derive their protein exclusively from plants? Have you ever witnessed a cow eating meat? Cows, chickens and pigs derive all their nutrients, including protein, from plant sources. Humans breast milk, nature's perfect food for babies, contains way less protein than any type of animal milk. Anatomically nor physiologically do we resemble meat eaters. So let's find out how animal and plant proteins act on our bodies and influence our well being.

Which Proteins Are Healthy For Us?

For a long time, plant protein was looked down upon and considered to be of lesser quality in comparison to animal protein. . Plants used to be consumed primarily by the working class, whereas regular meat consumption was more limited to the wealthy. Since those times, a lot has changed. The global per capita meat consumption has continually grown over the last five decades. Population growth as well as economic growth seem to be the major drivers for this increased consumption. Meat consumption is

Despite our massive health and environmental problems, global meat consumption is expected to grow even more in the coming years with a projected increase of 14 percent by 2030. US meat production hit an all-time high in 2018. As chicken has become the most popular meat, surpassing the all time favorite beef, the poultry industry has become one of the fastest growing industries in the U.S. But Americans also love milk and dairy products. Every year, about 64.9 million gallons of milk are being consumed in the U.S. alone. Such a heavy animal based lifestyle may be attributed to longstanding misinformation and misleading facts. Haven't we all grown up with the firm belief that meat is an important source of nutrients including protein and iron? We were made to believe that a milk mustache represents youth and health and that we need animal products not only to grow but to thrive. This understanding couldn't be further away from the truth. Scientifically proven, independent data published in international top medical journals reveal what impact meat and dairy really have on our health and well being.

Here is a summary of the most important facts which may be completely new to you but could ultimately save your life.

- **Animal Protein and Cancer**

In 2015, due to the overwhelming evidence that processed meats cause cancer, in particular colon and stomach cancer, the World Health Organization classified processed meats including ham, bacon, salami and Frankfurters as a **group 1 carcinogen (products known to cause cancer)**. This category also includes **tobacco smoking, asbestos and plutonium.**
Other substances found in bacon, ham, salami, and other processed and cured meats are the preservatives *sodium nitrate or potassium nitrate and nitrite.* They add an appetizing pink color to meat and destroy harmful bacteria. However, due to their potential carcinogenic and cell damaging effects, their commercial use has been limited (but not banned).

As early as 1968, Dr. T Colin Campbell, author of the bestselling book ***"The China Study"***, published his groundbreaking scientific findings about the intake of animal protein in regards to the development of cancer. The researchers found that above a certain threshold, **animal protein was able to "turn on"cancer**. A diet consisting of **20% or more** animal protein showed the strongest tumor growth rate. Reducing the animal protein content **below 5%** of overall calories resulted in no tumor growth. By switching the amount of animal protein in the diet, cancer could be turned on and off, just like a light switch. Next, the researchers tested plant protein. They found that **independent of the amount of plant protein intake no tumor growth was detected.** Animal protein, which has a different chemical composition than plant protein, produces higher levels of ***insulin like growth factor 1*** (IGF-1). IGF-1 is an important hormone which has a similar structure as insulin and stimulates cell division and cell growth. It also inhibits programmed cell death called apoptosis. Due to these actions, higher levels of circulating IGF-1 have consistently been associated with increased cancer risk, proliferation of cancer (increase in number of cells), and malignancy (the capacity to invade surrounding tissues and spread throughout the body) as well as the development of autoimmune diseases and inflammatory diseases in general. Dietary factors which promote cancer growth are called **promoters**, while factors which slow down cancer growth are called **anti-promoters**.
People who eat a diet high in animal protein have a much higher risk for most types of cancer, including prostate, breast and

colon cancer. The numbers are striking: Protein from dairy sources is associated with a 40% higher risk of prostate cancer. Women with a history of breast cancer have a 49% higher chance of dying from breast cancer by consuming just a single cup of milk a day. According to a study funded by the National Cancer Institute, women who consumed the most cheddar and cream cheeses had a 53% increased risk for breast cancer.
Overall, a **diet high in animal foods is associated with a 75% increased risk of premature deaths from all causes.**

Animal foods contain two main proteins, **casein and whey**. Cow's milk contains the most casein and has a ***casein to whey ratio of 80/20***. In comparison, human breast milk contains far less casein and has a ***casein to whey ratio of only 40/60***. The first year of our lives is a time of maximum growth in which babies triple their birth weight. But this is nothing compared to the growth rate of a calf. Instead of ***300%*** growth in humans, calves increase their weight by ***1566%*** in one year! In order to grow that rapidly, calves need larger amounts of protein compared to humans, particularly more casein. After the first year of life, the growth rate in mammals naturally slows down, reducing their need for protein. Each species' milk is perfectly tailored to the needs of their offspring. In times of food scarcity, milk from other species may have helped us to survive but based on our current understanding, it makes no sense to continuously over consume what is basically a baby calf's growth fluid coming from a hormone laden lactating cow. The more you think about it, the more absurd it is.

- **Animal Protein and Phosphorus**

Animal protein contains high levels of the mineral phosphorus. In the human body, phosphorus levels are tightly regulated by a hormone called **fibroblast growth factor 23** (FGF23). FGF23 is secreted by bone cells in response to our oral phosphate intake. The more we take up and the higher our serum phosphate level, the more phosphate is being eliminated, thereby normalizing serum phosphorus levels. Data suggests that FGF23 may be ***harmful to our blood vessels***, may cause enlargement of the cardiac muscle (*hypertrophy*) and has been linked to heart attacks, sudden death, and heart failure.

- **Milk and Bone Health**

Just like most of us believe that meat consumption is critical for their protein and iron needs, most of us adhere to the assumption that milk is essential for obtaining enough calcium and forming strong bones. After all, that's what we have been told for decades. Independent scientific evidence clearly shows otherwise. **Animal products such as meat, eggs and dairy, are classified as acidic foods because of their higher concentrations of sulfur containing amino acids.** An acidic pH in the body can occur from an acid forming diet, emotional stress, toxic overload or any process that deprives the cells of oxygen and other nutrients. The body will try to compensate for acidic pH by using alkaline minerals such as calcium, which is primarily found in our bones. **The higher our dairy intake, the more calcium is being released from our bones**. The World Health Organization states that *"the adverse effect of protein, particularly animal protein, might outweigh the positive effect of calcium intake on calcium balance"* . This chemical mechanism explains why populations with a higher dairy intake and an overall higher consumption of animal protein have a *higher incidence of bone fractures.* Contrary to animal foods, **plant foods are alkaline** and their consumption keeps calcium where it belongs- in our bones, while at the simultaneously providing us with additional calcium.

- **Animal Foods Promote Pathologic Changes in Arteries**

Meat, in particular red meat, and liver contain **carnitine and choline**. You may have seen carnitine on supermarket shelves being promoted as a supplement for weight loss and/or as a muscle building agent. However, these two substances play a vital role in the pathogenesis of atherosclerosis. Carnitine, as well as choline, are metabolized by certain gut bacteria into trimethylamine (**TMA**), which are then oxidized in the liver into the atherosclerosis- and thrombosis-promoting metabolite trimethylamine-oxide (**TMAO**). ***TMAOs damage the lining of our blood vessels, create inflammation, and drive cholesterol into arterial lesions.*** By doing so, they support the formation of atherosclerotic plaques and cause cardiovascular disease. ***High levels of TMAOs in the blood have been shown to be a powerful predictor of future cardiac events, even in the absence of elevated cholesterol levels.***
Consuming animal foods alters our gut flora, thereby facilitating the formation of TMAO. People who eat an exclusively plant-based diet appear to form little TMAO. In fact, when researchers fed steak to a vegan, virtually no TMAO was made. The former president of the American College of Cardiology, Dr. Kim A. Williams, states that ***the effects of TMAOs are so profound that they alone should be a reason to vigorously avoid animal foods.***
High amounts of carnitine can be particularly found in red meat. But what about white meat, which has been promoted as being the healthier choice? It turns out that instead of carnitine, **white meat contains high levels of choline**. Choline has a

very similar chemical structure compared to carnitine and is being metabolized by our gut bacteria just like carnitine, also resulting in the formation of TMAO. The highest levels of choline are found in white meat, eggs, milk, cheese, shrimp and other crustaceans followed by red meat and liver. Studies have shown that the *consumption of two eggs is followed by a rapid rise of TMAO in the blood of omnivores.*
Despite its involvement with TMAO, choline is an important essential nutrient, which we can only obtain through our diet. It is found in sufficient amounts in a wide variety of plant foods. *Quinoa, broccoli and tofu* are particularly rich sources of choline.
Carnitine, on the other hand, which plays a critical role in energy production in our body, can be produced by our bodies.

- **Bioaccumulation and Biomagnification of Toxins**

Generally speaking, the lower we eat on the food chain, the safer we are. In every ecosystem, organisms are tightly connected through **linear food chains as well as complex food webs**. These terms refer to the transfer of matter and energy from one organism to the other. On top of the food chain or food web are predators. The build up -or accumulation- of toxins in an individual organism is called bioaccumulation. Biomagnification is the process by which toxins are passed from one group (also called trophic level) to the next within a food web, thereby increasing in concentration. Naturally, animals at the top of the food web are affected the most.
Toxins such as pesticides, plastic byproducts, heavy metals and industrial toxins such as polychlorinated biphenyls (PCB's) and furans have become increasingly prevalent in our modern industrial world, inevitably finding their way into the organisms of every living being. Toxins can be ingested, absorbed through skin or inhaled and bioaccumulate in the tissues of animals as we go up the food chain.

For decades, we have thoughtlessly used the ocean as a dump for all of our chemical pollutants and waste. As a result, the biggest, fattiest fish, like tuna and swordfish, are shown to have the highest levels of mercury, polychlorinated biphenyls (PCBs) and dioxins. Mercury is a potent neurotoxin, which affects the central and peripheral nervous system. This may explain why higher fish consumption is associated with a higher risk for Alzheimers, dementia, depression and a higher suicide rate. This is particularly concerning given that tuna is among the most popular fishes consumed in the U.S.

The majority of us have already accumulated varying degrees of toxins in their bodies. **93% of dioxins find their way into our bodies with the food we consume**. **The highest levels of dioxins are found in fish followed by eggs, cheese and meat.** Males have no way of getting rid of dioxins that bioaccumulate in their fatty tissues. Women, on the other hand, pass them on to their babies through the ***placenta and through breast milk***. Many of these toxins have the ability to destroy motor neurons (***neurodegenerative effects***), leading to Parkinson's or Alzheimer's. They also threaten the normal development of fetuses and young infants by impairing growth and maturation of the brain and/or central nervous system (***neuro- developmental diseases***). Despite this evidence, pregnant women are still advised to consume fish on a regular basis.

Microplastics (MPs) turned out to be a massive global problem due to their toxic effects on fish and humans. MPs can cause tissue damage and oxidative stress and are able to cause changes in immune-related gene expression in fish. After being exposed to MPs, fish suffer from neurotoxicity, growth retardation, and behavioral abnormalities. The effects of MPs on our health are still poorly understood.
Some of the toxins accumulated in our body can take years, even decades, to be broken down. DDE (dichloro-diphenyl-dichloroethylene), for example, a metabolite of DDT (dichloro-diphenyl-trichloroethane), a pesticide banned in the early 1970's, can still be found in serum samples of 75-80% of the population due to its long half life and continued exposure.

- **Animal Foods and Other Harmful Substances**

Most animal products contain hormones, antibiotics and other drug residues. Currently, 80% or antibiotics are used in animal agriculture, with pigs and poultry receiving 5 to 10 times more antibiotics than cows and sheep. Among other factors such as overprescription of antibiotics and poor sanitation and hygiene practices in hospitals, the overuse of antibiotics in farming and agriculture is a major contributor to **antibiotic resistance**. When bacteria are continuously exposed to even small amounts of antibiotics, they will eventually develop an immunity to the drug, turning into "antibiotic-resistant bacteria". As a result, some antibiotics have lost their effectiveness against specific infectious diseases. Examples of bacteria that are resistant to antibiotics include methicillin-resistant Staphylococcus aureus (MRSA), penicillin-resistant Enterococcus, and multi drug resistant Mycobacterium tuberculosis (MDR-TB). Antibiotic resistance poses a serious threat to public

health. The Centers for Disease Control and Prevention reports more than 2.8 million antibiotic- resistant infections each year in the United States, resulting in the death of 35,000 people annually. In the European Union, 23.000 annual deaths were reported and numbers are on the rise. Researchers predict that by the year 2050 antibiotic resistance will cause 10 million deaths each year, surpassing cancer as the leading cause of death worldwide. Antibiotics are also known to disrupt microbial diversity of the gut flora and increase the risk for chronic diseases such as asthma, allergy, heart disease, diabetes, cancer, and obesity.

Some commonly consumed foods such as raw beef mince routinely contain high amounts of harmful pathogens. Apart from raw and insufficiently heated meat, which may contain pathogens such as Campylobacter, sufficient heating kills harmful bacteria. What survives heat exposure are **bacterial endotoxins**. Endotoxins such as lipopolysaccharides (LPS) are toxic molecules which are part of the bacterial cell wall of gram-negative bacteria. LPS are released into the environment when the bacteria multiply or when their cell membranes rupture through bacterial breakdown. Endotoxins are not only heat resistant, but also survive digestive enzymes and even stomach acid. Meals high in endotoxins promote **transient systemic inflammatory episodes**, which predispose subjects to the development of atherosclerosis and insulin resistance. These mechanisms seem to be **exacerbated by the presence of saturated animal fat**, because endotoxins like to attach to lipoproteins which transport dietary long-chain saturated fatty acids through the gut wall.

Since the 1950s, the FDA has approved a number of **steroid hormone drugs** for use in beef cattle and sheep, including natural estrogen, progesterone, testosterone and their synthetic counterparts. These hormones are used to increase the animals' growth rate and the efficiency with which they convert their feed into meat. For a long time, the use of hormones has been debated due to their potential health risks on humans. Hormonal substances still under debate in terms of their human health impacts are estradiol-17β, progesterone, testosterone, zeranol, trenbolone, and melengestrol acetate (MGA). All of the steroid hormone implants are available for over-the-counter purchase in the U.S. and are generally given by the livestock producer at specific stages of the animals' growth.
Another hormonal drug, **recombinant bovine growth hormone** (rBGH), commonly used in the US farm industry, has already been banned in Japan, Australia, New Zealand, Canada, and in the European Union due to animal and human health concerns. In the United States, rBGH has been used since its approval by the FDA in 1993.

What We Eat Is Of (G)utmost Importance

Hippocrates declared 2000 years ago that ***"All disease begins in the gut"***. Little did he know that our gut houses trillions of microorganisms. Everything we put into our bodies affects an entire world of bugs that exists deep within our body, unseen and unfelt by us. For the longest time, we have completely underestimated the importance of our gut and merely considered it as a system that absorbs nutrients and eliminates waste. But our gut is much more than a simple tube with an opening at each end. In fact, our gut is the largest sensory organ in our body with an enormous surface area, and is teeming with microorganisms. It hosts over 100 trillion bugs from at least 1000 different species of bacteria, whose combined weight is about 4.4 pounds (2 kilograms). The community of microorganisms (such as fungi, bacteria and viruses) that exists in a particular environment is called microbiome. The microbiome interacts dynamically with its host and environment, and its composition varies markedly over time and between individuals The microbes in our gut influence how we feel, think, remember, learn, sleep and behave. Researchers found nearly 46 million bacterial genes—about 24 million in the mouth microbiome and 22 million in the gut microbiome, outnumbering human genes by more than 100-fold. More than half of all bacterial genes were individual-specific, unique genes.

Microbiome Development- Mom Matters

Bacterial colonization of the newborn occurs at birth upon exposure to vaginal, fecal, and skin microbiota, although there is some circumstantial evidence suggesting that bacteria can be transmitted from the mother to the fetus. During pregnancy, the composition of the mother´s microbiome undergoes a series of shifts, which seem to be important for he growth/ health of the mother and newborn. After birth, maternal breast milk promotes the colonization and maturation of the infant gut microbiome. Beside bacteria, micro breast milk also contains prebiotic human milk oligosaccharides- sugars which promote the growth of specific microbial communities. The early microbiome progresses and evolves along with the diet of the

infant. By the age of 3, the composition of the microbiome becomes similar to that of adults.

In adults, a **healthy microbiome** is characterized by a stable and diverse community of microorganisms, which cover the inside of the gut wall by forming a thick bacterial band which is attached to the mucosa. These symbiotic organisms protect us and nourish the cells lining our gut (*epithelium*). This single layer of cells represents the only separation between the inside of our intestine and the rest of our body. Our epithelial cells rely heavily on the adjacent microorganisms- they derive up to 70% of their energy from bacterial activity alone. Without a properly functioning bacterial band epithelial cells become malnourished and damaged. As a result, their life cycle (maturation process) is negatively affected, which impairs important functions including our ability to properly digest and absorb nutrients.

I cannot rave enough about our amazing gut flora. These microorganisms don't just interact with epithelial cells but are vital for biochemical interactions throughout our body.
Beneficial microorganisms actively produce, absorb, metabolize and neutralize a wide range of substances, processes from which we benefit in the following ways:

- Microorganisms produce certain **neurotransmitters**, which- among other things- help to control feelings of fear and anxiety
- Microorganisms produce important chemicals such as **short chain fatty acids** (*butyrates, propionates, acetates*) from fiber, which are extremely protective. These fatty acids boost the protective mucus layer in our gut, affect genes that control cell proliferation (*anti-carcinogenic*) and protect us from metabolic diseases and overweight/ obesity. They promote anti- inflammatory processes, influence gut motility and determine how energy is metabolized.
- Microorganisms recycle bile acids, cholesterol and amino acids to produce other substances that affect our brain
- Microorganisms produce *anti-bacteria*l (antibiotic like), *anti-fungal* and *anti-viral substances* (e.g. interferons and cytokines)
- The cell walls of beneficial bacteria *absorb various carcinogenic* (cancer causing) substances rendering them inactive.
- Microorganisms produce organic acids that lower the pH near the epithelium, providing an *acidic environment* that protects against intruders.
- Microorganisms pretty much represent our own *nutrient factories* by actively synthesizing various nutrients like Vitamin K2, pantothenic acid, folic acid, Vitamin B1, B2, B3, B6 and B12, various amino acids and other active substances. This is nature's incredible way of making sure that we get necessary nutrients even in times of food scarcity. People with digestive issues and *dysbiosis* (unhealthy composition of microorganisms) are missing out on this steady stream of vitamins and other nutrients.
- Microorganisms can even *swap surface antigens* (called mimicking) with epithelial cells, meaning that they literally exchange parts of their "recognition molecules", which they have attached on their surface. This mechanism helps to improve our body's immune response and may be involved in the development of autoimmune diseases, in which the body attacks its own cells.

Our gut can be compared to a highly competitive real estate market. Three different populations of microorganisms inhabit our intestine, primarily our large intestine, and are constantly fighting over their shares. A healthy gut flora is dominated by friendly, so called **beneficial microorganisms** (e.g. Bifidobacteria, Lactobacteria, Propionobacteria, physiological strains of E.coli, Peptostreptococci and Enterococci), which tightly control the **opportunistic microorganisms** (e.g. Bacteroids, Peptococci, Staphylococci, Streptococci, Bacilli, Clostridia, Fungi and many others) as well as the **potential pathogenic- or transitional flora** (various microbes we swallow daily when eating and drinking).
Proper bacterial colonization of the intestine is critical to normal development and functioning of our immune and endocrine systems. The greatest threats to the neonatal microbiome appear to be C-section delivery, antibiotic use, and formula feeding. For instance, babies born by C-section harbor no vaginal microbes at birth. Instead, they are colonized by skin bacteria. Although further research is needed, microbial differences between C-section- and vaginally delivered babies could be observed after 1 month, 2 years, and even 7 years of life. Clear evidence indicates that antibiotics before, during, and after birth also disrupt the natural microbiome assembly. Infant formula also seems to perturb the colonization and prolifer-

ation of the neonatal intestinal microbiota. In addition to the three major threats, the optimal assembly of the infant microbiome may be impaired in babies born vaginally to mothers with a disrupted vaginal or intestinal microbiome. A disruption of the natural development of the neonatal microbiome increases neonates' long-term risk of metabolic and immune diseases.

An altered gut flora (**dysbiosis**) is associated with an impaired immune system characterized by fewer immune cells in the gut wall, decreased production of defensive chemicals like interferons, reduced production of antibodies and decreased and altered function of *macrophages* and *neutrophils* (special immune cells which can attack and destruct foreign substances and cells). Due to a damaged and malfunctioning gut wall, the gap between the endothelial cells widens, letting in various substances which are supposed to remain inside our intestine and not leak into the surrounding tissues and ultimately the rest of our body. This condition has become known as the **leaky gut syndrome**. Particles which migrate through the intestinal wall include toxins, partly digested food, proteins (especially milk and wheat proteins) and certain microorganisms like fungi, bacteria. These substances trigger our immune system, which is primarily located in our gut wall, to initiate and maintain inflammatory responses. The resulting reactions are not limited to our digestive tract but in their wake, chemicals travel through our blood vessels to every part of our body. The overall effects of a leaky gut can include a variety of chronic diseases such as chronic fatigue, autoimmune diseases including multiple sclerosis, lupus and type 1 diabetes, fibromyalgia, arthritis, skin and food allergies, asthma, acne, obesity and mental diseases. A leaky gut seems to be one of our- if not THE-most challenging health problems today.
The risk of an allergic rhinoconjunctivitis diagnosis in children was significantly higher in the children born by cesarean delivery than in those delivered vaginally. Cesarean delivery also was associated with subsequent diagnosis of asthma. The risk of developing asthma has also been associated with the type of bacteria contributing to the gut microbiota during the first 100 days of life.

These findings highlight ***the importance of preventative strategies to support the establishment of a healthy microbiome in babies***. These should include a more conservative administration of antibiotics, a renewed emphasis on initiating and sustaining breastfeeding and the promotion of vaginal deliveries or additional restoring measures in cases of C-section such as ***"vaginal seeding"***. This practice ensures inoculation of babies with the maternal microbiome immediately after delivery by using a cotton gauze or cotton swab with vaginal fluids to transfer the vaginal flora to the mouth, nose, or skin of the newborn. Other restorative measures include the pre- and probiotic supplementation of newborns.

Our Diet Shapes the Microorganisms Residing Inside Our Gut

The foods we eat not only affect the composition and the function of our microbiome but also affect the communication between our gut and the rest of our body. Dietary alterations start causing *microbial shifts within just 24 hours*. After about three days, the bacteria in our intestine start displaying behavioral changes due to different genes being turned on in their microbiome. As a result of these alterations in the gut flora, a cascade of inflammatory events is set in motion, which affects our whole body. For instance, a certain type of bacterium which is linked to inflammation and intestinal diseases in mice has been shown to flourish under a meat-rich diet.
The digestive system of meat eaters also includes bacteria which have the ability to convert choline and carnitine into dangerous TMAO's.

The Gut Brain Connection

Even though located far away from each other, our gut and our brain are tightly connected, both physically and biochemically. Mounting scientific evidence suggests that our gut microbiome modulates brain development, brain function as well as our behavior by a large variety of immune, hormonal and neural pathways. This complex interaction is called the **brain-gut-microbiota axis.**
Although our brain contains around 100 billion neurons, about 500 million neurons reside in our gut, which is the reason our gut has also been called the **"second brain"**. Millions of nerves called the **autonomic nervous system** (ANS) bidirectionally connect the gut and the brain. The ANS consists of two branches, the parasympathetic and the sympathetic nervous system.

- The **parasympathetic branch** is also called **"rest and digest"** because it directs blood flow away from other areas towards our digestive organs, leaving us feeling tired after a heavy meal. Its largest nerve is the vagus nerve

(also appropriately called the *"chill out nerve"*), the longest and most complex cranial nerve, which runs all the way from the brain through our face and thorax to our abdomen.

- The **sympathetic branch**, on the other hand, is well known as being the **"fight or flight"** system and directs blood flow towards our muscles in order to run away quickly or stand our ground.

Everyday, we experience examples of the powerful gut brain connection. When we are nervous before an important meeting, a date, an exam or a lecture, our fight or flight mode kicks in. Adrenalin goes up, and blood is being drained from our brain and our gut. After all, who needs to worry about digestion or ponder an escape plan in the eyes of immediate danger? As a result of the sympathetic response, our minds go blank and we have butterflies in our bellies. This feeling is caused by the reduced blood flow and oxygen which is felt by sensory fibers, prompting the butterfly sensation. We might even feel the need to run to the bathroom because our external anal sphincter muscle relaxes.

Turning off the "flight or flight" response is the task of the **vagus nerve.** Stimulating the vagus nerve activates a relaxation response, which reduces our heart rate and brings down our blood pressure.

Just as a troubled brain can send signals to the gut, a troubled intestine can send signals to the brain.
Stress inhibits the calming vagus signal and promotes gastrointestinal problems. Vice versa, inflammatory gastrointestinal disorders like Crohn's disease reduce vagal activity, thereby increasing overall stress levels. Gut microorganisms can activate the vagus nerve, thereby directly influencing our behavior. Furthermore, the vagus nerve also seems to distinguish between beneficial and potentially pathogenic bacteria and mediates signals to our brain, causing either anxiety or reducing stress. Mental disorders associated with dysbiosis and a leaky gut include Parkinson's disease, Alzheimer's disease (AD), dementia, ADHD, schizophrenia, psychosis and depression.
Actively controlling the vagal response can help us relax and cope better with stress (see more in chapter…page…).

Our Gut Flora Under Threat

Immune system related diseases such as allergies and autoimmune diseases have increased significantly in the last decades, mainly because we have stopped taking care of our gut microorganisms. On one hand, we have deprived our beneficial gut bacteria of their appropriate food by adopting a fiber deficient/fiber less diet. On the other hand, the side effects of our modern lifestyle actively harm the population of this delicate and well balanced ecosystem. The combination of overuse of prescribed antibiotics, antibiotics in drinking water and animal products, overall bug phobia and hygiene habits and a variety of chronic medications negatively influence the composition and state of our microbiome.

These are the most common medications that negatively alter our gut flora:

- **Antibiotics**: Antibiotics are only effective in the case of bacterial infections and should only be taken if strictly necessary. Nearly one third of antibiotics prescribed in the United States aren't appropriate for the conditions being treated, according to a study published in the Journal of the American Medical Association in 2016. Antibiotics cause severe imbalance of the intestinal microbiota and destroy the community structure. These changes are not fully reversed, even after several months of discontinuation of dosing. The more often antibiotics are taken, the more bacteria develop antibiotic resistance, rendering the drug less effective.
- **Cortisol**
- **Non-steroidal anti-inflammatory drugs** (NSAID) such as aspirin or ibuprofen
- **Antacids**
- **Oral contraceptives**

How do I know that something is not right in my gut?

The following questions can help you identify potential digestive problems.

- After eating, do you experience signs of indigestion including

  Bloating (feeling full)

  Excessive gas (burping, belching, flatulence)

Nausea

Acidic taste in your mouth

Stomach discomfort

Abdominal pain

Burning sensation in the lower part of your chest

- Do you experience constipation (24 hours or more without bowel movement) or diarrhea (frequent passage of loose, watery, soft stools) on a regular basis

- Do you feel that a variety of foods upset your digestive system

- Are you getting tired after eating a regular sized meal

If you are experiencing any of the above symptoms, no need to worry! In Part II of the book, I will explain how to regain and maintain a healthy gut flora. Not only will you feel physically better, but also mentally stronger and more relaxed.

References

The Burden of Primary Liver Cancer and Underlying Etiologies From 1990 to 2015 at the Global, Regional, and National Level JAMA Oncol. 2017;3(12):1683-1691. doi:10.1001/jamaoncol.2017.3055

https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

https://www.reuters.com/article/us-obesity-us-idUSBRE88H0RA20120918

Health and Care Workforce in Europe: Time to Act, WHO report September 14th, 2022

Hong YM. Atherosclerotic cardiovascular disease beginning in childhood. Korean Circ J. 2010 Jan;40(1):1-9. doi: 10.4070/kcj.2010.40.1.1. Epub 2010 Jan 27. PMID: 20111646; PMCID: PMC2812791.
https://www.cdc.gov/chronicdisease/about/costs/index.htm

https://www3.weforum.org/docs/WEF_Harvard_HE_GlobalEconomicBurdenNonCommunicableDiseases_2011.pdf

Ioannidis JP. More than a billion people taking statins?: Potential implications of the new cardiovascular guidelines. JAMA. 2014 Feb 5;311(5):463-4. doi: 10.1001/jama.2013.284657. PMID: 24296612.

Alberts B, Johnson A, Lewis J, et al. Molecular Biology of the Cell. 4th edition. New York: Garland Science; 2002. B Cells and Antibodies.

Blondeau N, Lipsky RH, Bourourou M, Duncan MW, Gorelick PB, Marini AM. Alpha-linolenic acid: an omega-3 fatty acid with neuroprotective properties-ready for use in the stroke clinic? Biomed Res Int. 2015;2015:519830. doi: 10.1155/2015/519830. Epub 2015 Feb 19. PMID: 25789320; PMCID: PMC4350958.

Downing NS, Shah ND, Aminawung JA, et al. Postmarket Safety Events Among Novel Therapeutics Approved by the US Food and Drug Administration Between 2001 and 2010. JAMA. 2017;317(18):1854–1863. doi:10.1001/jama.2017.5150

Willett WC, Koplan JP, Nugent R, et al. Prevention of Chronic Disease by Means of Diet and Lifestyle Changes. In: Jamison DT, Breman JG, Measham AR, et al., editors. Disease Control Priorities in Developing Countries. 2nd edition. Washington (DC): The International Bank for Reconstruction and Development / The World Bank; 2006. Chapter 44. Available from: https://www.ncbi.nlm.nih.gov/books/NBK11795/ Co-published by Oxford University Press, New York.

Kanherkar, R.R., Bhatia-Dey, N., Csoka, A.B. (2014). Epigenetics across the human lifespan. Frontiers in Cell and Developmental Biology, 2:49

Cairns, J., Overbaugh, J. & Miller, S. The origin of mutants. Nature 335, 142–145 (1988). https://doi.org/10.1038/335142a0
https://www.nytimes.com/2016/09/13/well/eat/how-the-sugar-industry-shifted-blame-to-fat.html

Baraldi LG, Martinez Steele E, Canella DS, Monteiro CA. Consumption of ultra-processed foods and associated sociodemographic factors in the USA between 2007 and 2012: evidence from a nationally representative cross-sectional study. BMJ Open. 2018 Mar 9;8(3):e020574. doi: 10.1136/bmjopen-2017-020574. PMID: 29525772; PMCID: PMC5855172.

OECD-FAO Agricultural Outlook 2021-2030

Jang C, Hui S, Lu W, Cowan AJ, Morscher RJ, Lee G, Liu W, Tesz GJ, Birnbaum MJ, Rabinowitz JD. The Small Intestine Converts Dietary Fructose into Glucose and Organic Acids. Cell Metab. 2018 Feb 6;27(2):351-361.e3. doi: 10.1016/j.cmet.2017.12.016. PMID: 29414685; PMCID: PMC6032988.

Klein AV, Kiat H. The mechanisms underlying fructose-induced hypertension: a review. J Hypertens. 2015 May;33(5):912-20. doi: 10.1097/HJH.0000000000000551. PMID: 25715094; PMCID: PMC4947541.

Grillo A, Salvi L, Coruzzi P, Salvi P, Parati G. Sodium Intake and Hypertension. Nutrients. 2019 Aug 21;11(9):1970. doi: 10.3390/nu11091970. PMID: 31438636; PMCID: PMC6770596.

Russo E, Leoncini G, Esposito P, Garibotto G, Pontremoli R, Viazzi F. Fructose and Uric Acid: Major Mediators of Cardiovascular Disease Risk Starting at Pediatric Age. Int J Mol Sci. 2020 Jun 24;21(12):4479. doi: 10.3390/ijms21124479. PMID: 32599713; PMCID: PMC7352635.

Muhammad A. Abdul-Ghani, Ralph A. DeFronzo, “Pathogenesis of Insulin Resistance in Skeletal Muscle”, BioMed Research International, vol. 2010, Article ID 476279, 19 pages, 2010. https://doi.org/10.1155/2010/476279

Goran, Michael I., and Barbara A. Gower. “Relation between visceral fat and disease risk in children and adolescents.” The American journal of clinical nutrition 70.1 (1999): 149S-156S.

Spagnuolo MS, Iossa S, Cigliano L. Sweet but Bitter: Focus on Fructose Impact on Brain Function in Rodent Models. Nutrients. 2020 Dec 22;13(1):1. doi: 10.3390/nu13010001. PMID: 33374894; PMCID: PMC7821920.

Sigala DM, Hieronimus B, Medici V, Lee V, Nunez MV, Bremer AA, Cox CL, Price CA, Benyam Y, Abdelhafez Y, McGahan JP, Keim NL, Goran MI, Pacini G, Tura A, Sirlin CB, Chaudhari AJ, Havel PJ, Stanhope KL. The Dose-Response Effects of Consuming High Fructose Corn Syrup-Sweetened Beverages on Hepatic Lipid Content and Insulin Sensitivity in Young Adults. Nutrients. 2022 Apr 15;14(8):1648. doi: 10.3390/nu14081648. PMID: 35458210; PMCID: PMC9030734.

Goran, Michael I. “Metabolic precursors and effects of obesity in children: a decade of progress, 1990–1999.” The American journal of clinical nutrition 73.2 (2001): 158-171.

Barker DJ. The origins of the developmental origins theory. J Intern Med. 2007 May;261(5):412-7. doi: 10.1111/j.1365-2796.2007.01809.x. PMID: 17444880.

Brenseke B, Prater MR, Bahamonde J, Gutierrez JC. Current thoughts on maternal nutrition and fetal programming of the metabolic syndrome. J Pregnancy. 2013;2013:368461. doi: 10.1155/2013/368461. Epub 2013 Feb 14. PMID: 23476780; PMCID: PMC3586494.

Hediger ML, Scholl TO, Schall JI. Implications of the Camden Study of adolescent pregnancy: interactions among maternal growth, nutritional status, and body composition. Ann N Y Acad Sci. 1997 May 28;817:281-91. doi: 10.1111/j.1749-6632.1997.tb48214.x. PMID: 9239196.

Alexaki VI. The Impact of Obesity on Microglial Function: Immune, Metabolic and Endocrine Perspectives. Cells. 2021 Jun 23;10(7):1584. doi: 10.3390/cells10071584. PMID: 34201844; PMCID: PMC8307603.

Beilharz, Jessica E., J. Maniam, and M. J. Morris. “Short-term exposure to a diet high in fat and sugar, or liquid sugar, selectively impairs hippocampal-dependent memory, with differential impacts on inflammation.” Behavioural brain research 306 (2016): 1-7.

https://worldhappiness.report/ed/2019/addiction-and-unhappiness-in-america/

Leigh, Sarah-Jane, and Margaret J. Morris. “Diet, inflammation and the gut microbiome: mechanisms for obesity-associated cognitive impairment.” Biochimica et Biophysica Acta (BBA)-Molecular Basis of Disease 1866.6 (2020): 165767.

David M, Hodak E, Lowe NJ. Adverse effects of retinoids. Med Toxicol Adverse Drug Exp. 1988 Jul-Aug;3(4):273-88. doi: 10.1007/BF03259940. PMID: 3054426.

Zong G, Li Y, Sampson L, Dougherty LW, Willett WC, Wanders AJ, Alssema M, Zock PL, Hu FB, Sun Q. Monounsaturated fats from plant and animal sources in relation to risk of coronary heart disease among US men and women. Am J Clin Nutr. 2018 Mar 1;107(3):445-453. doi: 10.1093/ajcn/nqx004. PMID: 29566185; PMCID: PMC5875103.

Sears B, Perry M. The role of fatty acids in insulin resistance. Lipids Health Dis. 2015 Sep 29;14:121. doi: 10.1186/s12944-015-0123-1. PMID: 26415887; PMCID: PMC4587882.

Campbell TC. Dietary protein, growth factors, and cancer. Am J Clin Nutr. 2007;85(6):1667.

Ornish D, Weidner G, Fair WR, et al. Intensive lifestyle changes may affect the progression of prostate cancer. J Urol. 2005;174(3):1065-1069.

Kleinberg DL, Wood TL, Furth PA, Lee AV. Growth hormone and insulin-like growth factor-I in the transition from normal mammary development to preneoplastic mammary lesions. Endocr Rev. 2009;30(1):51-74.

Campbell TC. Cancer Prevention and Treatment by Wholistic Nutrition. J Nat Sci. 2017 Oct;3(10):e448. PMID: 29057328; PMCID: PMC5646698.

Chung, M., van Buul, V., Wilms, E. et al. Nutrition education in European medical schools: results of an international survey. Eur J Clin Nutr 68, 844–846 (2014). https://doi.org/10.1038/ejcn.2014.75

McCann SE, Hays J, Baumgart CW, et al. Usual consumption of specific dairy foods is associated with breast cancer in the Roswell Park Cancer Institute Databank and BioRepository. Curr Dev Nutr. 2017

Stöhr R, Schuh A, Heine GH, Brandenburg V. FGF23 in Cardiovascular Disease: Innocent Bystander or Active Mediator? Front Endocrinol (Lausanne). 2018 Jun 27;9:351. doi: 10.3389/fendo.2018.00351. Erratum in: Front Endocrinol (Lausanne). 2018 Jul 18;9:422. PMID: 30013515; PMCID: PMC6036253.

Le LT, Sabate J. Beyond meatless, the health effects of vegan diets: Findings from the Adventist cohorts. Nutr. 2014 May 27; 6(6): 2131-47

E Giovannucci. Dietary Influences of 1,25(OH)2 Vitamin D in Relation to Prostate Cancer: A hypothesis. Cancer Causes Control. 1998 Dec; 9(6):567-82. Available here: http://www.ncbi.nlm.nih.gov/pubmed/10189042.

Harvard T.H. Chan, School of Public Health: The Nutrition Source – Calcium and Milk: What’s Best for Your Bones and Health? Available here: http://www.hsph.harvard.edu/nutritionsource/calcium-full-story.

HC Sherman and AO Gettler. The Balance of Acid-Forming and Base-Forming Elements in Foods, and its Relation to Ammonia Metabolism. J. Biol. Chem. 1912 11: 323-338. Available here: http://www.jbc.org/content/11/4/323.citation.

D Feskanich, WC Willett, MJ Stampfer, GA Colditz. Protein Consumption and Bone Fractures in Women. Am J Epidemiol. 1996 Mar 1; 143(5):472-9. Available here: http://www.ncbi.nlm.nih.gov/pubmed/8610662.

LA Frassetto, RC Morris Jr., DE Sellmeyer, A Sebastian. Adverse Effects of Sodium Chloride on Bone in the Aging Human Population Resulting from Habitual Consumption of Typical American Diets. J Nutr. 2008 Feb; 138(2):419S-422S. Available here: http://www.ncbi.nlm.nih.gov/pubmed/18203914.

MM Adeva, G Souto. Diet-induced Metabolic Acidosis. Clin Nutr. 2011 Aug; 30(4):416-21. Available here: http://www.ncbi.nlm.nih.gov/pubmed/21481501.

US Barzel, LK Massey. Excess Dietary Protein can Adversely Affect Bone. J Nutr. 1998 Jun; 128(6):1051-3. Available here: http://www.ncbi.nlm.nih.gov/pubmed/9614169.

DM Hegsted. Calcium and Osteoporosis. J Nutr. 1986 Nov; 116(11): 2316-9. Available here: http://www.ncbi.nlm.nih.gov/pubmed/3794834.

K Michaëlsson, A Wolk, S Langenskiöld, S Basu, EW Lemming, H Melhus and L Byberg. Milk Intake and Risk of Mortality and Fractures in Women and Men: Cohort Studies. BMJ. 2014; 349: g6015. Available here: http://www.ncbi.nlm.nih.gov/pubmed/25352269.

D Feskanich, HA Bischoff-Ferrari, L Frazier and WC Willett. Milk Consumption During Teenage Years and Risk of Hip Fractures in Older Adults. JAMA Pediatr. 2014 Jan; 168(1): 54–60. Available here: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3983667/ .

HC Sherman, AR Rose and MS Rose. Calcium Requirement of Maintenance in Man. J. Biol. Chem. 1920 44: 21-27. Available here: http://www.jbc.org/content/44/1/21.citation.

BJ Abelow, TR Holford and KL Insogna. Cross-cultural Association between Dietary Animal Protein and Hip Fracture: A hypothesis. Calcif Tissue Int. 1992 Jan; 50(1):14-8. Available here: http://www.ncbi.nlm.nih.gov/pubmed/1739864

LM Ausman, LM Oliver, BR Goldin, MN Woods, SL Gorbach and JT Dwyer. Estimated Net Acid Excretion Inversely Correlates with Urine pH in Vegans, Lacto-ovo Vegetarians, and Omnivores. J Ren Nutr. 2008 Sep; 18(5):456-65. Available here: http://www.ncbi.nlm.nih.gov/pubmed/18721741

Wu W, Chen C, Liu P, et alIdentification of TMAO-producer phenotype and host–diet–gut dysbiosis by carnitine challenge test in human and germ-free miceGut 2019;68:1439-1449.

https://www.forksoverknives.com/animalproteindangers/

Koeth RA, Wang Z, Levison BS, Buffa JA, Org E, Sheehy BT, Britt EB, Fu X, Wu Y, Li L, Smith JD, DiDonato JA, Chen J, Li H, Wu GD, Lewis JD, Warrier M, Brown JM, Krauss RM, Tang WH, Bushman FD, Lusis AJ, Hazen SL. Intestinal microbiota metabolism of L-carnitine, a nutrient in red meat, promotes atherosclerosis. Nat Med. 2013 May;19(5):576-85. doi: 10.1038/nm.3145. Epub 2013 Apr 7. PMID: 23563705; PMCID: PMC3650111

Interview with Kim A. Williams Sr., MD, President of the American College of Cardiology. http://meatyourfuture.com/2015/09/interview-with-kim-a-williams-sr-md-president-of-the-american-college-of-cardiology-extended-version.

Chenghao Zhu, Lisa Sawrey-Kubicek, Allison S. Bardagjy, Hannah Houts, Xinyu Tang, Romina Sacchi, Jody M. Randolph, Francene M. Steinberg, Angela M. Zivkovic. Whole egg consumption increases plasma choline and betaine without affecting TMAO levels or gut microbiome in overweight postmenopausal women. Nutrition Research,Volume 78, 2020, Pages 36-41, ISSN 0271-5317. https://doi.org/10.1016/j.nutres.2020.04.002.

Genuis SJ, Kelln KL. Toxicant exposure and bioaccumulation: a common and potentially reversible cause of cognitive dysfunction and dementia. Behav Neurol. 2015;2015:620143. doi: 10.1155/2015/620143. Epub 2015 Feb 4. PMID: 25722540; PMCID: PMC4334623.
Antibiotic Resistance Threats in the United States, 2019. https://www.cdc.gov/drugresistance/pdf/threats-report/2019-ar-threats-report-508.pdf

https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002184.

Bren L. Battle of the bugs: fighting antibiotic resistance. FDA Consum. 2002;36(4):28-34.

Fouhy F, Guinane CM, Hussey S, et al. High-throughput sequencing reveals the incomplete, short-term recovery of infant gut microbiota following parenteral antibiotic treatment with ampicillin and gentamicin. Antimicrob Agents Chemother. 2012;56(11):5811-5820.

Guarner F, Malagelada JR. Gut flora in health and disease. Lancet 2003;361:512–9.

Mueller NT, Bakacs E, Combellick J, Grigoryan Z, Dominguez-Bello MG. The infant microbiome development: mom matters. Trends Mol Med. 2015 Feb;21(2):109-17.

Pannaraj PS, Li F, Cerini C, Bender JM, Yang S, Rollie A, et al. Association between breast milk bacterial communities and establishment and development of the infant gut microbiome. JAMA Pediatr

Renz-Polster H, David MR, Buist AS, Vollmer WM, O'Connor EA, Frazier EA, et al. Caesarean section delivery and the risk of allergic disorders in childhood. Clin Exp Allergy 2005;35:1466–72.

Stiemsma LT, Arrieta MC, Dimitriu PA, Cheng J, Thorson L, Lefebvre DL, et al. Shifts in Lachnospira and Clostridium sp. in the 3-month stool microbiome are associated with preschool age asthma. Clin Sci (Lond) 2016;130:2199–207.

Harte AL, Varma MC, Tripathi G, McGee KC, Al-Daghri NM, Al-Attas OS, Sabico S, O'Hare JP, Ceriello A, Saravanan P, Kumar S, McTernan PG. High fat intake leads to acute postprandial exposure to circulating endotoxin in type 2 diabetic subjects. Diabetes Care. 2012 Feb; 35(2):375-82.

Erridge C. The capacity of foodstuffs to induce innate immune activation of human monocytes in vitro is dependent on food content of stimulants of Toll-like receptors 2 and 4. Br J Nutr. 2011 Jan; 105(1):15-23.

Deopurkar R, Ghanim H, Friedman J, Abuaysheh S, Sia CL, Mohanty P, Viswanathan P, Chaudhuri A, Dandona P. Differential Effects of Cream, Glucose, and Orange Juice on Inflammation, Endotoxin, and the Expression of Toll-Like Receptor-4 and Suppressor of Cytokine Signaling-3. Diabetes Care. 2010 May; 33(5):991-7.

https://www.fda.gov/animal-veterinary/product-safety-information/steroid-hormone-implants-used-growth-food-producing-animals

David, L., Maurice, C., Carmody, R. et al. Diet rapidly and reproducibly alters the human gut microbiome. Nature 505, 559–563 (2014). https://doi.org/10.1038/nature12820

Forsythe P, Kunze WA. Voices from within: gut microbes and the CNS. Cell Mol Life Sci. 2013 Jan;70(1):55-69. doi: 10.1007/s00018-012-1028-z. Epub 2012 May 27. PMID: 22638926.

Forsythe P, Bienenstock J, Kunze WA. Vagal pathways for microbiome-brain-gut axis communication. Adv Exp Med Biol. 2014;817:115-33.

John R Kelly, Paul J Kennedy, Niall P. Hyland. "Breaking down the barriers: the gut microbiome, intestinal permeability and stress-related psychiatric disorders". Front. Cell. Neurosci., 14 October 2015 Sec. Non-Neuronal Cells.

Maria Luca, Maurizio Di Mauro, Marco Di Mauro, Antonina Luca, "Gut Microbiota in Alzheimer's Disease, Depression, and Type 2 Diabetes

Mellitus: The Role of Oxidative Stress", Oxidative Medicine and Cellular Longevity, vol. 2019, Article ID 4730539, 10 pages, 2019.

Sekirov I, Tam NM, Jogova M, Robertson ML, Li Y, Lupp C, Finlay BB. Antibiotic-induced perturbations of the intestinal microbiota alter host susceptibility to enteric infection. Infect Immun. 2008 Oct;76(10):4726-36.

Chapter 2

Disconnected From Ourselves and The People Around Us

"They sit and stare and stare and sit
Until they're hypnotized by it,
Until they're absolutely drunk
With all that shocking ghastly junk."

You may be familiar with the song from *Charlie and the Chocolate Factory*, in which the Oompa-Loompas sing of the dangers of TV. When Roald Dahl wrote his bestseller in 1964, there were no smartphones, iPads or computers. The only threat to young minds was the television set, which Roald Dahl despised calling it the "idiotic thing".

"It clogs and clutters up the mind
It makes a child so dull and blind ...
His powers of thinking rust and freeze!
He cannot think -he only sees!"

Fast-forward sixty years and TV seems insignificant compared to the limitless content we and our kids are exposed to through phones, tablets, laptops and school computers.

Modern technology has profoundly changed our lives at an incredibly fast pace and it's easy to get carried away by its rapid development and the sheer volume of information. It feels like we have gotten onto a rocket ship, ignited its powerful engines and took off. Only to realize that we are lacking a clear destination and that we haven't figured out how to steer our ship. Numerous fundamental questions are in urgent need for answers. How is modern technology shaping our societies? What prize are we willing to pay for our technological advancement? Will we be able to use these new technologies to our advantage? And most importantly- are we aware of their potential dangers?

At the root of many harmonizing philosophies is the ancient Chinese belief of dualism, the assumption that everything in nature has two sides, the Yin and the Yang. Yin, the dark side, is associated with everything negative and cold. Yang, the light side, is associated with positive and soft things. Modern technology is no exception to the concept of dualism, because, on one hand, it has brought us closer together by revolutionizing the way we communicate. People around the world, even in the most remote places, have the opportunity to educate themselves online. Data is stored online, facilitating editing and sharing and we have found ways to improve cognitive learning and developed tools to stimulate our creativity and imagination. Modern technology has greatly simplified our individual lives but has also shaped the modern business landscape. Global networking has been made possible due to easily accessible information.

On the other hand, modern technology has been misused to manipulate, control and influence masses of people. We are unfamiliar with its hidden dangers and find ourselves on new uncharted terrain. Every day, new ethical, moral and legal questions are popping up including our right to privacy, transparency and the safety of our online data.

Connected to the Whole World but More Alone Than Ever Before

If modern technology enables us to easily connect with people all around the globe at any given time of the day, why do we feel more alone than ever? Just within the last decade, the rate of loneliness has doubled, climbing from 11% in 1980 to 50% in 2010. Some statistics even put this number as high as 72%. It seems that humans need the actual work of being physically present with somebody rather than being connected purely online. Digital devices only offer the illusion of being with a person without the demands of it which leaves us feeling empty. The time we spend on our devices results in reduced face to face time, time lost with family, friends and other real life people. We only really connect when we look each other in the eyes. Our happiest moments are almost always rooted in the interconnection with other people. Spending most of our time on artificial devices leaves us exhausted and empty and reduces our social skill, creativity, playfulness and empathy. Particularly children and teenagers need to develop their social skills during real life interactions. The more a child hides behind a screen, the more socially awkward he or she becomes, creating a self-perpetuating cycle. In the past, the desire to belong to a group forced us to overcome our insecurities and fears and interact with others. Nowadays, teens- and grown ups alike- can easily hide in the virtual world, becoming more reclusive and alone. Compared with teenagers from previous decades, today's teenagers are less likely to get together with their friends, party together, date, go shopping or to the movies. In the late 1970s, about half of all 12th-graders got together with their friends almost every day. By 2017, less than 30% did. The drop was particularly noticeable after 2010, the year tablets were introduced. Coincidence? I think not. Just as the drop in face-to-face time quickened after 2010, the rates of loneliness in teenagers shot up. **According to statistics, today's teenagers and young adults are the loneliest generation on record**. As the rate of loneliness goes up, so does depression, unhappiness and even physical pain. .

Too many people feeling lonely is not just a sad fact, but also associated with a wide range of health problems which affect individuals as well as our society at large. Lonely people have higher levels of circulating **stress hormones**. **Stress, as we know, is related to 95% of all chronic diseases**. Lonely people also suffer from a diminished quality of sleep. Research has shown that sleeping less than 7 hours and more than 9 hours shortens our lifespan and increases heart disease and stroke by about 30%. Abnormal sleep duration is also associated with accelerated cognitive decline and reduced immune function due to heightened systemic inflammation.

Most of us might be unaware of the extent to which our emotional status influences our life expectancy. But the fact is that if we feel lonely, we die earlier. The overall mortality risk associated with loneliness compares to those associated with smoking and exceeds those associated with obesity and physical inactivity. After all, humans are the ultimate social creatures, we need to be connected not only to survive but to thrive. Studies have shown that socially isolated people are twice as likely to die early compared to those who have thriving social interactions. For humans, the feeling of being necessary seems to be vital.

Why is it so hard to turn off our devices?

We've all been there. All you want is to take a quick glance at your Facebook or Instagram feed. But then something catches your attention, you start swiping and you keep on swiping and before you know it thirty minutes have gone by. It seems that our media screens are controlling us instead of us controlling them. Just recently, I witnessed a group of adults at a particularly nice restaurant, who barely spoke with each other during the entire evening, let alone look at each other. Instead, they were playing games and watching videos on their mobile phones.

Children and young adults in particular can become completely oblivious of their surroundings and are unable and unwilling to put down their devices. I am sure our children are not the only ones who have secretly watched YouTube videos, Netflix series or played games while we thought they were sound asleep. We parents are not entirely without blame. It's easier to hand over our phone to a whiny kid, keep kids quiet in order to enjoy a nice adult dinner conversation or give in to avoid a fight over screen time.

Why are we so obsessed with our devices? The answer lies in the biochemistry of our brains.

Welcome to the dopamine seeking-reward loop

Much of what we do on screens releases dopamine in our brain's pleasure centers. This complex brain reward system evolved to promote activities which are essential to the survival of a species, particularly sexual activity and feeding behav-

iors. The dopamine pathway seems to play the primary role in the reward system by connecting different areas in the brain. Dopamine is a neurotransmitter, a substance produced in various parts of the body including the brain and the gut. Dopamine provides us with a feeling of pleasure and enjoyment. But there is more to it- recent research found that **dopamine is critical in causing seeking behavior.** Seeking behavior is **the motivation to want, desire, seek out, and search.** It increases our general level of arousal and our goal-directed behavior. Evolutionarily, the motivation to seek out and consume rewards has been driven by the necessity to meet our physiological needs. According to researchers and psychologist Kent Berridge, there are two complementary systems, the **"wanting"** and the **"liking"** system. Dopamine is part of the strong wanting system. Repeated consumption (e.g. addictive drugs, shopping) or behavior (e.g. playing computer games, being online) can lead to sensitization. As a result, we want more and more. At the same time, the weaker, not dopamine driven "liking" system remains unchanged. Consequently, we want and crave more while the pleasure we derive from our experiences does not add up to our needs. Hence, we get caught in an endless dopamine seeking reward loop. Every feed we look at, every game we play, every video we watch makes us want more. No matter how much time we spend online, we will never be satisfied because **there is no saturation limit built in the dopamine system**. We will only turn our devices off because someone is interrupting or because we have something that really needs to be done. Gaming addicted people even ignore their most basic physical needs like hunger and thirst and play until exhaustion. The World Health Organization officially recognizes "Gaming Disorder" as a mental health condition.

Our dopamine system is very sensitive to special cues that a reward is coming our way such as auditory or visual triggers. The anticipation of the reward is what makes us check out a feed when a notification pops up on our phone, not the reward itself. Remember, **the seeking is stronger than the liking.**

The **primary substance of the liking system** is the neurotransmitter **serotonin**, also called the *happiness hormone*. Serotonin conveys the message **"I like it, this feels good, I don't need anymore"**. It is easy to mix up dopamine induced pleasure with serotonin induced happiness. The saying that one cannot buy happiness is very true. What we buy is pleasure, which has a short expiration date. The more we get caught in the wanting loop, the more dopamine goes up. At the same time, serotonin goes down. You may have experienced this inverse effect before- the more you buy the more unhappy you get. Contrary to dopamin triggered pleasure, serotonin induced happiness is a longer lasting and more stable state of mind, characterized by feelings of contentment and satisfaction with one's life or current situation.
The better we can distinguish pleasure from happiness, the more conscious we can be about our life choices. Dr. Robert Lustig, author of the brilliant bestselling book **"The Hacking of the American Mind"** enumerates the following differences:

- Pleasure is short lived (ice cream and alcohol), happiness is long-lived (finishing school, marathon).
- Pleasure is visceral (being drunk, high etc); happiness is ethereal (feeling calm and contentment).
- Pleasure is taking; happiness is giving.
- Pleasure can be achieved with substances (foods, gambling, stimulants); happiness cannot be achieved with substances.
- Pleasure is experienced alone; happiness is experienced in social groups.
- The extremes of pleasure all lead to addiction, whether they be substances or behaviors. Yet there's no such thing as being addicted to too much happiness.

There is nothing inherently wrong with feeling pleasure. But in order to live a healthy and happy life, we have to find the proper proportion of pleasure relative to happiness and find a way to balance them.

Never Enough

Dopamine is an excitatory neurotransmitter which means that it excites nerve cells. *Chronic over-stimulation* of nerve cells leads to neuronal cell death. In order to protect themselves, our nerve cells respond by down regulating dopamine receptors. Consequently, more and more dopamine is needed to achieve the same feeling of pleasure. This protective cell mechanism of down regulation is called ***tolerance***. Tolerance doesn't necessarily lead to addiction but can sometimes trigger addiction. Recovering from addiction is extremely difficult and therefore, it's best to avoid going down that road altogether. The good news for addicted people is that our brains have the ability to readapt to the absence of the drug and reestablish a balance,

which enables us to take pleasure again in simple, everyday rewards. We just need to wait long enough.
Dr. Anna Lembke, medical director of addiction medicine at Stanford University and chief of the Stanford Addiction Medicine Dual Diagnosis Clinic, describes in her book *"Dopamine Nation"* that her patients who are struggling with substance abuse often believe their addictions are fueled by depression, anxiety and insomnia. But she believes that the reverse is often true: Addictions can become the cause of pain, not the relief from it. That's because the behavior triggers, among other things, an initial response of dopamine, which floods the brain with pleasure. Once the dopamine wears off, a person is often left feeling worse than before.

Developing Brains

The most vulnerable in our society are our children and many parents are rightfully scared of potential side effects of too much screen time. Indeed, the brains of children and adolescents are particularly vulnerable because they are still developing and maturing. Millions of new neural connections are constantly generated, while at the same time, less-used ones are being pruned away. Digital screen media profoundly influence these processes.
When I watched our children glued to a screen Roald Dahl's words "it kills imagination dead"echoed in my head. Pediatricians warn that much of what happens on screens provides "impoverished" stimulation of the developing brain. Children need a wide range of online and offline experiences, including the chance to let their minds wander. Studies have established a direct link between boredom and creativity. In a state of boredom, our minds find new ways to entertain and occupy themselves. An endless stream of distractions by screens doesn't give our minds the opportunity to wander. On the contrary, screen media presents highly arousing, abnormal sensory stimuli to the brain, which results in the release of stress hormones (catecholamines such as dopamine, epinephrine, norepinephrine).

Scientists are concerned that the generations to come will grow up unable to cope with boredom or have lesser imagination. And sure enough, most kids and young adults feel uncomfortable just "without anything to do " and instead, are glued to their electronic devices. By the way, this phenomenon applies to adults as well- just take a look around bus stations, public transportation etc- how many people do you see simply looking out the window or reading a book?

Most children may not be able to grasp the power screens have over them, but teenagers are very much aware of it. A recent study has found that nine out of ten teenagers consider the amount of time they spend on screens a problem, while **60% of teenagers between the ages of 13 and 17 regard it as a major problem**. On average, teens spend *nine hours daily online*. I have no idea how they even manage to squeeze in all this time between school, after school activities and homework. Kids aged 8 to 12 spend a "mere" six hours a day on screens and children up to 8 years 50 minutes a day. Documentaries like ***"Screenagers"*** reveal the full extent of the close relationship many teenagers have with their devices. Too many are glued to their phones, from the second they wake up to the time they finally close their eyes, being kept up by their devices way too long.

But a good night's sleep is essential for normal brain development. During sleep, a series of bodily functions and brain activities take place. Think of it as necessary housekeeping time, during which toxins seem to be removed and nerves communicate intensely with each other. Diminished quality of sleep as well as lack of sleep can be harmful and lead to *behavioral problems, decreased attention span and poor performance*. Using blue light-emitting screen devices before bedtime can disrupt sleep patterns by suppressing secretion of the hormone **melatonin**. Additionally, stress hormones are being released in response to screen media, which also increase vigilance. Although teens need about 8 to 10 hours of sleep each night to function best, only 3% get the recommended amount. The remaining 97% only get 6.5 hours of sleep on average every weekday night.

Sleep statistics show that even adults don't get nearly enough sleep. The last thing many adults do before they fall asleep is browse through their social media feeds until their eyes get too tired and they eventually turn in for the night. Almost half of Americans admit to checking their smartphones before they even get out of bed in the morning. At least some of us, around 30%, wait until breakfast to turn their phones back on. The millennial generation, aged 18 to 24, is even more addicted to their phones- two thirds of them reach for their smartphones before they rise out of the covers. In 1910, the average person slept 10 hours each night. Today, Americans get on average 6.8 hours of sleep each night, with 45 to 54 year olds getting the least sleep. Approximately 2 out of 10 Americans suffer from a sleep disorder and nearly 9 million Americans take prescription sleeping pills.

Sleep deprivation not only takes a toll on our brain, but affects our entire body. *Lack of sleep increases the risk of disorders including high blood pressure, cardiovascular disease, diabetes, depression and obesity.*
Sleep deprivation impacts our economy. It is linked to lower productivity at work, which results in a significant amount of working days being lost each year. On an annual basis, the U.S. loses an equivalent of around 1.2 million working days due to insufficient sleep.

A young person's developing brain lacks a mature self-control system and is particularly vulnerable to pleasure seeking behavior for different reasons. An almond shaped area of our brain known as the amygdala, which develops early on in life, is responsible for instantaneous reactions such as fear and aggression. The frontal cortex however, the area of the brain in control of reasoning and thinking before we act, develops later than the amygdala. This is aggravated by the fact that during adolescence, the synapses (connections) between neurons are established at a rapid speed making them more effective. As a result of these processes, **children and young adults are less likely to think before they act, less likely to pause and consider the consequences of their actions and less likely to change dangerous or inappropriate behavior.** Children and young adults are thus more likely to act on impulse, misinterpret social cues and emotions and engage in dangerous or risky behavior. The biological facts are not meant as an excuse for their actions but certainly explain their behavior and emphasize the importance of adults setting clear guidelines and rules in order to protect them.

Neuromarketing

Modern tech companies intentionally use the chemistry of our reward system when designing their games and apps in order to get us maximally hooked. Psychologists and behavioral scientists are even hired to help with game designs and marketing. MRI imaging, for example, is used to test which ad campaign elicits the highest amount of brain activity in a particular region. Emotion Response Analysis (ERA) uses EEG imaging to identify the emotional response an individual has to a product, advertisement etc. This type of modern marketing using our physiological circuits is called neuromarketing.

Video games basically constitute a very rudimentary risk/reward system. While engaged in the game, we seek to unlock something, level up our character, achieve points, flashy icons, medals, etc. We are rewarded with the dopamine driven feeling of **pleasure and satisfaction**, and are triggered to continue our seeking journey. Vulnerable, particularly younger people, can easily be sucked into the games and become addicted to the point that they don't even get up to use the bathroom anymore. Though technology addiction has not yet been officially recognized in the United States, in-patient treatment facilities have started to treat screen addicted teenagers and adults.
Addiction is characterized as a psychological and physical inability to stop consuming a chemical, drug, activity, or substance, even though it is causing psychological and physical harm. In 2018, the World Health Organization recognized "gaming disorder" (note that the word "addiction" was not used) as a medical condition for the first time. There is growing concern about the increasing number of children and young adults whose excessive gaming behavior is causing mental health problems. Countries worldwide are trying to cope with an explosion in gaming and internet addiction. South Korea, for example, has banned children under 16 from playing online games between midnight and 6am.

Whatever objectives we parents might have for our children, whether we want them to be comfortable with themselves, have good relationships with other people, make friends, be interested in a variety of things, grow up with certain values and be creative, we have to keep in mind that ***the internet doesn't care about any of these goals.*** YouTube´s aim is to increase their online time and watch as many videos as possible. All app designers try to accomplish is to maximize the time we spend on their apps.

Screens and Relationships

During the day, we are using the internet far more than we used to. Since 2000, time spent online by the average American has risen from *9.4 hours to 23.6 hours per week.* That's almost a whole day spent online! Time spent on devices means less time spent with actual people. Not only do we spend less time with each other, but also the quality of time together suffers. We get interrupted by messages popping up on our phones and keep glancing at our screens instead of looking at the other person. This diminished attention leaves the other person with a feeling of neglect.

A new form of interaction called text messaging has freed us from the burden of having to express ourselves verbally. A 2015 poll by the Gravitate Research Group reports that 80% of Americans prefer instant messaging to calling. Text messaging clearly has some advantages. It allows us to communicate with others in situations where a face-to-face or phone conversation is not possible or appropriate, during a meeting, for example. It can also come in handy when you don't want others to hear what you are saying. Finally, sending a text is usually cheaper than making a voice call. On the other hand, texting can come with a variety of undesirable side effects. It has been shown that texting negatively affects our social and communication skills.

- Face to face conversations are vital in the workplace as well as in personal relationships. Text messaging cannot accurately convey tone, emotion, facial expressions, gestures, body language, eye contact nor oral speech. For that reason, messages can be misinterpreted or misunderstood, with the potential of jeopardizing relationships. Even though your teenager may disagree, an emoji is not a substitute for a facial expression.
- People who communicate primarily through text messages are much less likely to have meaningful conversations.
- Texting also creates- and, by nature, almost encourages- poor grammar habits. People who grow up texting using improper grammar on a regular basis prove to have poorer writing skills than people who use grammar correctly.

Educational Apps, Screens and Learning

Most parents have grown up without mobile phones, computer screens and video games. For our children, electronic devices and online access are just a natural part of their lives and are used both at school and at home. Hundreds of apps and a variety of software inside and outside the classroom provide a diversity of activities, facilitate practicing and promote fun learning and teaching. Whenever our kids ask our permission to download something, they know that by adding the term “educational” the likelihood of our approval increases. But do screens really provide the best tool for learning?
There is a growing concern that the benefits of screen media as a learning tool have been exaggerated and that the risks of addiction and stunting development have been underestimated.
Recent studies by the National Institute of Health (adolescent brain cognitive develop study) followed more than 11.000 children age 9 and 10 and presented the following, quite alarming, data:

- MRI brain scans show significant brain differences in children using smartphones, tablets and video games more than 7 hours a day. The outer layer of the brain, the cortex which processes information from our senses, thins prematurely, a process normally related to aging.
- Children spending more than 2 hours a day on screens score lower on thinking and language tests
- Increased media exposure is linked to increased rates of obesity
- Teenagers who use digital media at night are more at risk for disrupted sleep, anxiety, depression and have overall lower self esteem.
- Increased screen time is linked to higher rates of depression. Teenagers who spend less than 30 minutes a day online are less lonely and depressed.
- Playing computer games or being online affects the pleasure centers of the developing brains of our children. MRI scans show that when kids are on Instagram, the reward system in their brains fires up and dopamine is released, which plays a pivotal role in developing cravings and desire which ultimately promotes addiction.
- Screen time reduces quality time spent with others. Playing with others is a big part of how children connect and make friends, solve problems and develop social skills. Children with poor social skills are more prone to face social and emotional difficulties later in life.

The very founders of modern technology, prominent silicon valley tech moguls like Steve Jobs, Bill and Melinda Gates, Snapchat founder Evan Spiegel or Google CEO Sundar Pichai have expressed grave concerns about the impact and consequences of screen time and have limited screen time for their own children.

By all means, we can’t and shouldn’t try to stop our children from using their devices. After all, they are part of today’s

world. Instead, we should probably evolve along with the technology and educate our children on how to use their devices in a healthy way. Electronic devices are basically tools in the same way as a pen and pencil. There are times when to use them and times when to put them aside. It's our job as parents to educate ourselves in order to enhance the positive and mitigate the negative. Thankfully, the same technology that worries us provides plenty of tools and information for parents to ensure their safe use such as parental app advisors, parental control and many more.

Dangers of the Internet

Social media apps themselves may not pose an actual threat to our children's safety, but they provide an opportunity to expose, persuade, and potentially encourage kids to make poor decisions. Some of the apps on your kids' devices represent a gateway through which online predators, strangers and bullies may enter their lives. There are many more social media apps today besides the most popular ones.
Social media apps that are potentially dangerous have a few features in common that are clear indicators for parents that they are not safe for their children. These include **anonymous messaging, secret chat rooms, the ability to chat with strangers, and self-destructing messages, photos, and videos.** Self-destructing apps with end-to-end encryption automatically destruct messages when the receiver reads them and/or sets a limit for how long the receiver can see a message before it gets deleted. Both kids and young adults use them to prevent certain people including parents from viewing messages in their chat histories. Because of the perception of these apps as being safe to post anything, both teens and adults share inappropriate images and videos of themselves. Since messages disappear after a few minutes, it is more difficult to provide evidence against cyberbullying. Even when accounts are private, your children might be exposed to disturbing images. Imagine your kid wrapped in an invisibility cloak and sent into a dark abyss. Although invisible, your child can see everything, even things they are not equipped to process.

In the past ten years, social media use by minors has risen significantly due to an increase in smartphone usage with ***24% of adolescents reporting being "continuously connected"*** to the internet and half of the adolescents reporting being "addicted" to their phone. Overall, nearly 81% of American teenagers use online social media. The number of available social media platforms has never been greater for teenagers. In 2006, Facebook became available to kids age 13 and older. MySpace was one of the most popular social media sites between 2005 and 2008, when it was overtaken by Facebook. Instagram went online in 2010, Snapchat in 2011 and TikTok in 2016. By early 2022, TikTok saw about 1 billion global daily users.

Kids start using social media at a fairly young age. More than 60% of young people had their first social media account at age 12 or under. During adolescence, teenagers tend to rely less upon the adults in their lives and more heavily on their peers- and on social media. As mentioned before, kids are ill equipped to deal with the dangers social media can pose to their emotions, their self-image and self-esteem. Nearly half of young users have received intimidating, threatening or nasty messages online. Social media comes with a constant pressure to respond, update, be available and live in the public eye. In a recent survey, almost half of teenage girls stated that social media negatively impacts their self-esteem and almost 40% of young people reported that social media has a negative impact on how they feel about themselves. Girls in particular compare themselves more to other people when developing their identities, which makes them more vulnerable to the downsides of social media. The instant gratification young people feel when they receive "likes" and new followers acts as a form of social currency, like an instant poll on how much people like them or their appearance. Peer acceptance is extremely important for adolescents, and many of them care about their image in a very serious way.

Being constantly exposed to pictures of seemingly "perfect" lives makes it hard not to compare themselves and facilitates losing touch with reality. And indeed, the use of social media is positively associated with depression. A study on Instagram discovered that **depression** was more common in teenagers involved in social comparisons following strangers compared to teenagers who followed only friends.

Social networking platforms also provide the basis for **cyberbullying**, the online version of bullying. The effects of any type of bullying can be devastating, leaving victims feeling helpless, humiliated, angry, depressed, or even suicidal. Social media provides a perfect platform for cyberbullying, because it doesn't require face-to-face contact and therefore, greatly facilitates cruel behavior. Online, kids text things that they would never in a million years contemplate saying to anyone's face. This seems to be especially true of girls, who typically don't like to disagree with each other in real life. Cyberbullying is not limited to schoolyards and can go on 24/7, making it almost impossible for the victim to escape. No place, not even

home, feels safe. Hundreds or even thousands of people are potential witnesses, sharing or commenting on bullying content, which can quickly escalate the whole situation. Cyberbullying is associated with *higher levels of depression, low self-esteem, behavioral problems, substance abuse, suicidal thoughts, and suicide attempts for both the victim and the perpetrator.* Between 10% and 40% of adolescents experience cyberbullying and studies suggest that a positive association exists between cyberbullying, deliberate self-harm, and suicidal behavior among victims of such bullying. Indeed, teenage suicide rates have increased dramatically within the last years. In *2014, suicide was the second leading cause of death for adolescents in the United States.* Worldwide, it is the leading cause of death in females aged 15–19. According to the Centers for Disease Control and Prevention, 30% of U.S. high school students reported feeling sad or hopeless on most days within at least a consecutive 2-week period, about 18% seriously considered attempting suicide, about 15% formulated a plan to commit suicide, about 9% attempted suicide, and about 3% attempted suicide resulting in an injury that required medical attention in the 12 months before the survey in 2015.

Even if our children's accounts on social media platforms are private, it doesn't mean that they are safe, because they can still see everything. Next to innocent and funny posts are posts depicting kids hurting themselves, suicidal kids, kids who are asking for help, displaying eating disorders, kids that are being bullied or are bullies themselves and much more. Having flicked though this content has deeply affected me. I can only imagine what an impact such images and messages have on a young person.

Emotionally unstable teenagers may find support and coping strategies on the internet to help themselves. If they are unlucky, they might get pushed even further into dark spaces, where harmful behaviors are normalized and encouraged in a way that can stop them from seeking help offline. A study has found that adolescents with a history of non-suicidal self-injury (NSSI) including self cutting, burning, skin carving, punching or hitting are more active on social media than adolescents with no NSSI history. A review article looking at accumulated data concluded that "greater time spent on online social networks promotes self-harm behavior and suicidal ideation in vulnerable adolescents." In light of this, it is not surprising that the overall rate of emergency visits for self-harm has increased in the last years by over 50%, with the majority being girls. Since 2009, the rate of girls aged 10 to 14 arriving in American emergency rooms with self-inflicted injuries has increased by almost 20% per year, a pace far surpassing any other group. As if this fact wasn't dramatic enough, it is even more disturbing to know that self-inflicted injury is one of the strongest risk factors for suicide.

Another concern is the online promotion of thin **"ideal" body images**. A study found that teenage girls using Facebook scored higher on all body image concerns than nonusers). Images on social media platforms and online sites glorify thin body types which are often associated with popularity, beauty, success and wealth. Visual platforms such as Facebook, Instagram and Snapchat deliver the tools that allow teens to earn approval for their appearance and compare themselves to others. Parents have worried for some about the effect of idealized photoshopped magazine models on their kids, but what happens when the photo of a "real" person like the kid next door is photoshopped? Not surprisingly, the most vulnerable users are the ones who spend most of their time posting, commenting on and comparing themselves to photos. Teenage girls can spend hours sorting through hundreds of photos agonizing over which ones to post online.

Developing a negative body image severely impacts the physical and psychological well being of our children.

- It lowers their self esteem, which can result in negative moods and mood swings
- Fuels risky weight loss strategies and eating disorders
- Triggers mental health disorders such as depression.

Negative News

The days of waiting for the morning news or the daily newspaper being delivered to your doorstep are almost history. The newspaper industry has entered a new era. The Seattle Post-Intelligencer has become America's first newspaper to stop printing altogether and appear exclusively online. Today, all the information we are looking for is conveniently available by simply touching a button. Understandably, most people read the news primarily online. Social media has become the main source of online news with almost 2.5 billion internet users. Nearly 65% of people receive breaking news from Facebook, Twitter, YouTube, Snapchat and Instagram instead of from traditional media outlets. This trend is alarming insofar as it has opened the gates to false, misleading and extreme content. In order for feeds or "news" to be viewed by a large audience,

they have to be “liked” and shared multiple times allowing social platforms to control information. It is almost impossible to distinguish between fake news and real events. A new disturbing technology is called **“deepfaking”**. It allows high-tech computers to produce completely false yet remarkably realistic videos depicting events that never happened or people saying things they never said. Deepfake technology enables organizations to blur the line between fiction and reality. All these technological tools enable and facilitate mass manipulation and threaten to undermine our democratic principles, without us even realizing. We cannot stand by and watch as these events unfold. Our main goal should be to actively support and defend independent institutions and media outlets, be vigilant, and always scrutinize what we read or hear.

The sheer amount of data we are exposed to daily exceeds the content of any newspaper by far. In fact, the daily data amounts to the equivalent of 174 newspapers. Not surprisingly, surveys show that instead of people reading an article, they increasingly sift through the context of an article, spending a mere 15 seconds on each one. Most times, they only take in the headlines.

Keeping up-to-date with current events is an important part of being a responsible citizen. By staying informed, we can take action and become part of the solution. A constant negative stream of news about war, terrorism, crime, pollution, inequality, drug abuse and oppression, makes it hard not to feel depressed and the urge to ignore the news altogether and live in blissful denial can be quite strong. After all, news outlets around the world have become gloomier since the late 1970s. And it’s not just the news. The majority of magazine articles are inherently negative, covering topics from climate change to terrorism, shootings or human rights violations, epidemics, serious issues regarding food, health, retirement, welfare, energy, budget cuts and deficits and many more. Media outlets are engaged in an ongoing competition for their audiences and they use emotionally charged story lines and visuals to draw their reader’s attention. It’s in our nature to pay more attention to dangerous and threatening situations. This evolutionary instinct has helped us survive predators and natural disasters. But constant exposure to worldwide problems can greatly increase our stress levels. And although the world isn’t, at least not yet, falling apart, it can sure feel like it.

According to psychologists, being constantly subjected to negative and violent news can exacerbate or contribute to the development of stress, anxiety, depression and even *post-traumatic stress disorder* (PTSD). I can very much relate to this as I too have felt overwhelmed by waves of helplessness, disbelief, sadness or anger after reading the news. In the past few months, I have come across an increasing number of people who stopped following the news because they felt overwhelmed and stressed out.

Negative news not only intensifies our own personal worries but makes them more difficult to control and more distressing than they would normally feel. Ultimately, negative news changes how we interpret and interact with the world around us. A recent study has revealed that journalists who are regularly exposed to uncensored violent images and videos scored higher on indexes of PTSD — including re-experiencing, avoidance and general anxiety — as well as increased alcohol consumption, depression, and *somatization* (physical signs of distress in the body). Researchers also found that over time exposure to graphic violence leads to either *sensitization*, in which individuals become more sensitive to emotional stress, or desensitization, a sort of numbness. To prevent us from feeling overwhelmed but still stay informed, we can implement a few strategies which will be discussed in Part II of the book.

Gaming

Emotional numbing also occurs after repetitive playing of violent video games. A recent study has found that realistic violent video games desensitize the emotional responses of gamers to acts of violence and numb their feelings of guilt. Other studies have shown that children playing violent video games display an increased aggressive behavior. Should we be concerned about this? Probably yes. After all, more than half of the fifty top-selling video games contain violence and as many as 97% of U.S. kids aged 12-17 play video games. As games continue to get more sophisticated and realistic, the debate over whether or not children should be exposed to violent video games continues. Violent or not, experts agree that devoting too much time to video games in general can cause serious problems for kids. These range from lower social skills and poor grades to not getting enough physical exercise.

Acute and Chronic Stress

We talked about how acute stress redirects blood flow to our muscles, increases our heart rate and boosts our energy supply as part of the fight or flight mode. The first phase of stress response is a quick adaptation, resulting in *short-lasting responses by our sympathetic nervous system* (sympathetic adrenomedullary system). The second phase of stress, *"chronic stress"*, involves slow hormonal mechanisms (hypothalamic pituitary adrenal axis). Acute stress helps us to survive and master challenging situations. Research has even shown that short-term "acute" stress boosts our immune system. Chronic stress, on the other hand, takes a toll on our health. The relationship between stress and illness is complex and the susceptibility to stress varies from person to person. Factors that influence our susceptibility to stress include genetic vulnerability, coping style, type of personality and social support. Chronic stress profoundly affects our immune system and can promote a series of diseases:

- During times of stress, catecholamine (a neurotransmitter) and suppressor T cells are released in high numbers, which both suppress the immune system.
- Stress leads to the release of histamine, which can trigger severe broncho-constriction in asthmatics.
- Stress increases the risk for diabetes mellitus, especially in overweight individuals, since psychological stress alters insulin needs and raises blood sugar levels.
- Chronically elevated cortisol levels result in poor healing
- Stress alters the acid concentration in the stomach, which can lead to peptic ulcers, stress ulcers or ulcerative colitis
- Chronic stress can promote the buildup of plaque in our arteries (atherosclerosis), especially if combined with a high-fat diet and sedentary living, resulting in cardiovascular disease and stroke
- Chronic stress changes our microbiome
- There is no scientific evidence of a direct cause-and-effect relationship between the immune system changes and the development of cancer. However, recent studies found a link between stress, tumor development and suppression of natural killer (NK) cells, which is actively involved in preventing metastasis and destroying small metastases. (Life Event, Stress and Illness
- Brain regions such as the hippocampus, amygdala, and prefrontal cortex respond to acute and chronic stress by undergoing structural remodeling, which alters behavioral and physiological responses.
- Chronic stress can lead to mental health problems such as anxiety and depression, substance use problems, sleep problems, pain and bodily complaints such as muscle tension. The correlation between stressful life events and psychiatric illness is stronger than the correlation with medical or physical illness. The relationship of stress with psychiatric illness is strongest in neuroses, which is followed by depression and schizophrenia

The Drugging of Our Children

Millions of US children have been diagnosed with **attention deficit hyperactivity disorder (ADHD)**, affecting approximately 10.0% of children and 6.5% of adolescents in the United States.

ADHD is a condition that is a neurobehavioral disorder which includes symptoms such as

- Having trouble concentrating or focusing
- Having difficulty staying organized
- Being forgetful about completing tasks
- Having difficulty sitting still

Millions of affected children and teenagers are treated with prescription stimulants such as Ritalin, Adderall, Vyvanse or Concerta. These drugs fall into the category of Schedule II Controlled Substances (Drug Enforcement Administration, DEA), defined as substances with ***a high potential for abuse*** which may lead to severe psychological or physical dependence. Schedule II substances also include cocaine, methyl-amphetamine and opioid painkillers such as Demerol and Oxycontin. ADHD drugs are prescribed in the hope that they boost a child's performance in school. New studies show that there is little evidence that the drugs actually improve academic outcomes (Do stimulant drugs improve the academic performance of hyperkinetic children? A review of outcome studies.). Even though the side effects of ADHD drugs should send

chills down our spines, sales of ADHD drugs have grown by almost 90% in just 4 years. In 1997, the Centers for Disease Control and Prevention recorded 3% of American school children which were diagnosed with ADHD. This number has since increased by at least 3% annually. The largest study, the National Study of Children's Health, reported in 2011 that two thirds of all children diagnosed with ADHD were taking prescription drugs. What a huge number, given the fact that about 6.4 million children between the age of 4-17 have been diagnosed with ADHD, which corresponds to a 37% increase since 2003.

Side effects of ADHD medication include a long list of serious conditions:

- Sleep problems
- Headaches
- Decreased appetite, weight loss, anorexia, stomach aches
- Bipolar conditions
- Paranoia and psychotic episodes such as hearing voices or believing things that are not true. One study reported fears of being harmed by other children and suicidal thoughts.
- Delayed growth
- Rebound (irritability when the medication wears off)
- Facial Tics
- Moodiness and irritability, including new or worse aggressive behavior or hostility
- ADHD medication is associated with sudden death in children with heart problems
- 9 fold increased risk of developing Parkinson’s when a person was on Ritalin

Possible causes for the increased prevalence of ADHD seem to include increased awareness, too much screen time and video games, and dietary factors such as a high sugar high fat diet. Clinicians who oppose stimulants in the treatment of ADHD are the minority and doctors feel the pressure of pharmaceutical representatives and challenges from insurance companies. Pharmaceutical companies pour massive amounts of funds into promotional campaigns, targeting the general public as well as health care professionals (Analysis of Pharmaceutical Industry Marketing of Stimulants, 2014 Through 2018). Their business booms and everybody seems to be a winner. Except our children.

Prescribing stimulants seems to have become a simple approach to dealing with a “difficult” child. Stephen Hinshaw, internationally recognized professor of psychology, presents evidence that ADHD varies depending on demographics and even school policy. In some states, the rate of ADHD is as low as 4%, while others have a rate of almost 15%. The *“Leave No Child Behind Act”* of 2001 gives incentives to states whose school children scored well on standardized tests. It turned out that this act itself was a strong incentive to have more children diagnosed with ADHD and treated with prescription drugs. After all, children with ADHD are allocated more time to take tests and can even be excluded from the overall average.
To successfully treat children and teenagers, a thorough diagnosis, conservative use of medication, possible lifestyle changes and careful patient selection are needed.

References

Irwin MR, Olmstead R, Carroll JE. Sleep Disturbance, Sleep Duration, and Inflammation: A Systematic Review and Meta-Analysis of Cohort Studies and Experimental Sleep Deprivation. Biol Psychiatry. 2016 Jul 1;80(1):40-52. doi: 10.1016/j.biopsych.2015.05.014. Epub 2015 Jun 1. PMID: 26140821; PMCID: PMC4666828.

Robinson MJ, Fischer AM, Ahuja A, Lesser EN, Maniates H. Roles of "Wanting" and "Liking" in Motivating Behavior: Gambling, Food, and Drug Addictions. Curr Top Behav Neurosci. 2016;27:105-36. doi: 10.1007/7854_2015_387. PMID: 26407959.

Chang AM, Aeschbach D, Duffy JF, Czeisler CA. Evening use of light-emitting eReaders negatively affects sleep, circadian timing, and next-morning alertness. Proc Natl Acad Sci U S A. 2015 Jan 27;112(4):1232-7. doi: 10.1073/pnas.1418490112. Epub 2014 Dec 22. PMID: 25535358; PMCID: PMC4313820.

https://www.cdc.gov/sleep/data_statistics.html

https://www.rand.org/randeurope/research/projects/the-value-of-the-sleep-economy.html#:~:text=Sleep%20deprivation%20is%20linked%20to,days%20due%20to%20insufficient%20sleep

Reid Chassiakos YL, Radesky J, Christakis D, Moreno MA, Cross C COUNCIL ON COMMUNICATIONS AND MEDIA. Children and adolescents and digital media. Pediatrics. 2016;138 pii: e20162593.

Wang, Jin-Liang, et al. "The mediating roles of upward social comparison and self-esteem and the moderating role of social comparison orientation in the association between social networking site usage and subjective well-being." Frontiers in psychology 8 (2017): 771.

Memon AM, Sharma SG, Mohite SS, Jain S. The role of online social networking on deliberate self-harm and suicidality in adolescents: A systematized review of literature. Indian J Psychiatry. 2018 Oct-Dec;60(4):384-392. doi: 10.4103/psychiatry.IndianJPsychiatry_414_17. PMID: 30581202; PMCID: PMC6278213.
Tiggemann M, Slater A. NetGirls: The internet, facebook, and body image concern in adolescent girls. Int J Eat Disord. 2013;46:630–3.

Nock, Matthew K., editor. Understanding Nonsuicidal Self-Injury: Origins, Assessment, and Treatment. American Psychological Association, 2009. JSTOR, http://www.jstor.org/stable/j.ctv1chrr2g. Accessed 11 Nov. 2022.

Memon AM, Sharma SG, Mohite SS, Jain S. The role of online social networking on deliberate self-harm and suicidality in adolescents: A systematized review of literature. Indian J Psychiatry. 2018 Oct-Dec;60(4):384-392. doi: 10.4103/psychiatry.IndianJPsychiatry_414_17. PMID: 30581202; PMCID: PMC6278213. Tiggemann M, Slater A. NetGirls: the Internet, Facebook, and body image concern in adolescent girls. Int J Eat Disord. 2013 Sep;46(6):630-3. doi: 10.1002/eat.22141. Epub 2013 May 25. PMID: 23712456.

Repeated Play Reduces Video Games' Ability to Elicit Guilt: Evidence from a Longitudinal Experiment. March 2016Media Psychology 20(2). DOI:10.1080/15213269.2016.1142382

Metaanalysis of the relationship between violent video game play and physical aggression over time
Anna T. Prescott, James D. Sargent, and Jay G. Hull jay.g.hull@dartmouth.eduAuthors Info & Affiliations
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October 1, 2018. 115 (40) 9882-9888. https://doi.org/10.1073/pnas.1611617114

Schein J, Childress A, Adams J, Gagnon-Sanschagrin P, Maitland J, Qu W, Cloutier M, Guérin A. Treatment patterns among children and adolescents with attention-deficit/hyperactivity disorder in the United States - a retrospective claims analysis. BMC Psychiatry. 2022 Aug 18;22(1):555. doi: 10.1186/s12888-022-04188-4. PMID: 35982469; PMCID: PMC9387015.

Chapter 3

Disconnected from our Environment

"Here we are, arguably the most intelligent being that has ever walked on planet earth, with this extraordinary brain, yet we are destroying the only home we have."

Jane Goodall

A Bleak Forecast

Many of us still seem to underestimate the urgency of our environmental situation, yet it is hard to ignore the dramatic climate changes that can be seen and felt all around us. Every day, we are experiencing the consequences of our modern lifestyle, not in a far away corner of the earth, but right in front of our doorsteps, maybe even in our own hometowns. Like the citizens of Miami Beach, one of many affected towns along the East coast, who are experiencing "sunny day flooding". High tides set in on sunny days with brilliant blue skies, transforming streets into lakes and filling garages and driveways. These predictable events are caused by the rise of sea levels. Global warming and rising seas are increasing the amount of tidal flooding all around the world. A recent climate change study has warned that Venice will be underwater by 2100 if the acceleration of global warming is not curbed. According to the Intergovernmental Panel on Climate Change, sea levels could rise by more than three feet by the end of this century. The United States Army Corps of Engineers projects that they could rise by as much as five feet and the National Oceanic and Atmospheric Administration predicts up to six and a half feet. Many geologists are expecting even more- a ten-to-thirty-foot increase by the end of the century.
Despite the fact that some prominent individuals- against all scientific evidence- still publicly deny and even mock climate change, two fundamental facts are indisputable: Firstly, that climate change is indeed happening, at an even faster pace than predicted, and secondly, that these changes are the consequences of our actions.

The effects of climate change are becoming more and more serious. Not only has the number of extreme weather conditions such as record crushing heat waves, severe and prolonged droughts, heavy downpours with flooding and destructive storms increased, but also their severity. Besides the human tragedy of climate change related events, they also place a huge burden on our economy. The top three most expensive climate-driven events worldwide in 2018 took place in the United States, including monster storms Florence and Michael and the extensive California wildfires.

Due to our insatiable lifestyle, we are exploiting our planet's natural resources at an unprecedented pace, faster than the Earth can replenish them. We are the worst nightmare of every other species. Our attitude towards our planet seems to resemble that of extraterrestrial creatures straight out of a science fiction movie, which land on a planet and use up all its resources before moving on to the next exploitable planet. For us, there is no next planet, no plan B, at least not in the near future. And honestly, who would want to live on Mars? I, for my part, love our green and blue planet.
If we don't change the way we live, our planet won't sustain us much longer. Simply put, our resources are running out. The latest edition of WWF's biannual Living Planet Report demonstrates that the demand we place on the natural world has tripled since 1961. This year, July 28th 2022 marked the so-called ***Earth Overshoot Day.*** On that day, *we exceeded the ecological resources that Earth could regenerate in that particular year.* At our current rate of resource use we would need 1.75 planets to support our demand on Earth's ecosystem. These calculations include resources such as the amount of water, land, fish and forests we use as well as how much greenhouse gases we're pumping into the atmosphere.

As our vital natural resources become increasingly scarce, conflicts arise. Resource induced violence and wars seem to come straight out of a science fiction book but they are already happening even though we might not be aware of it. A severe drought, for example, most likely caused but at least exacerbated by climate change played a major part in the beginning of the Syrian civil war. Climate change directly promotes violence and hostility due to higher temperatures. Indirect causes, which fuel climate change driven violence, include natural disasters, failing crops, and strain on natural resources. All of these events result in economic disruption, displacement of families, and a substantial rise in migration.

What We Eat Matters

As a way to fight climate change we have focused on transitioning away from fossil fuels. At the same time, we have overlooked or ignored one of the largest contributors to climate change- animal agriculture and its environmental impact. ***What we eat affects our oceans, our land and the air we breathe, more than we might presume.*** The destructive impact of animal agriculture on our environment far exceeds that of any other technology on Earth. For the longest time, even experts underestimated the ecological impact of livestock farming. The consequences of raising 70 billion animals a year for human consumption has far reaching and fundamental consequences.

Air

- Most of our world's farming systems are centralized and highly industrialized. They emit very concentrated streams of waste and harmful gases such as ***ammonia, nitrous oxide and hydrogen sulfide.*** Inhaling these toxic fumes not only increases our risk for respiratory diseases including asthma and respiratory irritation but also promotes immune suppression and behavioral disorders. These chemicals have the potential to alter chemical tags on our DNA, which can increase the risk for neurodegenerative diseases such as Alzheimer's, Parkinson's, cognitive impairments and neurodevelopmental disorders.
- Animal agriculture is the second largest contributor to human made ***greenhouse gas emissions*** after fossil fuels. A greenhouse gas (GHG) is any gas in the atmosphere which absorbs heat, thereby keeping our planet's atmosphere warmer than it otherwise would be. The main GHGs in the Earth's atmosphere are water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O) and ozone.
- In terms of quantity and total impact on global warming, carbon dioxide is the most common GHG emitted by human activities.
- In 2009, the Worldwatch Institute claimed that ***animal agriculture is responsible for greenhouse gas emissions*** of 5% . And it maintained that the environmental impact in the supply chain of animals has been "vastly underestimated". A recent report puts the number ***as high as 87%***, including a broader spectrum of related factors such as desertification, habitat destruction and loss of forests, wildlife extinction, and ocean dead zones in their calculations. Methane produced by the animals alone accounts for at least 37% of methane released annually.
- The primary source of another greenhouse gas, nitrous oxide, is the fertilizer that is used to grow livestock feed. 44% of all anthropogenic ***nitrous oxide*** emissions can be attributed to livestock. Nitrous oxide is the most dangerous greenhouse gas, being ***300 times more potent than CO2***, and depleting our protective ozone layer. Since nitrous oxide has a shorter life span than CO2, reducing it could have a faster and significant impact on global warming.
- Our food system is one of the largest emitters of ***methane***. Methane is produced in the gut of ruminant animals such as cows, pigs and sheep. It is released during the decomposition of animal manure and organic wastes in landfills. We are already suffocating in animal manure but animal waste is forecast to increase by 40 percent between 2003 and 2030. Methane emissions also result from agricultural practices, especially rice cultivation. Methane is a particular dangerous gas. When methane is first released it is around ***80 times worse than CO2 at trapping heat.*** Not only is methane much more potent compared to CO2, it poses an even greater threat due to its long lasting effects. It is being oxidized only 10 to 20 years after its release, at which point it starts losing its warming potential.
- A study published in the journal Climatic Change in 2014 states that the average meat-eater in the U.S. is responsible for almost twice as much global warming as the average vegetarian, and close to three times that of

the average vegan. Beef consumption in an average American diet creates almost 2000 pounds of CO2 annually. ***Replacing meat with plants would bring down this number by 96 percent!*** Seafood also contributes massively to global warming, as the entire fishing fleet depends on dirty fossil fuels. The higher up on the food chain our food sources are and the more processed they are, the more severe their carbon footprint.

- Eating animal foods represents an indirect and highly inefficient way of eating. Every time energy moves from one organism to the next, in the process of digestion, roughly 85- 90% of energy is lost as heat while only the remaining 10-15% are transferred. The longer the "food chain", the less energy efficient this system is. Energetically speaking, it is absurd to feed crops to animals which will be turned into meat for humans. Cutting out the middleman and eating plants transfers energy directly to us and enables us to feed the growing world population.

Land

- Agriculture is the most destructive human activity. At the moment, we are feeding the world while destroying our planet. By tilling, using heavy machinery and chemicals, er have already destroyed 70% of soil and roughly 30 soccer fields of soil are lost every minute. If we continue at this rate, we will run out of farmable soil in 60 years which will result in catastrophic climate change, extreme droughts and food scarcity.
- Animal agriculture is taking up enormous amounts of land. ***Every day, 20 million acres of rainforest are being destroyed***, mainly to raise livestock and grow crops for factory farmed animals. At this point, half of Earth's rainforests have been cleared. The huge fires, which are used in Brazil to burn down trees in order to create farmland, can even be seen from outer space. Though the Amazon rainforest only makes up 5% of Earth's landmass it stores 10% of atmospheric carbon. When burning or cutting down trees, massive amounts of carbon are released into our atmosphere, adding up to 15% of all carbon emissions worldwide. This is more than all emissions from automobiles combined. The biggest analysis to date reveals a huge footprint of livestock - it provides just 18% of calories but takes up 83% of farmland.
- Life on our planet is disappearing right before our eyes, more quickly than ever before in human history. About 1 million animals and plant species are facing extinction. The five main drivers include changes in land and sea use, direct exploitation of animals, climate change, pollution and the introduction of invasive species. Rainforests only make up 2% of the total surface area of the Earth, but they house about half of all plant and animal species, which represent 10% of all biodiversity on Earth. Rainforests are believed to be the oldest living ecosystems on Earth. Due to the destruction of rainforests, plants and animals lose their natural habitats. Most of them are not able to survive and become extinct. According to Prof David Macdonald, Oxford University, ***"There is no future for humanity without biodiversity"***. It cannot be stressed enough that biodiversity is essential for the health of our planet. All organisms are linked together, part of interdependent ecosystems in which every species plays a specific role. We may not feel the loss of biodiversity as much as we feel the daily impact of climate change. Nevertheless, we depend on healthy ecosystems for water, soil formation, pollution breakdown and absorption, climate stability and recovery from natural disasters. Nevertheless, we are in the midst of the 6th mass extinction in Earth's history due to climate change, human-driven habitat destruction, chemical pollution, the introduction of non-native invasive species and increased competition for food and water. The last mass extinction took place approximately 66 million years ago and wiped out some three-quarters of all plant and animal species on Earth, including dinosaurs. This event seems to be caused by a meteorite the size of a mountain that slammed into Earth. Subsequently, the atmosphere filled with gas, dust, and debris which drastically altered the climate. Today's climate change related mass extinction wave is a direct result of human activity.
- Clearing forests and bushland causes ***erosion***. Erosion results in the loss of soil fertility, as topsoil contains all necessary nutrients plants need to survive. At the same time, due to the loss of organic matter and clay the soil's capacity to retain water is diminished. Grazing animals add to the process of erosion by compacting and acidifying the soil.
- Farmed animals globally produce more than ***3 billion tons of poop every year*** with an estimated increase of 40 percent until the year 2030. Manure polluting our waterways has dramatic ecological consequences. High levels of nutrients such as phosphorus and nitrates, which are part of manure, lead to the spread of waterborne pathogens as well as an overgrowth of harmful algae. The latter release deadly neurotoxins which can kill wildlife. Toxins finding their way into fresh and marine water end up in our food chain, ultimately ending up in our bod-

ies.

- Monocultures: Although animal-free diets are more sustainable in comparison to diets rich in animal products because they use many fewer natural resources, there are still economical considerations that need to be considered. A big threat to our world's ecosystems is growing mono cultures, such as soy plantations. By growing a single crop species in a field at a time, mono cultures enable farmers to use machinery, increasing the efficiency of activities like planting and harvesting. These benefits come at a high cost. The biggest drawback is the *increased risk of disease and pest outbreaks*. Therefore, large amounts of *pesticides and herbicides* are needed, which pollute rivers and streams. These agricultural chemicals also *diminish the amount of soil microorganisms as well as worms and insects* available to birds as food. Monocultures lead to *soil degradation and promote erosion*. Since monocultures are being harvested at the same time, the topsoil *loses its ability to retain moisture.* Therefore, vast amounts of water are required to irrigate monoculture crops. There are quite a few steps we can take in order to promote a healthy environment. We can choose local and seasonal organic plant foods and look out for products made from environmentally friendly ingredients. Although we have year round access to foods from all around the world, picking local foods not only supports local organic farmers but also intensifies our connection to nature, looking forward to seasonal changes and cherishing seasonal foods. I strongly recommend shopping at farmer's markets and checking the origin of supermarket products.

Water

Our oceans seem vast, powerful and indestructible. They are teeming with life- at least they were. We thought our actions have no impact on our oceans, that they will swallow up no matter how much garbage we dump into them and all extracted sea life will always be replenished by nature.

We seem to vastly underestimate the importance of water for our survival. Water covers more than two thirds of our planet. Our oceans produce around 70 percent of the oxygen we breathe and absorb 50 times more carbon dioxide than the atmosphere. They regulate our climate by transporting heat from the equator to the poles, cold water from the poles to the tropics and regulate precipitation. In essence,our oceans are a complex climate control system we depend on. As marine biologist, explorer and scientist Dr. Sylvia Earle states **"No water, no life. No blue, no green."**

The oceans are home to the greatest abundance of life on earth- and we have only just started to explore it. The National Oceanic and Atmospheric Administration (NOAA) estimated in 2000 that as much as 95 percent of the world's oceans and 99 percent of the ocean floor have yet to be explored. By considering the oceans to be vast and indestructive we have ignorantly exhausted their resources, completely oblivious and indifferent to their inhabitants. Today, we are facing the consequences of our actions. An international team of **ecologists and economists predicted that by 2048 our oceans will be empty of fish** due to overfishing, pollution, habitat loss, and climate change. Can you imagine an empty ocean, just less than 30 years in the future? What a disturbing and shocking outlook. Our scientific data reveal the sad reality. As of today, 87% of all fish species are either damaged or overexploited with many large fish types at less than 10% of their original numbers. In order to meet the demands for our appetite for seafood, modern fishing methods have depleted whole populations to such an extent that the industry has begun "fishing down the food web", going after deep sea fish, young fish and species previously not taken. Many species are facing extinction due to the fact that they are killed as "*bycatch*", unwanted and accidentally trapped by commercial fishing nets. As a result of our fishing methods, we have created tens of thousands of square kilometers of dead zones in the oceans. Still, when we look at the water from the surface, it looks the same, whether it´s healthy or not. And that´s exactly what makes it so difficult to connect with the urgency of the situation.

- Our oceans have been used for decades as limitless trash cans, into which we have dumped chemicals, heavy metals, plastic and other waste. In the Pacific, a massive island of plastic called ***The Great Pacific Garbage Patch***, three times the size of France, is floating around, growing by the minute. Much of the ocean's debris doesn't accumulate in compact patches but rather in small bits of plastic, or *microplastics*, which are smaller than 5mm in size and are suspended throughout the water column. By eating seafood, we are taking up all these harmful substances. Fish, turtles and birds suffer tremendously from absorbing plastic. Their digestive tracts get clogged up, their urge to eat is being diminished, and they exhibit an altered feeding behavior. Too many of these animals die a slow and painful death. You may have seen images of dead baby albatrosses documented by Chris Jordan, who have died by the thousands due to discarded plastic packaging and toys filling up their stomachs.

- Raising animals requires enormous amounts of water. It takes between 13.000- 26.000 gallons (50.000- 100.000 liters) of water to produce 2.2 pounds (1 kg) of beef compared to only 660 gallons (2500 liters) to produce the same amount of rice. Much less water is required to grow most fruits and vegetables. ***The production of just one single hamburger equals 2 months of showering***. Even though we hear recommendations to save water by spending less time in the shower, most of us don't seem to realize just how much water a meat eating diet requires.
- Grazing animals pollute groundwater.
- Animal manure and other agricultural runoff from large-scale farms have already polluted nearly one-third of the nation's rivers.
- Herbicides, pesticides and fertilizer find their way into the oceans, killing sea life, algae and reefs.
- Processing and manufacturing of animal products pollutes rivers with toxic chemicals, making them a major contributor to large ***"dead zones"*** as seen in the Gulf of Mexico.
- Freshwater fish farms pollute riverine environments.
- All fish are nowadays contaminated with heavy metals such as the neurotoxin ***mercury***, chemical toxins as well as microplastics.
- Altogether, factory farms are responsible for more pollution of waterways in the U.S. than all other industries combined.
- **Corals**: When we talk about corals you may have a bright and colorful image in your mind, vibrant and teeming with life, similar to a scene out of the movie "Nemo". Corals are made up of thousands of tiny invertebrates which belong to a large group of colorful and fascinating animals. Corals can't make their own food, they have a symbiotic relationship with algae living inside them. Coral reefs are the most diverse of all marine ecosystems and are tremendously important. Above all, they generate half of Earth's oxygen and absorb nearly one-third of the carbon dioxide generated from burning fossil fuels. They provide the natural habitat for marine species, protection from storms and waves, sand for beaches and food for a billion people worldwide. But coral reefs around the world are dying due to global warming, pollution and overfishing. While above the sea surface, everything may look normal and beautiful, while underwater, it may look like a graveyard, featuring lifeless corals covered with seaweed. Within the last 30 years, we have lost half of the world's coral reefs. Between 2014 and 2017, an unprecedented amount of coral reefs have bleached and died during a global ocean heat wave. During this time, more than 75 percent of Earth's tropical reefs experienced bleaching. When stressed by high temperatures and light levels, corals often expel their algae and turn white. Eventually, severe bleaching leads to disease and starvation. The biggest threats to our reefs are pesticides and chemicals in the water, the mining and burning of fossil fuels which traps greenhouse gases and increases ocean temperatures and plastic trash. ***The predictions are devastating- up to 90% of remaining corals may die within the next century.***
- **Acidification**: As oceans absorb carbon dioxide from the atmosphere, it is being converted into carbonic acid which causes a drop in the ocean's pH. Consequently, carbonate ions are bound with excess hydrogen, resulting in fewer carbonate ions. This makes it difficult for marine organisms such as shellfish (e.g. oysters, mussels and clams), corals, plankton and sea urchins to form their shells and skeletons. Just because other species don't grow shells, they still feel the detrimental effect of acidifying oceans. Squid, for example, are the fastest invertebrates and require lots of oxygen. Increasingly acidic oceans interfere with the amount of oxygen they can carry. Increasingly acidic oceans might undermine important behaviors that sea creatures need for survival. Experiments show that damselfishes, sharks and crabs raised in or exposed to highly acidic water may fail to smell predators or to find food or may uncharacteristically wander into dangerous places. The sense of smell, which is detecting, understanding and responding to molecules in the water, is a vital tool for navigation. Research has shown that even slight changes in ocean chemistry could throw off this delicate survival mechanism.
- **Sprays and lotions** that we use to protect our skin from the sun can cause tremendous damage to marine life. Chemicals commonly used in sunscreen and cosmetics like the UV filter oxybenzone are highly toxic to juvenile corals and other marine life. Just one drop of oxybenzone in 6.5 olympic sized swimming pools is enough to cause damage to sea creatures.

Everyone is Suffering

Most of us seem to be oblivious to the fact that what they are eating used to be a living being. Instead of being recognized as sentient creatures, animals such as cows, chickens, pigs, and turkeys are perceived as breasts, legs, thighs, flanks, and wings. We even refer to animal foods as ***products***. Animals born and raised on factory farms, formerly called CAFOS (concentrated animal feeding operations) don't know what it is like to be free. Instead, they suffer a miserable existence. About 99% of all animal foods come from factory farmed animals and over 90% of farmed animals worldwide live on factory farms. In the United States, factory farmed animals are heavily concentrated in grower states including North Carolina, Iowa, Illinois, Nebraska, and Kansas. In the most heavily farmed counties, the number of livestock can even exceed the number of people. Lately, factory farms have gotten more media attention for reasons that are far from positive. It has become common knowledge that factory farms are horrific places where animals are treated as mere products and pieces of the food industry.

Although many meat eaters dislike causing pain to animals and disapprove of factory farms, it hasn't stopped them from consuming animal foods.

How is it that we love our dogs, cats and other pets dearly and are repelled by the thought of eating them, while at the same time we are perfectly fine eating a pig or a cow? Most of our laws protect domestic animals such as cats and dogs from abuse yet they exclude farmed animals. Our societies follow arbitrary, human- made belief systems which have convinced many of us that it is perfectly acceptable to eat certain animals yet unthinkable to eat others. These belief systems differ from country to country. In China, for example, it's absolutely normal to eat dogs, while in France it's common to eat horses. These dominant belief systems condition people to act against their core values of compassion and disconnect from natural empathy.

The inner moral conflict between eating meat and our moral response to animal suffering doesn't just threaten our pleasure of eating meat, it also poses a threat to our personal identity. Therefore, people who consume animal products use a certain way of justification to defend themselves, often referred to as the ***"Three N's": normal, natural and necessary.*** They claim that eating animals is an essential and necessary part of the human diet, that humans were evolutionarily meant to eat meat and because everybody else is doing it, it must be completely normal. To enforce these belief systems, we have established A variety of habits and social structures have been established to enforce our belief systems. Meat-eating has, for example, always been linked to certain holidays and family traditions and is therefore defended as being part of our culture. For the longest time, meat consumption has also been promoted as a symbol of masculinity.

Conditions on factory farms are cruel, not only for animals. For factory farm workers, the psychological effect of traumatic work conditions- such as killing more than 40 animals a minute for as little as 6$ an hour- takes a high toll. Investigators, disguised as slaughterhouse workers, report symptoms of PTSD, anxiety, and other related mental health conditions. The majority of farmworkers, many of them undocumented immigrants, stay silent for fear of losing their jobs.

Factory farms profoundly affect the health of its workers as well as people living in close vicinity:

- Air pollution from factory farming may also damage the nervous system in adults, leading to increased anxiety in some individuals
- Particles and gases such as ozone can impact children's brain development, leading to a higher presence of neural, behavioral, and cognitive changes.
- Ozone and particle matter also damage our lungs, resulting in asthma, chronic bronchitis, chronic obstructive pulmonary disease and other lung conditions
- Air pollution from factory farms can have an adverse effect on cardiac health, particularly for elderly people or those with a preexisting condition
- Prolonged exposure to air pollution caused by agricultural emissions can also have a negative impact on reproductive health including decreased fertility, promotes cancer of the reproductive system and is associated with lower birth weight
- Air pollution can also increase the risk of diabetes

Naturally, the livestock industry actively uses psychological techniques to reinforce the dissociation between animals and meat consumption. They support the consumers' idea of naturalness, of animals that are allowed to be outdoors and perform species-specific behaviors. They use two distinct concepts of “animals” and “meat” and use words like “harvesting” instead of “killing” or “slaughtering”. Meat is processed and presented in a way that distances the product from its animal origin, and very specific packaging and advertising strategies are used.
The industry’s efforts have indeed paid off. According to a recent poll, 75% of U.S. consumers believe that they usually purchase humane products. In reality, only 1% of animals raised for food live on non-factory farms. Lately, the horrors of factory farm practices have gotten more media attention and multiple documentaries have shed light on the cruel conditions for animals and workers as well. The meat industry is very much aware of the fact that the majority of the public disapproves of the inhumane way they operate so they stay hidden from the public eye, keep out visitors and discourage workers from sharing their experience. We, on the other hand, gladly ignore what is going on in an out-of-sight-out-of-mind kind of behavior.

But let’s, for a moment, push aside the image of happy cows on a green meadow next to a beautiful red barn and face the cruel facts of everyday life on factory farms for animals:

Chickens

Industrialized growing systems aren’t just producing more chickens. With the help of feed additives, modern processing plants, medications, and utter disregard for animal welfare, they are producing bigger chickens at a faster rate to maximize their profits.
Naturally, chickens take 16 weeks to reach maturity. With cross-breeding, hormone and soy feeding humans were able to reduce this time by more than 50 percent. This unnaturally fast growth cycle combined with the lack of space to move around takes a huge toll on the chicken’s bodies. Their bones become brittle and break easily. Many develop lameness and are in constant pain. Today, the minimum requirement of space for egg laying hens is a cage the size of an A4 sheet of paper, with an extra postcard-sized bit of shared space that allows them to scratch and nest. In this tight environment, ironically called “enriched cages”, the animals are unable to express their natural behavior and are constantly stressed. This fosters aggressive and auto aggressive behavior. To minimize injuries, the chicken’s beaks, which are their primary sensory organs, get clipped. This painful procedure is usually performed when the hatchlings are just a day old. Although full debeaking is no longer allowed, beak clipping is still permitted in egg-laying hens.
In the egg industry, male chicks are killed right away because they cannot lay eggs and also, because they are not suitable for meat production. Layer hens are a different breed of poultry, bred to produce eggs whereas meat chickens are bred to grow large breast muscles and legs. The male chicks are killed by carbon dioxide gassing or quick maceration, which is basically shredding. Quick maceration ensures the chick is killed within a second if carried out effectively and competently. Gassing, on the other hand, results in gasping and head shaking and, depending on the mixture of gases used, may take up to two minutes for the chicks to die.
The lives of broiler chickens are not better than their egg laying relatives. By day nine, the broiler’s legs can barely keep its oversized breast off the ground. By day 11, it is puffed up to double the size of its cousin. It looks like an obese nine-year-old standing on the legs of a five-year-old. By day 35 it looks more like a weightlifter on steroids. The chicken’s bodies can’t keep up with the fast growth and they typically suffer from severe bone, heart and lung problems. Usually, broiler chickens are kept in an artificially lit shed of around 20,000-30,000 birds with computer controlled heating and ventilating systems. Modern broilers spend their short lives on top of their own waste encrusted bedding, which the industry refers to as “cake” or “poultry litter,”. As hard as it is to believe, this “cake” sometimes enters the food chain as a cattle feed supplement. Keeping animals in such close confinement enables disease to spread rapidly. Therefore, the water and feed are medicated with drugs to control parasites or with mass doses of antibiotics. Units are cleaned only at the end of each cycle, so after two to three weeks the floor of the shed is completely covered with feces and the air tends to be acrid with ammonia. At the end of their miserable lives the birds are sent to slaughter. Just to give you a glimpse of the scale we are talking about- Tyson Foods, the world's second largest processor and marketer of chicken, beef, and pork slaughters an average of 35 million chickens per week.

Cattle

Beef cattle begin their short lives largely outdoors. Early on, they are being separated from their nurturing mothers, which

causes prolonged distress for both mother and calf. The mother- calf bond is particularly strong and there are countless reports of mother cows who continue to frantically call and search for their babies after they haven been taken away. Between the age of six months and one year the calves are being sent on a stressful journey to factory farms to spend their remaining lives with hundreds or even thousands of others, often in muddy conditions and without shelter. These animals suffer respiratory distress caused by dust as well as digestive problems due to an unnatural diet of corn and other foods. In addition, they have to endure a series of painful mutilations including branding, castration, and tail docking.

Dairy cows

In contrast to beef cattle, dairy cows are mostly kept indoors. In order to constantly produce milk they are being artificially inseminated once a year. Their gestation period compares to humans and lasts nine months, which means that the majority of most dairy cows' lives are spent pregnant. When a calf is born, it is generally separated from its mothers within the first 24 hours after birth to make the mother's milk available for humans. This deeply traumatic event makes cows cry for days and alters the behavior of the calves. Male offspring are often raised for veal, while females become the next generation of dairy cows.

Pigs

The life of a breeding sow on a factory farm is characterized by extreme confinement, stress and suffering. Most of these pigs are confined to so-called gestation crates which are only slightly larger than their bodies, making it impossible to even turn around. The floor is made up of slats to allow easy removal of manure. This design causes traumatic injuries to the pigs feet and legs. The extensive use of ammonia causes respiratory distress. Breeding sows have to endure a constant cycle of impregnation, pregnancy, birth and nursing until they are eventually sent to slaughter. As a result of this treatment, the poor creatures show abnormal, neurotic behavior such as biting repetitively at the bars which causes additional suffering from sores and mouth damage.
When the sows give birth to their piglets in so-called "farrowing crates", the mothers can't even turn around to see their piglets because of the restricted environment. When the piglets are 12-20 days old, they are taken away from their mothers and have to endure a series of painful mutilations including tail docking and castration. They then spend the next six months in crates until they reach their "market weight".

Fish and other marine animals

We view life in the water very differently from life on land. Clearly, there is a huge empathy gap when it comes to fish. Very early on, we teach our kids that it´s ok to kill fish and they learn to turn off their feelings and empathy. We don´t even refer to fish as individuals any more but rather take them out by the tons. Most of us probably don´t even realize that fish are the largest group of vertebrates and that they are more diverse than all the other forms of vertebrates combined. Fish are not free goods for us to take.
Yet, every year, billions of sea animals are caught in huge nets and long lines. These fishing practices are notorious for catching large amounts of by-catch including fish, sea turtles, seabirds and marine mammals and incidentally killing them during operations. As they are pulled to the surface, many of them get crushed to death or severely injured. Others suffer

Part II

Reconnect

Chapter 1

Reconnecting to Our Food

Every movement that challenges established traditions will inevitably be met with concerns, resistance, and bring forth strong opponents. Most of us seem to be surprisingly defensive when asked about their lifestyle. A particular sensitive topic appears to be our dietary choices. The answer may lie in the fact that eating isn't just a fundamental necessity to survive but also accompanied by deep emotions. The foods we have grown up with are dear to us, they feel familiar, bring back memories, link us culturally, and make us part of a larger community. After all, humans are wired to seek comfort and security in order to survive. However, staying within our comfort zone limits us in the pursuit of new goals and achievements. Those of us who are willing to step out of their comfort zone reap the biggest rewards. Taking on challenges is what helps us grow. The aim of this book is to encourage you to leave your comfort zone, challenge your beliefs and open your eyes and your heart.

Besides transforming your own and your family's lifestyle, reconnecting to the world around you presents an opportunity to influence and change your community. If enough of us change, we can change the world. I couldn't phrase it better than Margaret Mead, the American anthropologist, or Japanese writer Ryanosuke Satoro:

> "Never doubt that a small group of thoughtful,
> committed citizens can change the world;
> Indeed, it is the only thing that ever has."
>
> *Margaret Mead*

> "Individually, we are one drop.
> Together, we are an ocean."
>
> *Ryanosuke Satoro*

What Is Our Ideal Food?

This seemingly simple question is a highly debated topic which evokes strong emotional opinions. There are countless websites, blogs and bestselling books that advocate very different and controversial diets. Some have been proven to cause harm, others are based on biased studies, and some simply represent the subjective lifestyle approach of certain individuals. This vast amount of available information makes it incredibly hard for the general public to know which sources to trust. As a result, most of us tend to stick with what feels familiar- the diet we grew up with.

However, overwhelming and indisputable scientific evidence shows that our health is positively linked to the consumption of plants. Simply put, *the more plant foods we eat, the healthier we are.* Living proof are inhabitants of certain geographic regions in the world called **Blue Zones.** Areas such as Okinawa (Japan), Loma Linda (California, USA), or Nicoya (Nicaragua) are home to the world's oldest and healthiest people. On average, they live close to one hundred years and maintain a high quality of life until their death. To find out what their longevity secret is, their lifestyle has been examined extensively. They all adhere to an almost entirely plant-based diet with a focus on local and seasonal produce, most of which they grow themselves.

A whole-food plant-based lifestyle not only protects us from the development and progression of pathologic processes and chronic diseases, but it is also the only diet scientifically proven to be able to reverse and cure chronic diseases.

A crucial part of a healthy whole-food plant-based diet is knowing how to prepare its ingredients appropriately. Without the proper preparation, even the healthiest foods such as beans and whole grains can have undesired or even harmful side effects on our health. This knowledge is not just important for plant eaters, but to anyone who consumes fruits, vegetables, grains, legumes, nuts and seeds on a regular basis. Our ancestors learned over time how certain foods need to be prepared in order to minimize negative side effects and maximize their nutritional benefit. They soaked and cooked ingredients and developed more complex techniques such as fermentation. Today, we are able to scientifically explain why these traditional methods are so vital for our well being. By reintegrating them into our daily lives we can access powerful plant nutrients. I will also describe why plants possess certain properties and how they ensure the survival of the species.
Before we get into any details, let's start by defining what a whole-food plant-based diet actually is.

A Whole-Food Plant-Based Diet

"Plant-based" refers to a diet being centered around

- Vegetables
- Fruits
- Whole grains
- Legumes
- Seeds and nuts

"Whole-food" stands for mostly whole, minimally processed foods.

A whole-food plant-based diet avoids or limits

Animal products including fish, meat, dairy and eggs

Highly processed and ultra processed foods

Refined foods with added sugar and fat

Quite often, a whole-food plant-based diet gets confused with a vegan diet. Although at first glance, a whole-food plant-based diet may resemble a vegan diet, it is rather the healthy version of a vegan diet. After all, many refined products like white sugar, sweeteners such as high fructose corn syrup and agave syrup, and highly processed foods such as cereals, chips, crackers, fake meat and fake cheese are technically vegan products, yet far from being nutritious.
Manuka honey, on the other hand, is technically an animal product, but offers amazing health benefits (see page) and should be included in a healthy diet.

Some of you may be overwhelmed or even put off by the list of excluded foods, because these may just be the ones you are enjoying the most. For me, the biggest motivator to switch our diet more than ten years ago was my newly acquired knowledge about the harmful side effects of animal foods. In addition, I began to realize the tremendous health benefits whole plant foods offer. Theses findings combined with a positive attitude and tremendous curiosity greatly facilitated our transition to a whole-food plant-based diet. Going through this program or even just changing the way you eat may completely change your overall relationship with food, making shopping, cooking and eating a truly enjoyable experience.

If we are at liberty to choose, why not choose the healthiest foods

Introducing a wide variety of plant foods is essential for a balanced whole-food plant-based diet.
However, certain plant foods are even more nutrient dense than others. Their broad spectrum of benefits includes:

- The reduction of inflammation and oxidative stress within our bodies

- The inhibition and prevention of cancer growth by removing carcinogens, inhibiting angiogenesis (new formation of blood vessels, the process by which tumors acquire a blood supply) and directly targeted elimination of cancer cells.

Examples of powerful plant chemicals are **polyphenols**, a group of natural food pigments which are found in particularly high concentrations in *raw cacao, ground flaxseed, berries and black olives*. Polyphenols effectively promote resilience against stress. They also have the capacity to reduce depression by modulating inflammatory responses in our brain as well as other mechanisms.
Certain plant compounds with antioxidant properties, found in dark berries, are even able to reduce DNA damage.

As explained in Part I, instead of being helpless victims of our genes we have the power to positively influence our health and wellbeing. Physicians routinely ask about our parents' medical history, specifically whether they suffered from strokes, heart attacks, cancer, or other chronic diseases. If your parents suffered from one of these conditions, you may find yourself at a higher risk of developing the same diseases because you grew up with the same lifestyle, and most importantly, with the same diet. Even those of us who inherited a genetic predisposition, such as the Alzheimer gene APOE or the mutated breast cancer genes BRCA1 and BRCA2, are able to prevent these diseases to a large extent by choosing a protective, anti-inflammatory diet.

No matter what genetic cards we were dealt, the more nutrient and antioxidant rich foods we include in our diet, the bigger our health benefits are. A group of particular beneficial plant foods referred to by Dr Fuhrman as ***"G Bombs"*** essentially represent an expanded version of ***"beans and greens"***. These foods are highly effective anti-inflammatory and anti-carcinogenic substances, should ideally be consumed daily and include the following:

G … for Greens
B … for Beans (and other legumes)
O … for Onions
M … for Mushrooms
B … for Berries
S … for Seeds and Nuts

Organic or not organic, that is the question

Currently, the majority of our foods are sprayed with herbicides and pesticides. In order for crops to withstand the chemicals and not die along with the unwanted weed, they have to be genetically modified. The most prominent representative of weed killers is the glyphosate-based chemical Roundup, which was introduced by Monsanto in 1974 right after DDT was banned. The active ingredient glyphosate has been classified by the WHO as a *"potential carcinogen"*. Despite the fact that Roundup diminishes our beneficial gut flora, which in turn directly influences our immune system, and despite mounting evidence that links Roundup to serious disorders including ADHA, ADS, Alzheimer, anencephaly and other birth defects, diabetes, heart disease, liver and thyroid and respiratory diseases, Lou Gehrig disease, non Hodgkin lymphoma and many more, it is still among the most widely used agriculturally chemicals. Herbicides and pesticides not only bio-accumulate in animal tissues (see page …) but find their way into our soil, the air we breathe, the water we drink, and even into our children's playgrounds.

In contrast to conventional foods, organically grown plants are not allowed to be sprayed with toxic chemicals. Organic plants rely on their own defense mechanisms against predators and environmental damage. This causes them to up-regulate their defense mechanisms and produce more antioxidants. In fact, studies found that **organic foods contain 18 to 69 percent higher concentrations of antioxidants**. In addition, heavy metals like cadmium, are reduced up to 50 percent in organically grown plants compared to conventionally grown foods. Organically grown foods even taste better. Their higher antioxidant levels seem to positively affect their taste and aroma.

Due to a number of reasons, the price between conventional foods and organic foods can be quite substantial. Organic growers spend a lot more time on their crops than conventional growers. They often use manual labor to control pests and diseases. Also, organic certification is time intensive and education is costly. Organic foods are mostly produced on a small

scale and farmers cannot benefit from the efficiency of large scale industrial sized farms. Organic land is higher prized than conventional farmland and requires certain specifications. Currently, conventionally grown food gets the majority of subsidies in most countries which distorts competition and allows conventional foods to be sold at more competitive prices than their organic counterparts.
A report by the California Public Interest Research Group called *"Apples to Twinkies"* states that between 1995 and 2010, American taxpayers spent over 260 billion dollars in agricultural subsidies, with most of these subsidies given to the largest farming operations in the United States. Worse, most subsidies were used to finance commodity crops such as corn and soybeans that are often manufactured into food additives such as high fructose corn syrup and vegetable oils, which end up in junk food. The cost of conventional food doesn't reflect the true costs involved. These include the costs to deal with the pollution of our land, soil and water, as well as higher medical costs due to chemical related diseases. In essence, it seems that we actually pay more for conventional food than organic food. It's just harder to see because the majority of those costs are hidden and paid for indirectly.
Organic food, on the other hand, promotes rural development, a healthy environment, food independence, generates more jobs and provides better animal welfare.

If given the choice, we would probably all choose organic foods over conventional foods. Because of the substantial price difference this may not always be affordable and we need to prioritize which foods to buy organically. Knowing which foods store less chemicals and are safer to consume than others helps us to strike a balance between cost and benefit.

Not all plants take up and store chemicals equally. The *Environmental Working Group* posts an annually updated list called the ***Clean Fifteen*** and the ***Dirty Dozen*** of the cleanest and the most polluted foods. The list is based on data from tests conducted by the United States Department of Agriculture (USDA), as well as the USDA's Pesticide Testing Program and the Food and Drug Administration.
Here is the 2023 list of the **"Clean Fifteen"** plant foods, in order of least contamination:

Carrots
Watermelon
Sweet potatoes
Mangoes
Cabbage
Kiwi
Honeydew melons
Asparagus
Frozen sweet peas
Papayas
Onions
Pineapples
Sweet corn
Avocados

The following 12 veggies and fruits, on the other hand, are referred to as **"The Dirty Dozen"** because of their high amount of pesticide residue. If possible, these ingredients should be purchased organically.
The *most polluted to less polluted* plant foods are ranked below:

Strawberries
Spinach
Kale, collard & mustard greens
Peaches
Pears
Nectarines

Apples
Grapes
Bell peppers & hot peppers
Cherries
Blueberries
Green beans

It can't be emphasized enough that all the foods listed above are highly nutritious and should be consumed regularly, even if they have not been grown organically. As mentioned before in the chapter about *bio-accumulation*, plant based foods overall contain considerably less harmful chemicals than animal based foods (see bio-accumulation page).

Anti-Nutrients

After this introduction to a whole-food plant-based diet, let's look into the *ideal preparation* of certain plant food groups. Plants may look innocent, but they are in no way powerless organisms, helplessly exposed to their environment and victims of predators. Just like living beings, plants will do anything to ensure the survival of their species. Just recently, scientists have started to unveil the incredible level of sophisticated plant survival strategies. Plants are able to communicate with each other directly through their leaves, branches, and roots, as well as through certain chemical messengers. They are even capable of warning neighboring plants of an impending aphid attack via thread-like filaments of fungi called mycelium.

Besides stress -induced increased production of antioxidants, plants also defend themselves against predators by repelling, harming, weakening or even killing them. Some plants express mechanical protection mechanisms such as an impenetrable bark barrier or grow thorns and spines. Others are equipped with chemical defenses that can act as repellents or toxins or reduce the plant's digestibility. When, for example, a grasshopper starts munching away at a leaf, the plant can stop it in its tracks by instantly producing natural insecticides.

Protective mechanisms and chemicals are also found in plant seeds to ensure their survival and reproduction. These chemicals have different responsibilities:

- They act as repellents against pests, bugs and other predators
- They assure an unharmed passage of seeds through the digestive tract of an animal. That way, the seeds wind up some distance away from the mother plant. By germinating further away, the baby plants don't compete with the mother plant for sun, moisture, and nutrients.
- They bind to and store vitamins and minerals within the seeds. When the right conditions are present, the seed starts to germinate and the nutrients are steadily released and become available as the baby plant grows.

As vital as anti-nutrients are for the plant, as challenging they are for us. These chemicals are called anti-nutrients because they *interfere with the absorption of important nutrients in our body*. Furthermore, they *disrupt our digestive system* by blocking certain digestive enzymes. The most well known anti-nutrients include lectins, phytic acid, oxalates and tannins.

Oxalates

Oxalates are responsible for the bitter taste of a plant and are capable of triggering a tingling or burning sensation in our mouth. Oxalates can be found in large quantities in ***spinach, chard or beets***. They are able to *bind to calcium and other minerals* thereby forming microscopic crystals. Consequently, the bio-availability of these minerals are significantly impaired. In addition, an imbalance of oxalates and calcium in our urinary tract can lead to the formation of kidney stones. 75% of all kidney stones consist primarily of calcium oxalate, and hyperoxaluria is a primary risk factor for this disorder. Interestingly, people with a healthy gut flora tend to host a certain bacterium called Oxalobacter formigenes, which feeds on oxalates, thereby reducing their side effects.

Lectins

Recently, lectins have become the center of attention and whole new diets have evolved on how to avoid them. Lectins are

ubiquitous in nature and are found in many foods including ***whole grains, legumes and plants of the nightshade family such as potatoes, bell peppers, eggplant and tomatoes***. Lectins are sugar binding proteins and have glue-like properties. We use their ability to clot red blood cells for determining human blood types. By attaching themselves to cells, including the ones that line our gut, they increase cell permeability while simultaneously inhibiting the repair of the damaged areas. They also disrupt the cell's metabolism, causing damage and inflammation.
Most lectins are resistant to human digestion. Once in our intestine, lectins bind to zonulin, a protein that modulates the permeability of the gut wall, and opens up the connections between the cells that line our gut wall. The increased permeability of the gut wall has been described as a ***leaky gut***. Once the intestinal wall has been breached, lectins and other dietary and bacterial compounds that aren't supposed to get in, can cross the intestinal wall and leak into our body, causing inflammation.
Lectins also seem to be involved in the development of autoimmune diseases. By sticking to cells in our body, they can elicit an auto-immune response similar to a friendly fire.

Phytic acid

Phytic acid is found within the ***hulls or bran of seeds, nuts and whole grains***. It decreases the bio availability of *iron, calcium, zinc, magnesium and phosphorus by binding to them*, forming complexes called ***phytates***. Phytic acid also *binds to the B vitamin niacin*, contributing to a vitamin B deficiency whose extreme form is called pellagra. Phytic acid also binds to minerals from other food sources that are simultaneously consumed, impeding their absorption as well. Phytates also *inhibit our digestive enzymes* including pepsin, trypsin and amylase. Amylase is required for the breakdown of starch, while trypsin and pepsin are involved in the breakdown of protein. When those enzymes aren't present in the right amounts, food doesn't get broken down properly, and our body misses out on key nutrients. We should therefore try to minimize our phytate intake by adequately preparing the affected food groups and maximize nutrient absorption.
It is not necessary nor possible to completely eliminate phytates from our diet because our body is capable of handling phytates to a certain extent. In fact, phytates have some benefits as they seem to inhibit the growth of cancer cells, bind to toxic metals and protect against osteoporosis.

Tannins

Tannins are enzyme inhibitors that can interfere with *iron absorption*. They are responsible for the dry and bitter feeling in our mouth following the consumption of *unripe fruit, red wine or tea* because of their astringent properties.

The good news is that we are able to reduce the anti- nutrient content of the respective foods. The way we prepare our ingredients influences their nutrient availability, their effects on our digestive system, and ultimately our overall health. Let's take a look at how we can maximize the nutritional value of our foods.

The Proper Preparation of Foods is of (G)utmost Importance

Over the last thousands of years humans have learned which foods to eat, which ones to avoid and how to prepare and store them. As a result, our ancestors developed special techniques such as fermenting, soaking or cooking to turn potentially harmful and indigestible foods into easily digestible and highly nutritious foods. During the last few decades, in the pursuit of producing foods with long shelf lives and reduced prep and cooking time much of this invaluable knowledge has been ignored. As it turns out, these modern foods haven't done us any good and we have become a nation of chronically sick people. To turn this around, we need to revive the traditional techniques and include them into our everyday life. Today, we are able to scientifically explain why techniques such as fermenting are so beneficial to us and understand the fascinating interactions between our food and our body.

Let's convert our theoretical knowledge into practical value and look at ways to prepare certain food groups with the aim of decreasing anti-nutrients and making these ingredients more nutritious and easily digestible. You don´t have to memorize the different techniques right away- they will be repeated over and over again in the Reconnect Program™ and the related recipes.

Although **oxalates** are found in almost all raw plants, some of them, including spinach, beetroot greens, beets, Swiss

chard, endive, kale, sweet potatoes and turnip greens contain higher levels of oxalates than others. Oxalates are quite easily ***destroyed by heat***, so boiling and steaming these vegetables has proven to be very efficient. In fact, one study found that steaming fresh spinach reduced the amount of soluble oxalate by more than 60%. Another study looked at a wider range of vegetables and found that in most of them, their soluble oxalate content was noticeably reduced after boiling. Overall, boiling has been shown to be more effective than steaming and baking. As oxalates are reduced, nutrients like iron, magnesium, calcium and zinc become more available for absorption. Especially for individuals predisposed to kidney stones, reducing oxalates by cooking vegetables has shown to be an effective way to prevent the formation of kidney stones.

Tannins are classified as polyphenols, plant compounds that protect cells from damage. They are typically found in *fruit skins, seeds, bark or leaves*. Tannin rich foods include tea leaves, whole nuts (walnuts, almonds etc), dark chocolate, cinnamon, cloves, grapes, pomegranates and acai berries, quinces and red beans. In fact, almost 50% of the dry weight of plant leaves are made up of tannin. Tannins are the reason black tea can have a bitter taste and cause a dry feeling in the mouth. But black tea isn't the only type of tea that contains tannins. Every tea variety contains tannins to a variable extent. Tannin is also an important textural element of wine and responsible for its dry taste. As fruit ripens, tannins are naturally reduced. Therefore, we seem to derive certain benefits from tannins due to their antimicrobial and antioxidant properties. However, overconsumption of tannins may impair digestive processes including the absorption of iron and may cause nausea. While tannins don't pose a problem for most people, the compounds can cause negative side effects for people sensitive to them. To reduce irritable side effects, adding a splash of plant based milk in black tea or eating something along with it proves helpful because proteins and carbohydrates will bind to some of the tannins, rendering them inactive. Ultimately, the overall daily amount of tannins will determine whether their beneficial effects will outweigh any harmful effects.

Phytic acid is part of whole grains, legumes, nuts and seeds and tubers. In a healthy gut probiotic bacteria can break down small amounts of phytic acid by a special enzyme called ***phytase***. The following techniques efficiently reduce phytic acid:

- ***Cooking or sprouting***. These techniques reduce phytic acid to a certain extent
- A ***combination*** of different methods such as soaking and cooking, soaking and pressure cooking or sprouting and cooking have been proven to be more effective
- By far the most effective way to reduce phytic acid is ***lactic acid fermentation***

Lectins are not naturally broken down by digestion. Therefore, certain foods such as beans, whole grains, quinoa and nightshade plants (white potatoes, tomatoes, bell peppers and eggplants) need to be ***cooked and/or fermented*** to effectively reduce their lectin content. Lectin sensitivity varies widely from person to person. Sensitive people may experience inflammation, brain fog, migraines, stomach issues, acne or joint pain after consuming just one lectin-rich meal. In any case, proper preparation of the particular food groups is highly recommended. Because the highest concentration of lectins are found in the skin and in seeds, peppers should be roasted, deseeded and skinned, particularly if a person is lectin sensitive. Similarly, eggplants should be peeled and roasted/cooked. For legumes, whole grains and pseudo-grains such as quinoa soaking, sprouting, fermentation and cooking/ pressure cooking all reduce lectin content. The most effective approach is a combination of at least two of those techniques. Tomatoes should be cooked over a long period of time, preferably in combination with olive oil. When I use raw tomatoes, I choose a variety with less seeds or remove and discard the majority of seeds.

How to Handle Specific Food Groups

As unfamiliar and complex as some of the following processes may sound, rest assured that once you have understood them, they are actually quite easy to master and implement into your daily schedule.

1.Whole Grains

Grains have been a staple food of our societies for at least 10.000 years. In ancient civilizations such as Egypt and Rome, white bread made from refined flour was considered a status symbol. Milling removes the hard outer layer and the bran, leaving only the endosperm, whose carbohydrates can be quickly digested. This process gets rid of the majority of anti-nutrients, which may be a good thing. The huge downside is that at the same time the beneficial components of the grain are

also removed, which leaves the white flour fiber-less, vitamin and mineral depleted.

For the last couple of decades we have been encouraged to eat more whole grains and many of us have integrated seemingly healthy, whole grain products into their meal plans such as brown rice, whole wheat noodles, whole grain cereals etc and cut down on refined grain products. But here is the catch: ***Due to their high content of anti-nutrients, whole grains are only nutritious if prepared properly*** (see below). This fundamental misunderstanding- or really misinformation- of the handling of whole grains resulted in a variety of modern health problems. Regular consumption of insufficiently prepared whole grains can lead to *mineral deficiencies, leaky gut, irritable bowel syndrome, bone loss, food allergies, and even mental illness.*

As with many other things, balance is the key to success. For most people, the occasional consumption of inadequately prepared whole grains is very unlikely to cause harm. Neither does the occasional consumption of empty refined grains while eating a balanced diet.

The Science Behind

Previously, we talked about what anti-nutrients are and how they interfere with our absorption of nutrients as well as our digestion. The good news is that all plants containing anti-nutrients possess the key to break up the chemical complexes anti-nutrients form with minerals. This key player is an ***enzyme called phytase***. *When seeds germinate, phytase breaks up phytate complexes, thereby setting free the nutrients and making them available for the seedling.*
Just to clarify again the important difference between these chemicals:

- **Phytic acid** is the anti-nutrient
- **Phytate**: the complex that is formed when phytic acid binds to minerals
- **Phytase**: the enzyme that can break up the complexes and free the minerals

Whole grains contain different amounts of both anti-nutrients as well as phytase.
Rye, for example, contains high levels of helpful phytase which facilitates its preparation.
Oats, on the other hand, contain very low levels of phytase but at the same time high levels of phytates. This unfavorable combination makes oats not only hard to digest, but also very challenging and time consuming to effectively prepare.
Spelt has a more favorable ratio of phytates to phytase and is therefore easier to treat. I therefore recommend replacing oats with spelt flakes or rye flakes, but we´ll get to that shortly.

How to Properly Prepare Whole Grains

1. Lactic acid fermentation

The most effective technique to reduce anti-nutrients in whole grains is the process of lactic acid fermentation, a technique well known to our ancestors. The art of bread-baking was understood long before we learned the science behind it. The magic begins with a *sourdough starter*, made up purely of water, flour, and naturally occurring wild yeasts and bacteria. Yeasts are naturally present in the air, on our hands, in the jar, maybe even on the spatula or spoon we use to stir the starter. Lactobacilli bacteria are naturally present in flour. As soon as these two microorganisms are combined, a whole ecosystem develops, which multiplies rapidly when fed with flour and water. This culture matures within just a few days of regular “feeding” cycles. The ripe sourdough starter is used to make bread dough which is given time to slowly ferment.
During the process of fermentation, ***yeasts*** feast on the carbohydrates of the grains and convert them to *carbon dioxide and alcohol* (called alcoholic fermentation). As the yeasts continue to feast on available sugars, they multiply. Their reproduction is temperature dependent- it occurs rapidly at warm temperatures (between 86–95°F, or 30–35°C), and slower at lower temperatures. The generated carbon dioxide causes the dough to produce bubbles and rise, while the alcohol evaporates.
Lactic acid bacteria, which greatly outnumber the yeasts, convert sugars to *lactic and acetic acid*, and produce some *carbon dioxide* as well as *aromatic compounds*. Due to drop of pH, which makes the dough noticeably sour, most microorganisms except yeasts that tolerate acid, drop out of competition at this point. Harmful microbes such as enterobacteria or staphylococcus cannot survive in such an acidic environment. The low pH also inhibits mold growth and extends the shelf life of sourdough bread, which is a reason humans used lacto-fermentation to preserve foods.

Last but not least and very importantly, lactobacilli release enzymes that *break down gluten*, resulting in a softer, lighter texture of the dough.
During the slow fermentation process, which should ideally last about 72 hours, but a minimum of at least 24 hours, *anti-nutrients in the flour are broken down and minerals as well as vitamins become available.* In fact, bacteria actively produce *B vitamins*. Therefore, long fermented whole grain sourdough bread is the most nutritious and easily digestible type of bread. Although sourdough bread has been around for centuries it has been replaced to a large extent with commercially made processed bread. Even though some of these products are labeled "sourdough" bread, they have nothing in common with traditional sourdough bread. With the help of commercial yeast they can be produced in a very short amount of time. Commercial yeast is virtually a monoculture of saccharomyces cerevisiae. In contrast, a genuine sourdough culture consists of various types of yeast as well as a lactobacillus-type bacteria.

Gluten, a protein found in whole grains, is probably the most misunderstood ingredient of the past decades and has been used as a scapegoat for numerous health conditions, mostly caused by an overall poor diet. In its pure form, gluten is a hard to digest sticky, gooey mass. During the long fermentation process of sourdough bread, gluten is broken down by a process called *hydrolysis*, in which enzymes break down large, indigestible proteins into smaller amino acids. This allows gluten to develop a web which traps gases, resulting in a fluffy and at the same time easily digestible bread loaf.
People with minor gastrointestinal issues and gluten sensitivity will almost certainly find that they can tolerate long fermented sourdough bread.

2. Soaking/Sprouting/Cooking

Most whole grains including wheat berries, spelt berries, millet or barley as well as pseudo grains such as quinoa, amaranth or buckwheat should ideally be soaked and sprouted before being cooked. Soaking the grains first followed by an oxygen rich environment mimics the natural conditions for germination. During this process, phytase is being activated and breaks up phytates. The influence of heat promotes their breakup even further.

Use the following instructions as a general guide:

- Add 4 cups of grains to a large glass or ceramic bowl. Add as much room temperature filtered water until the grains are completely under water..
- Stir in one tablespoon of an acidic substance such as lemon juice, apple cider vinegar or plant based whey (the clear liquid on top of plant based yogurt).
- Soak: Cover the bowl with a clean kitchen towel and allow it to sit at room temperature for about 8 hours.

Sprout: Pour the grains into a sieve and rinse them well. Now they are ready to receive some oxygen. Leave them in the sieve, - covered with the cloth, for 10-12 hours. I usually soak during the day and oxygenate overnight.
If you only soak the grains you will drown them, metaphorically speaking. Either cook the grains or - ideally- continue sprouting them. Some grains, like quinoa, sprout very quickly and you will most likely spot little shoots even after a few hours. Other grains may need an additional cycle to germinate.

- In this case, rinse the grains again and oxygenate for another 10-12 hours. Some people recommend another full cycle of soaking before oxygenating. I found that rinsing them and keeping them moist does the trick. At this point, you should be able to see little buds appearing.
- Give the grains a final rinse before cooking them. Keep in mind that soaking/ sprouting greatly reduces the cooking time- typically by more than half. Use the cooked grains right away or store them in the fridge for up to three days or in the freezer for up to 3 months.

A special note on pseudo grains such as quinoa and buckwheat

Pseudo grains resemble grains in appearance, but come from a different plant family. Pseudo grains include quinoa, amaranth and buckwheat. Pseudo grains not only contain all nine essential amino acids, which makes them a *complete source of protein*, but also have a high content of protein, fiber and low-glycemic carbohydrates. They are bursting with vitamins and minerals such as calcium, iron and magnesium. Humans have been well aware of their enormous health benefits since ancient times. Pseudo grains were worshiped, for example, by the Aztecs, who loaded up on them before going into battle.

I find that quinoa in particular is a very versatile and easy to handle grain. It sprouts very fast and can be made ahead and stored in the freezer. On average, I sprout and cook a whole package of quinoa once a week and use it in a variety of recipes. I use it as a healthy add-on in pancake and muffin batter, roast it with vegetables and spinach, mix it into salads and eat it with avocado drizzled with cashew sauce. Delicious quinoa recipes can be found in the recipe section of the book.

Grains That Require Special Handling

Some grains are harder to turn into a nutritious food than others, mostly because of their unfavorable phytase to phytic acid ratio.

Brown rice and accelerated fermentation

Brown rice contains *less phytase than other grains*. Soaking alone, even with the help of an acidic medium, doesn't effectively reduce phytic acid. Nevertheless, a study has shown that a modified soaking technique can reduce phytic acid in brown rice up to 96%. This method is called accelerated fermentation.
Here are the ***instructions for accelerated fermentation:***

- Soak 1 cup of brown rice in 2 cups filtered, dechlorinated water for 24 hours at room temperature without changing the water. - Reserve 10% of the soaking liquid and store in the fridge . Discard the rest of the soaking liquid and cook the rice with fresh water.
- Next time you prepare brown rice, use the reserved water and add filtered water until you have a total of 2 cups. Repeat with the next batch of rice. After three cycles, 96 % or more of the phytic acid should be degraded at 24 hours soaking time.

Because of this elaborate technique, one has to be very committed. More than once I felt frustrated because I forgot to save some water and had to start all over. If you have neither time nor desire to use this method, I would recommend choosing white rice instead of brown rice but encourage you to use other, easier to handle, whole grains altogether. A risotto, for example, can easily be turned into a heavenly barlotto using pearl barley as a replacement for rice. Even with the occasional white rice, a balanced whole food plant based diet provides you with plenty of fiber and nutrient rich foods. Think of a coconut curry with lots of different vegetables and dark leafy greens over white rice.

Corn/maize and nixtamalization

Mayas and Aztecs developed a special technique to turn corn into a nutritious food source. They used to soak corn in an alkaline solution by adding lime* (*calcium hydroxide*) or ash to the soaking water. This process, called nixtamalization, has several advantages. It increases the nutritional value of corn by decreasing phytates, improves flavor and texture and removes mycotoxins. If maize (by the way, corn and maize are one and the same) is not nixtamalized, it is a poor source of tryptophan, as well as the B3 vitamin niacin. When corn was imported populations in both Europe and North America were oblivious to this process. The result of a heavily corn based diet in these countries resulted in a terrible pellagra epidemic, which lasted for nearly 4 decades and affected about 3 million people, many of whom died. Pellagra is a chronic niacin deficiency that is characterized by the three catastrophic "Ds": diarrhea, dermatitis and dementia.
The dried and ground nixtamalized corn is called masa harina, which is offered in the U.S., for instance, by Bob's Red Mill. You can either make your own tortillas or arepas (very easy to prepare, see recipe book) from masa harina or look up a company that sells nixtamalized tortillas. We are very lucky to have a company close to our home that produces the most delicious nixtamalized corn tortillas. Tortillas that are available at supermarkets are very different products. They are typically made from low-quality industrial flour (mostly wheat) and contain lots of additives. Be aware that if not stated otherwise, corn tortillas labeled "whole grain", "healthy", "full of fiber", have not been nixtamalized.

*Not to be confused- lime, in this context, does not refer to the fruit but rather to limestone. This mix up has caused some confusion in the past.

Oats

Oats have become a staple breakfast food and are considered to be an affordable and healthy food. Little do most of us know that oats *contain more phytates than almost any other grain*. To make matters worse, they also contain *very little*

*phytas*e. In order to turn oats into an easily digestible and nutritious food, they have to be fermented and cooked.
To ferment oats, use the following steps:

- In a large glass or ceramic bowl, combine 2.2 pounds/1 kilogram of rolled oats with 40%water (400ml). Stir in 1 tbsp of plant whey (see page).
- Cover the bowl loosely with a clean kitchen towel and leave it in a dark and warm spot (e.g. turned off oven) for 24 hours. During colder months, feel free to preheat the oven to 90°F (34°C), then turn it off. Stir the oats every now and then to keep them from clumping together.
- Spread out the oats in a single layer on a dehydrator tray and dry them at 90°F (34°C) for 12 hours. Once dry, feel free to mix them with activated nuts and seeds, dried fruits or make your own granola. Store the fermented oats in a closed glass container.

Because of their unfavorable composition, I recommend replacing oats with other grains altogether, such as rye, buckwheat or spelt flakes.

Use the following guidelines to prepare “spelt meal” or other grain meals:

- Soak rolled grain flakes overnight (minimum of 12 hours, up to 24 hours) at room temperature (77-82° F/ 25-28° C) in plant- based milk and/or warm filtered water, to which you have added one teaspoon of plant whey (the watery part on the surface of plant yogurt) for every cup of grains.
- The next morning, cook them gently until they have reached the desired consistency. Find a detailed recipe in the recipe section of the book

There is also the option of preparing ***Bircher muesli*** using a combination of grains such as rye, buckwheat and spelt. You need to start the fermentation process 24 hours before planning on eating the muesli.

- In a bowl, combine 2 cups of mixed rolled grains (make sure you use rye flakes as they have a higher amount of phytase than other grains), 3/4 cup plant milk, 1 cup water, 1/4 cup apple juice, 1 tbsp plant whey and 1/4 cup raisins. Let ferment at room temperature for about 24 hours.
- Add 1 grated apple, 1 tbsp honey, 3/4 cup plant yogurt, chopped activated walnuts and a dash of cinnamon. Mix well and serve. Store leftovers in the fridge for up to a week.

Note on breakfast cereals:

Commercially made breakfast cereals are unhealthy for a variety of reasons. First of all, most cereals list sugar as the second or third ingredient. Furthermore, the majority of cereals contain mainly genetically modified ingredients such as corn, sugar beets and canola. Finally, they are manufactured by a process called extrusion. After the grains have been mixed with water into a sludge, this sludge is pushed through small holes at high temperatures with added pressure, shaping them into shapes such as flakes, puffs and many more. To finish them off, they are sprayed with oil and sugar to keep them crispy and crunchy. During this process, not only are most nutrients destroyed but also most phytase, the very enzyme that is needed to break up phytate complexes in whole grains. Ironically, even synthetic vitamins which have been added to the sludge are altered during the extrusion process.

Flour- a practical guide/summary on choosing and handling it

- Use flour that has been ground in a stone mill
- The fresher the flour, the more nutritious it is
- Use a combination of different flours including phytase rich rye flour
- Prepare batter/ dough with whole grain flours for baking or cooking the day before and let ferment overnight by adding a tablespoon of live cultures to the batter. Options include a sourdough starter, plant based whey, kombucha and plant yogurt with live cultures.
- If preparing a cake last minute, use refined flours (e.g. spelt, kamut) instead of whole grain flours

- Limit the consumption of modern wheat flour

Bread

The art of making traditional bread has become quite popular again and sourdough bread has recently risen in popularity. Sourdough is one of the oldest forms of fermentation and refers to bread whose dough has risen during the bread making process as a result of gas being produced by microorganisms as the grains ferment. As explained before, yeasts and bacteria feed on the carbohydrates thereby producing lactic acid (sour taste) and gas (carbon dioxide). This symbiotic relationship and the resulting fermented bread (I am referring to whole grain bread here) provides us lots of benefits:

- Improved nutritional profile with more available minerals such as magnesium, iron, calcium, zinc, phosphate and selenium
- Lactic acid bacteria release antioxidants during fermentation
- Improved flavor and texture
- Richer in vitamins, especially vitamin B complexes including folic acid
- Easier to digest due to the degradation of gluten
- High in dietary fiber- vital for gut health
- Lower glycemic index which prevents blood sugar spikes

Note on the side:
The name "sourdough" itself doesn't tell you anything about the duration of the fermentation process. Feel free to ask your baker about the length of their fermentation process- anything more than 48 hours is good but 72 hours would be ideal!

Take home message

- Stick to long fermented whole grain breads, preferably breads with a high proportion of rye.
- Avoid raw grains
- If you don't have time to prepare (soak/sprout) whole grains use refined flours instead.
- Instead of wheat, use a variety of grains including spelt, rye or ancient grains such as kamut

Even though a lot of this information may be new to you, once you have understood the basic principles, the integration of these techniques will be quite easy to fit into your daily routine. All it needs is a little bit of organization and planning ahead. Particularly when starting out, I would strongly suggest using a weekly meal plan to get used to the new routine. To be time efficient, I also recommend preparing larger quantities at once and storing excess in the fridge or the freezer.

2. Legumes

Starches in beans and lentils are very high in the polysaccharide amylose, comprising up to 40% of the starches. Because of its tightly packed helical structure, amylose is more resistant to our digestive enzymes. In order to break up those polysaccharides and turn legumes into easily digestible and highly nutritious foods, it is vital to prepare them appropriately:

- Soak legumes in twice the amount of filtered water for 24 hours, changing the water every once or twice (roughly after 8-12 hours). I change the water in the morning before going to work and when I come home in the evening.
- Transfer the legumes to a mesh and rinse them well.
- Cook them in a pressure cooker, the most effective cooking method for legumes in terms of anti- nutrients. Add an inch long piece of Kombu seaweed to increase the mineral content and add flavor. Cook the legumes until they are very soft- it's better to overcook than to under cook them. Cooking times vary depending on the type of legume. Chickpeas and beans usually take about 25 minutes to cook.

Important note:
Cooking legumes in a slow cooker does NOT sufficiently render them digestible. Precooked beans from the supermarket have most likely NOT been sufficiently (or not at all) soaked or properly cooked. I recommend buying dry legumes (organic

if possible) in bulk and preparing them at home. Preparing a larger batch and storing leftovers in the fridge or the freezer makes them readily available.

3. Nuts and Seeds

Depending on the type of nuts and seeds, their preparation differs. Some of them, such as sunflower seeds, can be sprouted. Others, in particular nuts with hard outer shells or hulls such as pecans or walnuts, cannot be sprouted. They still benefit from soaking as this washes out some anti- nutrients. Walnuts, for example, contain tannins in their brown skin, which can cause a bitter feeling or a sharp taste in your mouth and throat. Soaked walnuts have a much milder taste due to their lesser tannin content.
Sprouting occurs in a moist and humid environment, naturally the perfect conditions for germination. This environment also promotes the growth of bacteria, some of which are potentially harmful to us. The longer seeds are sprouted, the more these bacteria multiply. Our goal is to sprout seeds as much as necessary to reduce their anti- nutrient content effectively but as little as necessary to keep the growth of unwanted bacteria at bay. All we need to do is to kick off the germination process.

General guide for soaking and sprouting nuts and seeds:

- Place seeds in a jar or glass bowl and completely cover with lukewarm filtered water. Cover the jar with a mesh or kitchen towel and soak the seeds overnight.
- Transfer the seeds to a mesh, drain the water and rinse them well.
- Leave the seeds in the mesh, cover them with a clean kitchen towel and let them oxygenate for 6-8 hours.
- Rinse and drain them again. For most seeds, this short cycle is sufficient for germination. For pumpkin seeds, I use another cycle of soaking and oxygenating (repeat step 1-3).
- Enjoy the nuts and seeds right away or dehydrate them and store in the fridge or freezer. After soaking, I like to keep a small amount of moist seeds in the fridge to use within the next three days because we love their soft consistency.

Notes On Specific Nuts And Seeds:

Chia seeds

In order to be digestible and access their nutrients, chia seeds need to be either soaked for a few hours (see recipe section) or ground in a blender or spice grinder. Grind only a small batch (about 1/2 cup) at a time and store in the fridge because they oxidize quickly.

Flax seeds

Flax seeds are true superfoods with amazing protective properties which should be consumed every day. Because of the hardness, they need to be ground or sprouted, just like chia seeds. Only grind a small batch at a time and store in the fridge.

Sprouting flax seeds

- Place 1/2 cup of flax seeds into a glass bowl or ceramic bowl. Add twice as much filtered water and let soak at room temperature for 8-10 hours.
- Pour flax seeds into a mesh and rinse thoroughly for a few minutes until they don’t stick together any more. Use our fingers to swish them around in the mesh while rinsing for a few minutes.
- Hang the mesh over the bowl and let the flax seeds rest and sprout. Every few hours, when they start drying out, give them a good stir and a rinse. They will start sprouting after about 12 hours. As soon as you see small buds appearing, rinse them one more time.
- Drain well and transfer to the fridge. If you only sprout a small quantity of flaxseed, there is no need to dehydrate them. Simply store the moist seeds in the fridge, where they can last for a couple of days. As a serving size, I recommend using one tablespoon per person per day.

Sunflower seeds

These seeds are ideal for beginners, because they sprout very quickly within just one day.

Pumpkin seeds

Preferably, unhulled seeds are used for sprouting. Make sure to stop the sprouting process after the first small buds appear, because longer sprouting will result in a bitter taste.

Walnuts

Tannins, which can cause an unpleasant feeling in our mouth and throat, are located primarily in the skin of walnuts. Soaking walnuts for several hours washes out some of the tannins, leaving behind a softer, more buttery nut. make sure to change the water a few times. Enjoy the drained nuts right away or dehydrate and store them in the fridge or freezer.

Almonds

Almonds can be soaked just like walnuts, but an easier way to render them more digestible is to boil them for a minute, rinse them under cold water and dehull them as most of the anti- nutrients can be found in their dark skin.

Brazil nuts

Brazil nuts are an excellent source of selenium, a mineral with potent antioxidant properties. These nuts cannot be soaked or sprouted. I grate them and add them to our breakfast bowl every now and then.

Reconnect to Your Gut

A healthy gut flora and a well functioning digestive system are key to our health. Hippocrates realized early on that "All diseases begin in the gut". Gut health is tightly linked to the composition of the symbiotic microorganisms which inhabit our digestive system.

Establishing, maintaining and improving gut health

Our bodies are designed for and depend on predictable cycles of eating, sleeping and wakefulness. Even the microorganisms living in our gut exhibit circadian rhythms in both population structure and functional activity. The fluctuations of our body and the fluctuations of our gut bacteria influence each other. These changes are not only limited to night and day time but also to the rhythmic intake of food, the type of foods we are eating, our biological clock and even our gender. Consequently, the cells lining our digestive tract are exposed to these changes.
The richer and more diverse the community of gut microbes are, the lower our risk of diseases and allergies.

The following three factors are essential in establishing and maintaining a rich and diverse gut microbiome:

1. Prebiotics

The name prebiotics basically refers to *fiber*. Dietary fiber is only found in whole plant foods, not in animal derived foods. These plant compounds feed beneficial bacteria in our gut, promote their growth and increase their activity. As a result, bacteria produce nutrients, crucial chemicals including neurotransmitters, such as cortisol, tryptophan, and serotonin, and vital short chain fatty acids, which influence our brain function and behavior as part of the gut-brain axis (see page).

2. Probiotics

Probiotics are *living microorganisms* which can either be consumed as a supplement or- ideally- by the consumption of fermented foods such as yogurt, water kefir, kombucha, fermented raw foods etc (see recipes). Playing a major role in the gut-brain axis, certain probiotics are also referred to as "psychobiotics" because of their ability to enhance our mood, reduce stress and lessen depression and anxiety.

3. Sleep

Our body's circadian rhythm is deeply connected to our *microbiome*.
A healthy gut flora is the key to good sleep because gut bacteria manufacture about 95% of our body's *serotonin* supply. Serotonin is the precursor of the sleep hormone *melatonin*. Besides being involved in the regulation of our internal clock

and our sleep cycles, serotonin also profoundly influences our mood. The production of serotonin is also affected by our exposure to natural light, our food choices and the amount of exercise we get. How long we sleep affects our microbiome in return. A study found that after only 2 nights of just 4.5 hours of sleep, the number of certain beneficial bacterial strains in subjects' digestive tracts were reduced by almost 50%. In addition, the microbiome of the participants began to resemble those of obese individuals and they had a 20% increase in insulin resistance.

Here are some helpful guidelines for establishing a regular sleep routine:

- Regular sleeping hours: Stick to a sleep schedule with the same bedtime and wake up time. This helps to regulate your internal clock, thereby helping you fall asleep and stay asleep for the night.
- Screens off 2 hours before bedtime as blue light signals alertness to our brain, turn off all electronics during the night
- Keep your bedroom dark, using black out curtains or blinds etc if necessary
- Get sufficient sleep: According to the American Academy of Sleep Medicine, adults need between 7 and 9 hours of sleep, teenagers aged 13–18 years should sleep 8–10 hours per 24 hours and children aged 6–12 years should regularly sleep 9–12 hours per 24 hours
- Avoid caffeine after 2 pm if you have trouble falling asleep
- Moderate exercise daily or as often as possible
- Reduce stress: Emotional and physiological stress can affect the composition of the gut microorganisms which in turn negatively affects sleep. Relax and wind down with relaxation techniques such as mindfulness practice or a guided meditation or simply read a book before falling asleep.
- Keep up polyphenol rich foods: Polyphenols are phytochemicals that are responsible for the color of plants and help to protect them from various dangers, typically by acting as antioxidants. Polyphenols favor the growth of beneficial bacteria while simultaneously inhibiting overgrowth of pathogenic bacteria. They are most abundantly found in berries, raw cacao, green tea, plums, cherries, apples, nuts and beans.

Raw Versus Cooked

As mentioned earlier in connection with anti-nutrients, some plant foods are more nutritious when cooked, or can be even outright harmful in their raw state such as beans. Other plant foods are best eaten raw for maximum nutritional benefit.

The following foods are most nutritious when cooked:

- **Asparagus**: Cooking asparagus breaks down its fibrous cell walls, making the B vitamin folate and vitamins A, C and E more available for absorption.
- **Mushrooms**: Exposing mushrooms to heat helps degrade a potential carcinogen called agaritine. At the same time, cooking promotes the release of the powerful antioxidant ergothioneine.
- **Spinach**: Spinach is rich in the anti- nutrient oxalic acid, which binds to minerals. As cooking breaks up oxalates, the bioavailability of minerals such as iron, magnesium, calcium and zinc increases.
- **Carrots**: Carrots are well known for their beta-carotene content, an antioxidant which our body converts into vitamin A. Significantly more beta carotene is being absorbed from cooked carrots compared to raw carrots. Vitamin A is an essential nutrient for our skin as well as our mucus membranes, our immune system, and our vision.
- **Tomatoes**: Cooking greatly decreases their lectin content (lectins being anti-nutrients) while, at the same time, their lycopene availability increases. Lycopenes belong to the same family as beta- carotenes and are powerful antioxidants. Cooked tomatoes contain 2 to 10 times more available lycopene as fresh tomatoes. For maximal nutrient availability, slowly cook them on low heat with a bit of olive oil.
- **Potatoes**: Potatoes belong to the nightshade family. They contain anti-nutrients such as trypsin inhibitors and lectins, both of which can be significantly reduced by cooking. Potatoes also contain glycoalkaloids, which are formed through sunlight exposure and are toxic in large amounts. Cooking, peeling and properly storing potatoes

in a cold and dark place minimizes negative side effects.

The following vegetables are best enjoyed raw for maximum benefit:

- **Broccoli**: Raw broccoli, together with cauliflower, kale and cabbage belongs to the extremely healthy cruciferous family. In comparison to cooked broccoli, raw broccoli contains three times the amount of sulforaphanes, special cancer-fighting plant compounds. If you prefer cooked broccoli, gently steaming broccoli keeps at least part of its sulforaphanes available.
- **Cabbage**: Cabbage is loaded with vitamins, minerals and antioxidants. Cooking cabbage destroys the enzyme myrosinase, which plays a role in cancer prevention.
- **Onions**: In comparison to cooked onions, which still offer plenty of nutritional benefits, raw onion contains an anti-platelet agent. It prevents blood cells called platelets from sticking together and forming a blood clot, thereby aiding in the prevention of heart disease.
- **Garlic**: Raw garlic contains sulfur compounds with anti-cancer properties. These are being destroyed during cooking.

Food Labels

Every time we enter a supermarket, we are flooded with seemingly "healthy" food choices, from ice cream, over granola bars, veggie spreads, dips and dressings, juices to precooked frozen dinners. On closer inspection, most of them are far from being healthy. Just because packaged food products are labeled "organic," "low-fat," "all-natural," and "fiber-rich" doesn't necessarily mean they are promoting long-term health. Usually, they contain unhealthy amounts of added sugars, sodium, oils, artificial flavors, preservatives and other unnatural ingredients.

One of the great advantages of a whole-food plant-based diet is that you don't need to buy processed or packaged foods. Most ingredients are fresh plant foods which don't come with a food label. Other products like flours, grains and legumes are either unprocessed or minimally processed, which leaves little room for misleading information. As long as you stick to a balanced diet which includes a variety of ingredients there is no need to worry about numbers or labels. The combination of whole plant based ingredients provide all the necessary nutrients in the right amounts. In case you do buy processed or packaged foods, reading labels is vital for finding healthy options.

Food labels can be tricky and misleading

Although food labels are important as they inform us of the product's ingredients, they aren't always as transparent and informative as they should be. Food labeling regulations are so complex, that nearly 60% of consumers are having a hard time understanding the information provided. Some food manufacturers are deliberately tricking consumers into buying highly processed and unhealthy products. Their strategy seems to be working- studies have shown that added health claims positively affect consumer behavior.

Don't be fooled by claims on the package

According to a study, 460 out of 633 breakfast cereals had a health or nutrition claim on the package. A claim is a statement that creates a relationship between a product and some type of benefit. These written statements, symbols, vignettes and third party statements are there for a reason. Research has shown that people are drawn to health claims on the cover of a product when choosing their product. Consequently, sales of that product go up. Even simple words like "natural" or "fresh" can be deceptive and persuasive. Such claims influence our perception, even when there is no actual link to nutritional quality. Therefore, it's usually best to completely ignore whatever claims you see on a package and only read the list of ingredients.

Here is a list of the most commonly used sale-booster labels and health claims :

- **"All natural"**: All natural doesn't mean that much. These foods may still contain preservatives, sodium, high fructose corn syrup etc.

- **“Multi grain”**. This only refers to the fact that several types of grains are included, most likely refined grains.
- “Whole grains”. Most of those products contain a rather small amount of whole grains.
- **“Gluten free”**. Gluten- free doesn’t make a product healthy. In fact, supermarket shelves are overflowing with processed gluten free junk food loaded with unhealthy fats and sugar.
- **“Organic”**. This has nothing to do with the nutritional value of the product. Organic sugar is still sugar.
- **“Low-carb”**. Processed foods that are labeled low-carb are still processed unhealthy junk foods.
- **“Low fat”**. Low fat products usually come with a high sugar content. When fat is taken out of it, food tastes terrible. To make the product palatable, sugar is added. Processed foods that are labeled low-fat are still processed unhealthy junk foods.
- **“Zero trans fats**”: Products labeled in such a way may still contain up to 0.5gram per serving. If you consume 2 servings of such a product, the amount of this unhealthy ingredient quickly adds up.
- **“No added sugar”**. Some products are naturally high in sugar like fruit juices. Instead of sugar, unhealthy sugar substitutes may have been added to the product.
- **“Fortified or enriched”**. This only refers to the fact that nutrients like vitamin D or calcium have been added. It still doesn’t necessarily make a product healthy.
- **“Fruit flavored”**. These processed foods usually contain chemicals designed to taste like fruit instead of actual fruits.

Check out the list of ingredients

When reading a food label, keep it simple and stick to the list of ingredients. Product ingredients are listed in order of quantity- from highest to lowest amount.
If the first five ingredients contain refined grains, a type of sugar, or hydrogenated oils, you can assume that the product is unhealthy.
The shorter the list of ingredients, the better the product.
If you are unable to pronounce the name of an ingredient, it’s most likely not a natural and healthy ingredient.
“If it takes a lab to make it takes a lab to digest it”.

Watch out for:

Sodium: An additive we are getting too much of. The amount of salt in mg should be equal or less than the number of calories per serving size. So if you see 100 calories per serving, you want to see 100mg or less of sodium in it.

Fats: Avoid saturated fats and hydrogenated fats (= trans fats).

Carbs: These following terms usually refer to healthy products: sprouted, whole, cracked, stone ground. If you read any of the following words, the product has been refined: bleached, white, enriched, fortified.

Fiber: Choose foods with at least 2-3grams of fiber per serving.

Check serving sizes

Serving sizes are frequently much smaller than what people consume in one sitting, deceiving the consumer into thinking that the food has fewer calories and less sugar. For example, one serving may be half a can of soda, a quarter of a cookie, or a single biscuit.

Watch out for hidden sugars

While some foods include the word “sugar” in their ingredients, many use different words for products that are nutritionally similar to hide the actual amount. Most of us have heard of high-fructose corn syrup, a sugar made from processed corn. But there are also ingredients like “evaporated cane juice”, “brown sugar syrup”, “rice syrup”, “agave nectar”, “dextran” or “malt powder” which are less obvious and amount to the same thing, sugar. In fact, there are over 70 different names for what’s essentially sugar. Choose foods with whole sources of natural sweeteners such as dates, apples, dried fruits (unsweetened), bananas etc.

How to Successfully Switch to a Whole-Food Plant-Based Diet

While some of us might prefer a step-by-step transition, others may opt for a swift dietary change. I belonged to the second group. As soon as I had realized the deep connection between nutrition and health, I simply couldn't prepare meals anymore that I knew were harmful to us. Luckily, my husband was on the same page and consequently, we switched our diet more or less overnight. Right from the start, my biggest motivator was this intense feeling of empowerment that came with the knowledge that we can actively influence our wellbeing.
To assist you in your change I have compiled a list of practical tips that helped us with our lifestyle change.

1. Educate yourself and your family

Read, watch and listen as much as possible regarding a whole-food plant-based lifestyle. The more you know, the stronger your intrinsic motivation for change will be. Explain to your children why you are implementing these lifestyle changes and- age accordingly- discuss the scientific facts. Images are a very powerful tool- watch documentaries together such as ***"Forks over Knives"***, ***"Game Changers"***, ***"Tomorrow"***, ***"Cowspiracy"***, ***"Kiss the Ground"*** and listen to TED talks (find a list of recommendations in the back of the book/here).
Target specific topics that your family members care about. Teenagers who suffer from acne or other skin diseases might be especially interested to hear about the food-microbiome-skin connection and how they can heal their skin with their diet. Have a conversation about the involvement of students in climate change related topics, student initiatives such as "Fridays for Future" and discussions about current news related to climate change and physical and mental wellbeing.
An important topic to discuss with your children is the notorious sugar trap. Cutting down on their consumption of sweet foods may be one of the biggest challenges for your children. With candy being sold, offered and consumed pretty much everywhere and anytime, makes it incredibly hard to resist. Be understanding and offer alternatives as well as rewards for staying away from candy (see page .) may be helpful strategies. Adults and older teenagers may benefit from watching some of the online lectures of Dr Robert Lustig or reading his books about sugar (see appendix ***"The Bitter Truth About Sugar"***).
It may be helpful to know how taste buds work. Taste buds are sensory organs on our tongues with very sensitive microscopic hairs called microvilli. They send information to our brain about how something tastes, whether a food is sweet, sour, bitter, or salty. We possess about 10,000 taste buds which are being replaced every two weeks. Therefore, we can actually retrain our brain to like certain tastes by eating specific foods more frequently. It's like resetting our taste baseline. Encourage your kids to keep trying foods that they don't immediately like. Just as we can acclimate our taste buds to like something new, we can also change them to start disliking something. Take sugar, for example; once you have started cutting down on sugar, even a small amount may taste overly sweet. One study found that participants on a low-sugar diet perceived foods as noticeably sweeter after four weeks. Changing our taste buds is a process and might not feel particularly good the first few days. Knowing that this is just a two week temporary phenomenon makes it easier to persevere. To outsmart your brain, only eat when you are really hungry simply because everything tastes better when we are hungry.

2. Find support

Being supported by family and/ or friends can be of tremendous help during times of lifestyle change. If your environment proves not to be supportive, connect with people on line. You'd be surprised by the sheer number of like minded and helpful people. When I realized just how much our diet influences our health, I was absolutely convinced that my friends would be just as shocked. The association between dairy products and breast cancer in particular was such a wake up call for me. I just could not- and to this point still can't- understand how any mother can ignore this eye opening piece of information. Even worse, my friends were annoyed by my bringing up this- and related- topics. Not even the fact that I had a medical degree helped matters. Consequently, I felt lonely and isolated and as a result, distanced myself from my friends. To find support and get everything off my chest, I started a food blog and immediately felt that I was not alone. I was utterly surprised to find such a huge community of like minded people. One of the largest support groups is the nonprofit organization **Plant Based Nutrition Support Group**, which offers information, recipes, tips and virtual meetings.

3. Get the whole family on board

We as parents are the first and most important role models in the lives of our children. The way we lead our lives directly impacts our kids. Children are far more affected by our actions than our words. The younger our children are, the easier it is to introduce them to a healthy lifestyle. They will observe and simply copy our behavior. The older kids are, the more

they are subject to their environmental influences and the more creative we have to be in finding the right approach. Some children may be more open to new foods, while others are more reluctant or even resistant to dietary changes. Generally speaking, the more motivated, enthusiastic and proud we ourselves are, the more our positive attitude will rub off on our children. Although there is no strategy that works for every kid, here are some ideas targeted towards different age groups that have proven to be quite effective in my experience:

4. Have fun together

This is probably THE most valuable advice I can offer.
For younger children let your imagination go wild. My children loved to listen to stories while they were eating. One of our kids' favorite stories with numerous episodes involved a large pea family with fifty children. They all went to an amusement park and pushed each other aside in order to be the first one going down the most epic slide called The Esophagus. They slid down one by one, tumbled upon one another, squished grumpy zucchini dad in the stomach… our kids laughed so hard they could hardly eat. It's incredible how often children demand that you repeat the same story over and over again!

Read fun picture books with your children such as "Charlie and Lola- I Will Not Ever Never Eat a Tomato" and make up funny names together for fruits and veggies like green drops or cloud fluffs. In fact, a study has shown that a larger percentage of children tasted novelty health foods that were labeled with a funny name.

Explore your neighborhood and make your children curious about their environment. Take them outside to explore nature, show them how fruits and vegetables are grown and open their eyes to the natural magic that's happening all around us.

Take them grocery shopping and let them select a new fruit or vegetable. Some plant foods look truly amazing- our daughter was always drawn to rainbow chard and dragon fruits, while our son was fascinated with choosing the most perfectly ripe watermelon by smelling the different fruits and knocking on them. The riper the fruit, the more hollow the sound.

Blindfold your kids and have food tastings. Make them experience different tastes and textures, have them describe and guess what type of plant it is. This fun game might also come in handy if kids are being put off by the color of foods or drinks like, for instance, a dark green purplish smoothie. They might enjoy the sweet banana berry taste and come to realize that the color of a food isn't necessarily connected to its taste.

Let kids help in the kitchen and teach them how to snap green beans and peas, break off broccoli florets, use a salad spinner, tear
up leaves, massage kale leaves or smash avocados. Older children and teenagers can be in charge of preparing a plant based meal of their choice once a week.

Grow your own veggies or herbs- you don't necessarily need to have a backyard. A variety of fruits and vegetables thrive in an indoor environment or on balconies such as herbs, tomatoes, micro-greens, avocados and lemons.

Get a worm composter for the kitchen and teach your kid how worms turn plants into fertilizer.
Find a community garden or a similar project that you can join, that way connecting with like minded families.

If your teenager enjoys writing, encourage her to write down her new lifestyle experiences in a notebook, write a dairy or even start her own blog.

Look up like minded teenage bloggers, vegan celebrities, professional athletes and musicians to show your teenager that a whole-food plant-based lifestyle is actually very cool and trendy.

Find and check out organic or plant based cafes or restaurants.

Find a yoga studio for you and your teen.

5. Celebrate success

Once you have achieved a certain goal from the reconnect program, have a family movie night, take a weekend trip etc. Acknowledge that change can be hard at times. Be determined in your efforts knowing that it's the best that you can offer your family but provide lots of empathy when things become hard, especially for your kids. Work together to identify difficult situations and find strategies to tackle them.
Figure out everyone's preferences. We all experience tastes and textures differently. Together, find out whether your kids prefer raw or cooked vegetables, crunchy or soft ones, with dip or plain, yogurt with fruits or fruits on the side, etc. Our daughter, for example, used to love all sorts of crunchy raw vegetables and creamy yogurt with berries. Our son, on the other hand, preferred roasted veggies layered in a sandwich with cream cheese and disliked anything soft and mushy for breakfast.
Give your children plenty of choices (see below).

6. Use weekly meal plans

The majority of plant-based meals are prepared at home. At times, cooking may feel like a pleasurable experience and you might be in the moods for trying out new recipes. Other times, having to come up with a tasty meal idea for every single day of the week can be quite challenging. The dreaded question of "What am I going to cook tonight or tomorrow" can mostly be avoided by sticking to a weekly meal plan. Especially during the first few weeks and months on a whole-food plant-based diet, recipes may not come easily to you.
Weekly meal plans offer a lot of benefits:

- They assist you in being organized, shop efficiently and have all the necessary ingredients at home.
- They make it easier for everyone to pitch in an idea and pick something they really like.
- They facilitate the preparation of a balanced diet with a wide variety of different ingredients. For example, adding an Asian dish to your meal plan once a week can cover your weekly supply of nutrient rich seaweed and fermented miso. A balanced weekly meal plan should generally include ample amounts of leafy greens, seaweed, different grains, nuts, seeds and vegetables. A weekly meal plan limits the need for less nutritious "emergency" foods like processed or precooked meals, which we unavoidably fall back on if we don't know what to cook or run out of ingredients.
- Weekly meal plans help with the timely preparation of ingredients. I usually prepare plant based milks, yogurt and cashew cream cheese once a week, usually on Friday afternoon and soak grains and legumes on Saturday afternoon/ evening so I can cook them on Sunday evening. A weekly routine greatly helps to fit the different preparation steps into your schedule and I encourage you to find a routine that works for you. Most of these steps take up little time and it's just a matter of finding the time to carry them out.

In the last part of this book I have provided four weekly family meal plans with recipes and corresponding shopping lists to get you started. Naturally, the more plant-based meals you prepare, the more you'll be able to adjust these meal plans according to your family's taste and the more fun you'll have discovering new dishes.

7. Give yourself time to adjust

Our evolutionary system is seeking caloric dense foods to ensure our survival. The more dopamine we have in our system, the more we need. This mechanisms is caused by neural adaptation and is called habituation. In comparison to high caloric foods natural plant foods cause less dopamine release and our bodies need about 8-10 weeks to get used to healthy dopamine levels. To ease the transition phase here are a couple of practical tips:

- Wait until you are really hungry before you eat. Everything tastes much better when we are hungry. You can even drink water for one day before starting with a plant-based diet.
- Feel free to add a 1-3 day healthy juice cleanse (available online, make sure it´s a healthy program with lots of vegetable juices and little fruit juices!). By reducing our sodium and fat intake we sensitize our fat and sodium receptors.

The Power of Choices

I included this part about choices because it helped us tremendously with a variety of challenges we faced as a family over the years. You will find that during the book, I will keep coming back to this concept, because it will greatly facilitate a lifestyle change with children- or even a partner who may not be as open to healthy changes as you are.

As grown ups we have become used to organizing and planning our days as well as to make hundreds of decisions day in day out. Naturally, we want what's best for our kids and tend to organize their lives as well. Too often, we don't realize that by imposing our choices on our children, we are denying them the development of a number of crucial life skills. Part of growing is to learn that decisions have consequences, to enjoy the good ones and deal with unfortunate outcomes.

As parents, presenting options may be the single most useful tool to manage life with children. Choices can be implemented fairly easily into everyday life, there are no costs involved and- as a free bonus-, it can make your life quite entertaining. Many years ago, before "giving choices" became more mainstream, my husband accidentally came across a book called **Love and Logic**, which illustrates the benefits of letting children decide and experience the consequences of their actions. The book offered us a completely new perspective on parenting, and made so much sense to us that we embraced the concept right away. To this day, I still feel that was one of the most beneficial decisions for our family. The Love and Logic concept led to less arguments and a more relaxed and happy family life.
In essence, this approach includes:

- Presenting choices
- Showing empathy
- Delivering consequences

Letting your children decide by themselves benefits them in multiple ways:

Kids feel in control, which is a very natural human desire. Being empowered avoids unnecessary tensions and fights at home as it redirects possible anger away from you. After all, the kid has made the decision and you are simply a messenger delivering a necessary consequence. Also, giving choices doesn't allow for a no answer.

By allowing your children to make choices, you show them respect.

Feeling in control builds confidence.

Kids learn the decision making progress, experience the outcome of their actions and learn how to deal with consequences. Especially uncomfortable and undesired consequences have a tremendous learning potential. Insofar, parents should embrace every poor choice they make, true to the motto every problem presents an opportunity.

Kids who are allowed to make choices use their creativity, foster their abstract thinking and develop essential problem solving skills.

Implementing choices has powerful effects which are not limited to any age. Give it a try in your professional life but be careful when applying the concept to your partner. My husband was not amused when I asked him whether he wanted to bring out the trash before or after dinner.
The more choices you present yo
ur kids with throughout the day, the better. If something is really important feel free to say "You got to choose all day, now it's my turn to choose." Even though we are handing over the power of making a decision to our children, we are still the ones selecting their options.

Above all, stick to the following guidelines:

Keep it simple with limited options: either/or questions work best. Too many choices are confusing and distracting.

Your options should make sense. Giving a choice like "You can either wash my car or drink a green smoothie" may not work effectively.

Have fun and be creative. Coming up with choices and consequences can actually be quite entertaining. It doesn't necessarily mean you're taking the topic lightly.

Above all, show empathy. Remember how hard it is to deal with an undesired outcome. Instead of saying “I told you so”, hand back the problem “What are you going to do about it?” or “That must be really hard for you”. Use words like “I am sure you’ll figure it out”. If you- in the heat of the moment- can’t say anything truly empathetic and nice, don’t say anything at all.

You don’t need to react right away. Sometimes, it’s best to delay a consequence by saying “I need some time to think about it and will let you know later”

Delivering positive consequences is as important as negative ones.

Here are some choices connected to our lifestyle change topic:

“Would you rather eat your greens as a salad or have them in a smoothie?”

“Would you rather have a green bowl or a yellow bowl”

“Would you rather have carrot sticks or cucumber sticks as snack”

“Would you prefer the nuts and seeds in a smoothie or in your yogurt bowl”

“Beans or green?”, “Burritos or red beans and rice?”, “Apples or pears?” “Quartered or sliced?”… “Blackberries or blueberries?”

“Mindfulness or yoga?”

“Mindfulness in the morning or in the evening?”

“Would you like to take a walk before or after dinner?”

“On the weekend, would you rather go on a bike ride or go hiking?”

“Would you like to turn off your electronic devices after dinner or before bedtime?”

Challenges with Children

Switching to a whole-food plant-based lifestyle can be quite challenging, more so when you have children. Over the years, I found that most of us struggle with similar issues and I hope to have included a few ideas that may help you deal with some difficulties. Most of the strategies are targeted towards younger children but can be adapted for older kids and teenagers.

Challenge Number 1: Your Child Is A Picky Eater

Firstly, and most importantly, be a role model. You can’t preach what you don’t practice yourself. If everyone in the family eats the same way, kids will regard these foods as normal.
Secondly, use choices such as “Would you like peas or corn ?” or “Would you rather eat the lettuce or have it in a smoothie?” Thirdly, explain -age appropriately- why you are changing your diet. For more scientific explanations, a few great websites for children explain important topics such as the greenhouse effect, the effect of sugar on their bodies etc.
I recently downloaded a 3D app about the human body that illustrates how our individual organs look and function, how arteries clog up and what a heart attack or diabetes is. It’s also important to discuss the pressing issues of today’s world such as protecting the oceans or the meaning of sustainability. Make sure to use positive words and discuss how the children can contribute to a cleaner environment. Finally, actively involve the children when grocery shopping, take them to farmer’s markets and get to know the people who grow their food. Use their natural curiosity and challenge their senses.
Planting and exploring certain foods proved to be a fun project for our children. For example, we grew aloe vera plants and the children learned how to cut open the leaves and remove the gel from the inside. In summer, we rubbed the gel on to our skin to rehydrate from the outside and added it to our smoothies to rehydrate from the inside.

Challenge Number 2: Eating Out

You’d be surprised by the number of plant-based food options you can find at almost every restaurant. Most of them offer at least some veggie side dishes, salads or pasta (avoid creamy pasta sauces). During the last decade, more and more health food restaurants have opened up as well. Eating out should always be a pleasant experience. We don’t eat out that often as we love to cook at home, but if we do, we want it to be an enjoyable experience instead of a frustrating occasion. Therefore, we always check out the menu ahead of time to make sure we end up at a suitable restaurant which offers a variety of plant based choices.

Challenge Number 3: School Foods

When our children were younger, I used to send snacks and lunch to school every day because unfortunately, the majority of meals provided at the school were unhealthy and had little nutritional value. When our daughter was in preschool, a chef at her school prepared the children's daily meals; although freshly prepared, these were not healthy food options and meat, for example, was part of everyday menu. For a couple of weeks, I followed the school's meal plan but provided our daughter with plant-based versions of these meals. After this brief period, she announced that it was not necessary for me to go through all the trouble and that she was perfectly fine bringing her own, different lunch and snack. She actually felt quite proud about eating healthy foods.
What worked for her does not necessarily apply to every child. Our son, for example, did not want to stick out and so his lunch box ingredients had to look like everybody else's. He was afraid that other children would comment on his food. So I sent sandwiches and cookies along, all of which were whole-food plant-based except for the occasional vegan cheese slice. For older kids, I would recommend discussing different options and finding a solution together. For example, now that our son is older, I send sandwiches along on most days (which his friends love, by the way) but he can choose to have hot lunch at school as well. Luckily, at his school, there is always a plant-based option.

Challenge Number 4: Parties

Parties only happen once in a while and the children are very much looking forward to these events. The least I want is to spoil the fun or alienate them from their friends by sending them different foods along, requesting special foods or even forbid them to eat certain foods. Kids´ birthday parties always seem to include the most unhealthy foods like candy, sugar and cream filled cakes, juices and soft drinks, meat and fries. We had only one rule for our children when they were younger: to stick to water and avoid soft drinks. Complying with this rule proved to be very easy for them as they grew up without soft drinks, never really tolerated them well and felt sick after their consumption.
Food wise, they were allowed to pick whatever they wanted. However, my extremely successful trick was to fill them up with lots of nutritious foods before the party. As a result, they felt too full to care much about the unhealthy party food.

Challenge Number 5: Sweet Treats And Rewards

One might think that the abundance of documentaries, books, and articles on the negative impact of sugar would change our relationship with sweets. On the contrary, at tennis camps, ballet lessons, parties or friends, sweet treats are still used as rewards and giveaways. I am actually quite annoyed by this omnipresence of sugar. A harmful substance should never and under no circumstances be considered a treat. It is too much to ask of children to politely decline this sweet poison which is being waved right in front of their faces. Neither was I pleased to be viewed as the " mom, who always says no". I did what was in my power, like bringing stickers to school to be used instead of candy or working out a compromise with our kids to get a sweet treat every third tennis lesson instead of every lesson. I also swapped treats for small toys, movie nights or iPad time. For Halloween, our kids picked three of their favorite treats and exchanged the remaining sweets for cash, which they used to buy themselves something at the toy store the next day.
We can still satisfy our kids´sweet desires by preparing naturally sweet treats such as ice creams, popsicles, puddings etc. You´ll find recipes and ideas in the last chapter of the book.

Food Myths

The Oxford dictionary describes a myth as "something that many people believe but that does not exist or is false". Let's clarify the most common dietary myths.

Myth Number 1: Humans Are Meant To Eat Meat

To put that statement in perspective, let's compare the anatomy and physiology of our cat Stella to mine.

- First of all, the length of Stella's intestine is only as long as her body. This design prevents toxic byproducts from the digestion of meat from lingering in her body longer than necessary. In comparison, the length of my intestine is about 8 times the length of my body.
- Stella has very pointy, long and sharp canines and can open her mouth only vertically. I, on the other hand, can move my lower jaw to the left and right side in order to grind my food. Also, my canines look nothing like

Stella's.

- Stella's digestive enzymes differ substantially from mine.
- Even our stomach acids display a different level of acidity.

Researchers have come to the conclusion that, anatomically as well as physiologically, I- and the rest of the human race- belong to the group of frugivores or fruit eaters, together with some monkeys and birds. Just because we are able to survive on a large variety of different foods doesn't imply that all foods are beneficial for us.

Myth Number 2: A Whole-Food Plant- Based Diet May Harm Your Child

At some point you will inevitably hear that a diet devoid of animal products may be dangerous for your children. In the latest edition of his famous book "Baby and Childcare", the most influential pediatrician of all times, the late Dr. Benjamin Spock, stated ''We now know that there are harmful effects of a meaty diet'' and ''Children can get plenty of protein and iron from vegetables, beans and other plant foods that avoid the fat and cholesterol that are in animal products.'' As for dairy foods, Dr. Spock stated, ''I no longer recommend dairy products after the age of 2 years. Other calcium sources offer many advantages that dairy products do not have.'' Furthermore, Dr. Spock emphasized that a plant-based diet reduces the risk of children developing heart disease, obesity, high blood pressure, diabetes and certain diet- related cancers.
I find it quite alarming that so many of our colleagues still scare parents away from a healthy nutrient rich plant-based diet when their traditional arguments are no longer scientifically valid. How can doctors still recommend and defend a traditional Western diet when we know that iron uptake from animals does not undergo our body's regulatory mechanism and that, in fact, high animal iron intake is related to esophageal cancer, when we know that heart disease is not only associated with the intake of animal products but already starts during childhood, when we know that animal protein promotes cancer growth, when we know that processed meats like sausages, ham etc are classified carcinogens, when we know that a high dairy intake is associated with high rates of hip fractures and when we know that environmental toxins bio accumulate in meat and fish?

Also, nobody takes into account or discusses the amount of processed and unhealthy foods typically found in a typical Western diet. A reflection of this poor diet can be seen on the kids´menu sections of restaurants- rarely can we find vegetables and fruits. Usually, the menu consists of fries and some type of meat or fish. Most of the kids I encounter every day eat a very limited variety and amount of fruits and vegetables. Yet, there seems to be no public concern or discussion. Yet, when I mention that our kids have been raised on a whole-food plant-based diet, doctors seem to be very concerned about the well-being of our kids. Being a physician myself, I can deal with these reactions but I can understand that most parents may give in to these comments because they become afraid of harming their children. Usually, just to avoid unnerving confrontations during check ups , I don't even bother mentioning our diet.

According to the current state of science, a whole-food plant-based diet is still the best diet we can adhere to.
Our own children have been on a plant-based diet for years, are thriving, growing in a healthy way, don't have any nutrient deficiencies, are rarely sick, slim and fit, show empathy and respect for other living beings and are very much aware of our environmental problems.

Myth Number 3: Plant Protein Is Inferior To Animal Protein

Somewhere along the line people got this idea that meat is the only food that contains ample amounts of protein and that animal protein is superior to plant protein. Both arguments are simply common disbeliefs. Overall, the importance of protein is overrated. The average adult only needs about 45 to 60 grams of protein a day. To put this into perspective, a cup of lentils already contains about 18 grams of protein. To top it off, all plant foods including veggies, fruits, grains, nuts and seeds contain protein. In terms of components, there is no difference between animal and plant proteins. They are both made up of amino acids, and they both contain the same 22 amino acids. However, the ratio of these amino acids is different. It is commonly cited that "plant foods aren't complete proteins," referring to the fact that they don't contain all of the essential amino acids. For once, there are plenty of complete vegan protein sources such as quinoa, pumpkin seeds, chia seeds, and hemp seeds. But even more important is the fact that we rarely snack on one and the same ingredient all day long. Rather, we combine different ingredients into a whole symphony of foods. We have to look at the larger picture and take into account the sum of our foods.

Nevertheless, it is true that meat is more likely to contain all essential amino acids. But remember that animal protein is not necessarily healthy and is always accompanied by unhealthy substances such as saturated fat, cholesterol, choline and carnitine (see Part I Disconnected).

Myth Number 4: A Plant-Based Diet Provides Insufficient Calcium And Causes Weak Bones

As explained before, quite the opposite is true. *Dairy products are linked to weak bones.* A 12-year Harvard study of 78,000 women, those who drank milk three times a day actually broke more bones than women who rarely drank milk. There are plenty more studies that prove that a *higher dairy consumption is linked to a higher rate of osteoporosis and hip fractures*. People with the highest dairy product consumption have approximately double the risk of hip fracture compared to those with the lowest consumption. On the other hand, plant foods are alkaline and no calcium is lost during their consumption. Therefore, the most useful calcium sources are green leafy vegetables and legumes, or "greens and beans", for short.

Myth Number 5: A Plant-Based Diet Lacks Iron

Iron found predominantly in blood and muscle tissue of animals differs from iron found in plants. Our iron levels are tightly regulated by different chemical circuits and feedback loops. Unlike other minerals, iron levels are only controlled by absorption. Iron can be considered a double edged sword- too much of it contributes to premature depth as iron generates cancer- causing free radicals. Too little iron, on the other hand, causes anemia. In contrast to animal heme iron, non-heme plant iron If you don't have enough iron in the blood, our bodies boost iron absorption in the intestine. If our iron levels are sufficient, absorption is decreased. This beneficial regulatory system only works extremely well in the case of plant based non-heme iron, not so much with animal heme iron. This is why heme iron is associated with cancer, heart disease and a higher risk of diabetes. Compared to heme iron, plant non-heme iron is less efficiently absorbed by humans. In 2019, global anemia prevalence was about 30% in women of reproductive age. Studies have shown that *women who eat plant-based diets do not appear to have higher rates of iron deficiency* compared to women who eat a lot of meat. Still, women of reproductive age need to ensure adequate iron intake. The healthiest sources of iron are whole grains, nuts, legumes, seeds, leafy green vegetables and dried fruits. Make sure to combine these foods with vitamin C rich plant foods as vitamin C increases iron absorption. The amount of vitamin C in one orange can enhance iron absorption between 3-6 times!
Iron supplements have been shown to cause oxidative stress, so it's always best to first address an iron deficiency with dietary changes.
Tea and coffee, on the other hand, are considered to be the strongest inhibitors of iron absorption. A cup of tea reduces iron absorption by about 75%-80%, and a cup of coffee by about 60%. The stronger you make them, the greater the effect will be. So it's best to avoid tea and coffee while eating and wait with their consumption for a couple of hours before and after a meal.

Supplements

Adhering to a balanced, whole-food plant-based diet provides you with all the necessary nutrients while minimizing your exposure to harmful food components such as saturated fat, cholesterol and sodium. Still, in our modern world, there are a couple of issues that need to be addressed:

Vitamin B12

Due to the current conditions of our soil and our sanitary standards, it's vital for everyone on a plant-based diet to supplement Vitamin B12. The only reason people who eat meat do not have to supplement is the fact that farmed animals are being supplemented.

Recommendations for adults under age 65: 2500microgram (mcg) once a week (or 250mcg once a day). Taking too much is not an issue, because our bodies will just pee it out.

Over the age of 65: increase dosage up to 1000mcg a day as we absorb less as we age.

For children and infants (you can adjust the daily dose to a weekly dose):

1-3 years: 5 mcg/day
4-10 years: 10 mcg/day

11+ years: 50 mcg/day

From the two available sources of vitamin B12 *cyanocobalamin* and *methylcobalamin* make sure to pick the first one as there is insufficient evidence for the absorption of the latter one.

Vitamin D

We get vitamin D from sufficient exposure to sunlight. Due to the fact that most of our body is usually covered by clothes or sunscreen, and that most of us live in a colder climate, we have to supplement this extremely important vitamin. I recommend supplementing throughout the year as vitamin D plays such an essential role in many chemical processes in our body. If you are interested in the why and how I can strongly recommend the videos by renowned researcher and physician Professor Dr. Jörg Spitz.

Vitamin D supplements come in different forms. We prefer liquid drops of vitamin D which are combined with vitamin K2 due to their synergistic effects from organic sources.

Ideally, if you have not supplemented in the past, you would want your serum vitamin D level to be assessed before you start taking vitamin D. Levels of 50 nmol/L (20 ng/mL) or more are sufficient for most people. If necessary, you have to start with higher doses of supplements to get your levels corrected before you switch to the regular dose.

Recommended dose:

For adults: 2000 IU (international units) vitamin D3 supplement each day

For kids: 1000 IU/ day

References

Crystal Smith-Spangler, MD, MS, Margaret L. Brandeau, PhD, Grace E. Hunter, BA. Are Organic Foods Safer or Healthier Than Conventional Alternatives?
A Systematic Review. https://doi.org/10.7326/0003-4819-157-5-201209040-00007

Chai W, Liebman M. Effect of different cooking methods on vegetable oxalate content. J Agric Food Chem. 2005 Apr 20;53(8):3027-30. doi: 10.1021/jf048128d. PMID: 15826055.

https://www.insead.edu/newsroom/2019-food-packaging-claims-mislead-consumers-with-ideas-of-health
U.S. Department of Health and Human Services. Bone Health and Osteoporosis: A Report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, Office of the Surgeon General; 2004.

Feskanich D, Willett WC, Colditz GA. Calcium, vitamin D, milk consumption, and hip fractures: a prospective study among postmenopausal women. Am J Clin Nutr. 2003;77:504-511.

Tiwari AK, Mahdi AA, Chandyan S, Zahra F, Godbole MM, Jaiswar SP, Srivastava VK, Negi MP. Oral iron supplementation leads to oxidative imbalance in anemic women: a prospective study. Clin Nutr. 2011 Apr;30(2):188-93. doi: 10.1016/j.clnu.2010.08.001. PMID: 20888091.

Fonseca-Nunes A, Jakszyn P, Agudo A. Iron and cancer risk--a systematic review and meta-analysis of the epidemiological evidence. Cancer Epidemiol Biomarkers Prev. 2014 Jan;23(1):12-31. doi: 10.1158/1055-9965.EPI-13-0733. Epub 2013 Nov 15. PMID: 24243555.

Cook JD. Adaptation in iron metabolism. Am J Clin Nutr. 1990 Feb;51(2):301-8. doi: 10.1093/ajcn/51.2.301. PMID: 2407101.

Yang W, Li B, Dong X, Zhang XQ, Zeng Y, Zhou JL, Tang YH, Xu JJ. Is heme iron intake associated with risk of coronary heart disease? A meta-analysis of prospective studies. Eur J Nutr. 2014;53(2):395-400. doi: 10.1007/s00394-013-0535-5. Epub 2013 May 26. PMID: 23708150.

Chapter 2

Reconnecting to Ourselves and the People Around us

Blue Zones and a Healthy Mind Platter

In this chapter, we'll be focusing on the different aspects that promote a healthy mind. Far too often, we prioritize physical well being at the expense of mental health. Instead, we should identify and address the underlying factors that promote mental well being. In our modern digitalized world, our mind has much to deal with. We are constantly connected to the whole world, flooded with information, and quite often stressed out by too many tasks that need to be tackled. Multi-tasking and its associated fragmented attention combined with the feeling of being overwhelmed with information frequently results in inner emptiness and feeling lost. Chronic stress negatively impacts our health, which puts even more strain on us and once in it, this vicious cycle does not seem to stop. Instead, we should learn how to take care of us despite all this craziness around us. But how and where to start? Maybe by finding someone who has figured out how to live a happy and fulfilled life and learn from him.

A few years ago, a few scientists, led by Dan Buettner, set out on a National Geographic expedition to discover the secrets of longevity. They identified five places around the world including Okinawa, Japan, and Loma Linda, California, where people consistently live over 100 years old and enjoy a high quality of life throughout their lives. The places were named ***Blue Zones***. The centenarians of the Blue Zones displayed nine commonalities which Dan and his team referred to as the **Power 9**. These common denominators are believed to reduce stress, keep us healthy and slow down our aging process :

- **Moving around:** People from the Blue Zones are not running marathons. Instead, they tend to their gardens, run errands and simply move around a lot.
- **Purpose**: The Okinawans call it Ikigai, which translates to "The reason I wake up in the morning." A purpose in life adds on average an extra seven years to our lives.
- **Downshift**: People in the Blue Zones experience stress like everyone else, but they have different strategies to tackle and reduce it. These include practicing mindfulness, gardening, spending time in the sunlight, laughing a lot, meeting friends and taking a nap during the day.
- **80% rule:** People in the Blue Zones stop eating when they are 80% full. They also eat their smallest meal in the late afternoon or early evening, and do not eat any more for the remainder of the day.
- **Plant-based diet:** The diet primarily consists of plant based meals with lots of legumes such as beans and lentils. Small amounts of meat are only consumed about 5 times a month.
- **Wine**: Almost all people of Blue Zones (except Adventists) drink one to two glasses of wine on a regular basis, almost every day, mostly in the company of friends and/ or with food.
- **Feeling of belonging**: Almost all centenarians were part of a larger group of people.
- **Putting their families first:** Taking care of their children, committing to a partner and caring for their parents and grandparents seems to play an important role when it comes to longevity.
- **Social support:** The world's longest lived people are part of social circles that support healthy behaviors, Okinawans have created so called ***Moais***—groups of five friends they commit to for their entire life. They support and encourage healthy habits and behaviors among each other. From the Framingham study we

learned that smoking, obesity, happiness, and even loneliness are contagious. The same applies to healthy behaviors- the more people around display healthy behaviors, the more likely you will adhere to them as well.

If we become aware of the full spectrum of beneficial mental activities, we can learn how to implement them into our daily routines just like we add nutritious foods to our diet. With the right environment, our brain is given the chance to develop in different ways. The psychologists Dan Siegel and David Rock have compiled a list of seven essential mental activities, which should be integrated into our everyday routine, just like eating nutritious foods. Hence the name ***"healthy mind platter"***. These activities seem to improve the functions of our brain and have been shown to slow down mental decline by promoting mental flexibility. As you will see, these activities reflect the lifestyle of people in the Blue Zones.

The **Healthy Mind Platter** includes the following activities:

1. Focus time
2. Play time
3. Connecting time
4. Physical time
5. Time in
6. Down time
7. Sleep time

"These seven daily activities make up the full set of "mental nutrients" that your brain and relationships need to function at their best. By engaging every day in each of these servings, you promote integration in your life and enable your brain to coordinate and balance its activities. These essential mental activities strengthen your brain's internal connections and your connections with other people and the world around you."

Dr Siegel

1. Focus Time

When we concentrate on tasks in a goal-oriented way, we promote the establishment of deep connections in our brain. Focus involves our ability to pay close attention while at the same time avoid distractions that will compromise our task. For example, to finish a school or work assignment, we need to focus on the relevant information that will comprise the assignment. At the same time, we must try to avoid typical distractions such as feeds, emails, being hungry or tired, and block out people or noises around us. Focus is the gateway to all thinking: perception, memory, learning, reasoning, problem solving, and decision making. Without good focus, all aspects of our ability to think will suffer. Without focus, we won't be as productive, the quality of our work suffers and we are wasting time.
According to current research, the average attention span of American adults has continuously dropped within the last decades and is now limited to 20, 10, or even just five minutes. Due to the persistent daily flood of stimuli competing for our attention, it seems that our brain somehow rewires itself to better accommodate this rapid pace and kind of shuts down. Luckily, thanks to the plasticity of our brain, it can be retrained just like we train our muscles.

Here are a few exercises that will help to increase your ability to focus:

- Gradually increase the length of your focus
- Start out with a fairly easy goal and work your way up from there. For example, set a timer for 5 or 10 minutes and focus exclusively on one task, such as reading a book or an article or focus on your work. Then take a 2-5 minute break before focusing for another 5-10 minutes. Each day, add 5 minutes to your focused time until you can focus for 45 minutes straight, after which you can allow yourself a 15 minute break. Once you get comfortable, work on lengthening your focus time while decreasing your break time.
- Train your memory

- Remember when we had to memorize poems at school? Memorizing poems is actually a great way to exercise your mind. Recently, poems have become quite popular again and every bookstore offers a wide range of remarkable modern day poetry.
- Read
- Instead of scanning the headlines or finishing an article half way, read entire articles or books. Despite the fact that the reading of e-content has generally gone up, Americans read way less than they used to. Only 5% of readers who start an article actually finish it. A recent survey showed that 25% of Americans didn't even read a single book in 2019. Complex ideas, whether fictional or non fictional cannot be squeezed into a short story or an article and require an entire book.
- Be curious
- The more curious you are about something, the more it catches your interest and focus. William James, American philosopher and psychologist, has shown in a simple experiment how curiosity can extend focus on a subject: "Try to attend steadfastly to a dot on the paper or on the wall. You presently find that one or the other of two things has happened: either your field of vision has become blurred, so that you now see nothing distinct at all, or else you have involuntarily ceased to look at the dot in question, and are looking at something else. But, if you ask yourself successive questions about the dot- how big it is, how far, of what shape, what shade of color, etc.; In other words, if you turn it over, if you think of it in various ways, and along with various kinds of associates- you can keep your mind on it for a comparatively long time." (Talks to teachers, Chapter II Attention, William James)
- Listen
- Attentive listening strengthens our concentration skills. At the same time, paying attention to what somebody is saying is one of the simplest and most powerful things we can do for another person. Giving other people undivided attention makes them feel respected and recognized, improves the quality of our relationships and can transform an ordinary conversation to one that fosters growth and higher self-esteem. Attentive listening involves putting electronic devices aside and resisting the urge to interrupt or assist.

Be mindful

Mindfulness is a very simple yet powerful strategy to exercise your mind. It means slowing down by focusing on the moment and simply observing our physical and emotional sensations. Studies have shown that practicing mindfulness or meditating on a regular basis not only improves our attention span but has a positive effect on various other mental functions.

Here are a few tips to get your work done in a focused way:

Declutter your mind

A cluttered mind is restless and unfocused. It tries to move in many different directions at once and the result is that very little gets done. There are lots of different ways to declutter your mind and free up mental space. Choose a tool- such as a notebook, an app or simply a piece of paper, and write down whatever is on your mind. This can include appointments to be made, sign ups for school, bake sales, organizing birthday parties, ideas for a new project, meal ideas or shopping lists. Before you focus on your task, take a few deep breaths to let go of any distractions.

Declutter your workspace

Removing unnecessary clutter creates a clean, simple workspace with less distraction.

Turn off and/ or put your electronic devices aside

While you are focusing on your task, don't check your emails or social media sites, turn off notifications, vibrations etc.

Understanding the teenage brain and helping them focus better

When our teenagers don't get their work done in an efficient way, parents can get quite annoyed. It turns out that there

is a physiological reason for their behavior. Research has found that the mental development of teenagers takes longer than previously thought and that the brain structure of adolescents resembles that of much younger children. Brain scans revealed an unexpected level of activity in their prefrontal cortex, an area involved in decision-making and multitasking. This indicates that adolescent brains not only work less effectively compared to adult brains but also in very different ways. Teenagers experience massive hormonal shifts and substantial neural changes. The brain activity gradually shifts from the back of the brain to the front of the brain. Teenagers, for example, consider the consequences of their actions for themselves, while adults consider the social consequences of their actions. It is also harder for adolescents to pay attention in class without letting their minds wander, and it is hard for them to ignore distractions while doing their homework. We as parents can support them in finding helpful strategies. Resist the urge to shower your teen with your ideas, as this can overwhelm them and naturally increase their resistance to your ideas.

Instead, read through the following suggestions with your teen and have a productive discussion about them:

- **Analyze and address underlying physical factors** such as fatigue from not eating enough, or eating non nutritious foods, dehydration or lack of sleep.
- **Limiting external distractions:** Keep all electronic devices not needed for homework in a designated spot, far away from the work space. Find a quiet spot without other family members walking past or interrupting and no TV noise. If there is limited quiet space, use noise canceling headphones. Some students learn better when they listen to calming background noise. Find out what works for you. Some students tend to drift off during their work and can't resist the urge to change to a gaming website. If that's the case, working in a place where people can see you might be a good option. Alternatively, make a commitment to yourself/your parents what you are planning on accomplishing in a certain amount of time.
- **Dealing with internal distractions:** Writing down tasks and worries lets the mind rest and allows you to focus on the task at hand. Short breathing exercises before getting started with the work can help tremendously. I particularly recommend this technique for assessments- breathing in and out three times before getting started with a test calms the nerves and improves focus. A visualization technique that I often use includes different imaginary folders, in which tasks or problems can be stored. I only pull out one folder at a time and focus only on this one content. This strategy has proven extremely useful when I am working on a bunch of different projects and feel overwhelmed by the sheer number of tasks. As soon as we feel overwhelmed, our brains automatically shut down and we can't think straight anymore.
- **Being organized**: In addition to compartmentalizing mentally, use actual folders or boxes for each subject and separate folders for completed tasks and tasks that still need to be done. Assign priorities by using different colors or numbers. You can also use a whiteboard, planner or notebook for the tasks that need to be done. There is hardly anything less satisfying than crossing off or wiping off a completed task.
- **Time management:** Divide your work into shorter intervals and give yourself a realistic deadline for each task. For instance, rather than thinking "I have 3 hours to finish my homework", think: "I have 25 minutes to do my math homework, 30 minutes to do my history reading…" etc. Use a timer to keep track and allow for a few minutes of break between tasks. Usually, 10-15 minutes works well for most teens. Get up, walk around, eat an apple, drink some water. Then sit down and start your new task. It's ok if you can't complete your obligations in a single focus session. Simply schedule another session. Large projects or assignments can feel overwhelming at times. Divide them up in smaller chunks and estimate how much time each obligation will require. This process can be applied to basically any overwhelming task. At medical school, I would start with the day of the assessment and work my way backwards to figure out when to start studying.
- **Establish a homework routine:** Establishing a homework routine helps finishing tasks on time (more see page…).
- **Increase your motivation:** There are two different kinds of motivation- extrinsic and intrinsic. Extrinsic behavior is when we perform a behavior or engage in an activity because we want to earn a reward. Extrinsic motivation seems to increase our overall productivity. Reward yourself with a movie night, meeting friends etc. Intrinsic motivation is when we are motivated by personal satisfaction or enjoyment. Intrinsic rewards such as feeling proud of ourselves for having finished an assignment or given our best makes us feel happy and proud. The quality of our work performed is mostly influenced by intrinsic factors. If we are doing something that we find rewarding, interesting, and challenging, we are more likely to come up with new ideas and creative

solutions. If a task feels boring, challenge yourself to see how quickly you can finish it. Try setting yourself a short deadline, for example.

2. Play Time

Nowadays, parents seem to be torn between their instinct of letting their children play and their own or society's expectation to pack their free time with as many activities as possible. A recent survey found that the majority of American parents believe it's important to keep children as busy as possible with structured activities. Driving our kids from one activity to the next every afternoon may seem like our parental duty, quite often reinforced by peer pressure. But our good intentions seem to have significant side effects. According to research, about 40% of American children are sleep deprived because they are too busy. Over scheduling can not only be overwhelming for children but also negatively impact their academic and personal development.

Play time is vital for our children's mental well being, their brain development and the development of their social skills. We don't need to worry that our children will be at a disadvantage due to fewer extracurricular activities. A healthy amount of extra curricular activities provide an opportunity for our kids to pick up new skills and learn persistence and accountability.
For children, unstructured play not only contributes to stress reduction but also promotes problem solving and creative thinking. For older kids, "play time" refers to spending time with friends as well as participating in loosely-structured activities which allow for plenty of individual exploration and interaction with others such as a hip hop class. Play time should include being active and not sitting in front of a screen.

While playing is crucial for children's development, it has proven to be also extremely *beneficial for people of all ages*. In our hectic lives, many of us are so caught up in their work and family commitments that they have forgotten to make time for pure fun. Playing releases endorphins, stimulates creativity, improves our memory and establishes new connections in the brain. It helps us feel young and energetic, makes us forget about commitments and work and improves relationships. Goofing around, laughing and playing with friends, our partner, kids or pets is fundamental for our emotional well being and relieves stress.

3. Connecting Time

Family meals present a great opportunity to interact with each other. Too often, families grab a quick bite in the car every evening as they're rushing from one activity to another. Frequently, family members don't get to see each other at the dinner table because of conflicting schedules. But sitting down and sharing a meal together is hugely important for everyone. When we connect with other people, ideally in person, we activate and reinforce our brain's relational circuitry. Having family dinners at least four nights a week reinforces family bonds and fosters a *sense of security* in children. Families who sit down together for dinner have a lower incidence of teen drug use, pregnancy and kids getting in trouble with the law, according to Oren Amitay, registered psychologist and lecturer at Ryerson University in Toronto. Make sure the phones are being put away and silenced and the TV is off. Feel free to listen to music, engage in conversations and pay each other undivided attention. Work together as a group in setting the table and help each other when cleaning up.

Connecting only really happens when we look at each other, eye to eye, face to face. When we take in other people's facial expressions, this information is passed on by neurons and in the occipital lobe of our brain, these visual signals are being interpreted. People from different cultures and backgrounds around the world share universal facial expressions to communicate joy, happiness, fear and anger. Social media platforms such as Facebook, Twitter, Pinterest, Instagram, and WhatsApp have profoundly changed the way we communicate. Even though they facilitate communication, collaboration, content sharing, and interaction, they negatively affect real-life communication by decreasing the number of face-to-face interactions. They thereby alter the nature, quality, and scope of our communication, and weaken our language skills. Humans need physical interactions and connections for their wellbeing. A study undertaken by Singapore's Nanyang Technological University has shown that people who spend most of their time on Facebook are at higher risk of suffering from depression. They also found that the more time people spend on Facebook, the higher their levels of envy, which led to feelings of depression. In contrast, the less time people spend on social media, the less symptoms of depression and

loneliness they experience.

Spend quality time with your larger family and friends. Share meals with friends, go out, have happy hours, spend time with grandparents or schedule a weekly friend date. In 148 separate studies, experts concluded that people who didn´t have close ties to their communities had a 50% chance of dying before their 7.5 year follow-up, compared to individuals who didn't have an active social life.

4. Physical Time

Currently, we are spending way too much time being inactive. We are mostly sitting- in our jobs, at school, driving around etc. Being physically active offers tremendous health benefits, both for our bodies and our mental wellbeing.
I frequently encounter two major misconceptions when it comes to exercise or "working out".

> The ***first misconception is that by exercising we lose weight***. We can only burn about 10-30% of all calories we consume with our food with physical activity. Which means that if we want to lose weight, we need to make dietary changes.
>
> Secondly, ***we don't need to push ourselves to the brink of exhaustion several times a week to reap the benefits.*** Regular exercise in moderation is all we need to stay fit and active.

Moderate regular exercise improves cardiopulmonary fitness, builds muscles, controls weight, reduces symptoms of depression and anxiety. It even increases our attention span. Studies have found that students who engaged in moderate physical exercise before taking a test performed better than students who didn't exercise. Exercise reduces the risk of heart disease, cancer, type 2 diabetes, high blood pressure, osteoporosis and obesity. Regular exercise has been shown to be as effective in treating depression as anti- depression drugs such as selective serotonin reuptake inhibitors.

5. Time In

When we zoom in and focus on our sensations, images, feelings and thoughts, we give our brain the opportunity to pause amidst the chaos and untangle and sort through observations and experiences. A study demonstrated that employees who spent 15 minutes at the end of the day reflecting about lessons learned performed 23% better after 10 days than those who did not reflect. A similar study found that commuters who were prompted to use their commute to think about and plan their day were happier, more productive, and less burned out than people who didn't. If you have a busy week, schedule in some reflection time and use this time slot to reflect, and not to skip in favor of other activities. Use simple yet effective mindfulness practices throughout the day. As management consultant Peter Drucker stated: "Follow effective action with quiet reflection. From the quiet reflection, will come even more effective action." I find it helpful to have a notebook or gratitude journal on my nightstand to jot down notes and reflections. It empties and calms my mind before going to sleep.

6. Down Time

When we are non-focused, without any specific goal, and let our mind wander or simply relax, we give our brain the opportunity to search for neural stimulation. If our mind can't find any stimulation, it will create it. Sure enough, research has shown that boredom can enable creativity and problem-solving by allowing the mind to wander and daydream.
It's ok to do nothing. Your brain will still be active.

7. Sleep Time

Getting ample amounts of sleep provides our brain with much needed rest. Our brain activity during sleeping plays several important roles in the maintenance of our physical, emotional, and mental health.
A good night's sleep is also key to brain development. Using blue light-emitting screen devices like smartphones before bedtime can disrupt our sleep patterns by suppressing the secretion of the hormone *melatonin*. Many teenagers who stay up late texting or gaming are lacking the deep REM sleep essential for processing and converting information from that day into memory. "So even if they stay awake in algebra class," Rich says, "they may not remember what happened in class yesterday."

The American Academy of Sleep Medicine recommends for adults the minimum of 8 hours of sleep per 24 hours, for teenagers aged 13–18 years between 8 and 10 hours and for children aged 6–12 years 9–12 hours.

The Importance of Routines

Our habits drive most of what we do. Habits like leaving home too late for school or work every morning may have sneaked into our lives, increasing our daily stress levels. We may be used to skipping breakfast or have a drink each evening to relax, which negatively impacts our health.

Routines and habits, whether they are certain patterns of thought or behavior, are a normal part of our lives and can influence us tremendously, both in a positive or negative way. Beneficial routines have an enormous potential in helping us feel more in control, form healthy habits and cope with change and reduce stress levels. No matter how crazy, unpredictable, challenging and often times hard our days are, knowing that we start every day with a short mindfulness practice to ground us, to have a nice cup of coffee every day around midmorning, to have a family meal around 7pm and to have a bedtime ritual at night, can be a real comfort.

Before making changes identify your “negative” habits- the most important things you would like to change in your life. Out of those, choose the keystone habit, the one you want to change the most. Only start changing one habit at a time in order to avoid being overwhelmed. Think about the reward you will get when changing your routine like being more productive and relaxed at work when you are on time instead of not stressed or providing your body with nutrients and the right fuel. Most likely, changing one habit has a ripple effect on other habits of your life and will help you change more of your routines. Be prepared for setbacks. Life is full of challenges and nobody is perfect. Be kind to yourself, pick yourself up and start again.
The most important routines for adults are eating well, getting enough sleep, practicing mindfulness or yoga to cope with stress and being active. Come up with a weekly schedule that works for you. In the last chapter, you’ll find an example of how a reconnect week could look like.

Setting up new reconnect routines not only helps make it easier for you to follow the program and more likely that you’ll stick with it in the long run.

Routines for children and teenagers

In what psychologists have described as an “epidemic of anxiety”, developing routines within your family offers every family member, especially children, a “safe space” and a sense of predictability, security, familiarity and consistency. There is a reason toddlers love predictability and routines that may seem dull to us. Jean M. Thomas, M.D., clinical professor of psychiatry and behavioral science at The George Washington University School of Medicine and Health Sciences, says that a reliable schedule “increases their sense of security because they know what’s coming next. The more secure toddlers feel, the more they can focus on things like learning, exploring, and playing.” She also explains that repetitiveness of events each day like having breakfast at the dinner table, followed by getting dressed, and brushing teeth not only lays down critical pathways in the brain but also strengthens these connections. As a result, kids tend to be much more confident and calm and less likely to throw temper tantrums.
Particularly teenagers experience constant change in their lives which affects them emotionally. While school provides a form of routine, each day is also filled with uncertainties. Their bodies are changing, hormones start to kick in, friends come and go, they want to become more independent and as a result, they may lack a sense of self, feel anxious or scattered and unfocused. A routine provides structure amidst their turbulent lives.
Rituals are personal habits that a family has to develop and come up with individually. Basically, you figure out what tasks need to be done, then line them up and follow that order every day. While we grown ups can set up our own routines and checklists, children and teenagers may need our support.

The following rituals have worked well in our family and are simply meant as a string of ideas for establishing your own routines.

Morning rituals/ routine for young children

A morning ritual may include:

- Waking the kids up the same way each morning- with hugs, kisses and cuddles, followed by a
- Healthy breakfast (see recipe section). Don't hesitate to let the kids help setting the table etc. It continues with a
- Bathroom routine and getting dressed- school uniforms make mornings so much easier!

When the kids are ready and there is still time before heading out, they can sit and read a book or listen to music.

Especially when introducing a new routine, praise them and use a reward system if helpful (we used a sticker treasure hunt card and as a reward we had movie nights, etc.).

After school routine

Depending on the age of your children, after school routines may vary. Once kids settle into a routine, very little reminding is necessary. The following routine worked really well when our children were in primary school.

- Snack and chat time. Primary school children can either be loud, happy and chatty after school or worn out by a long day. Either way, they are usually hungry and allowing them the same time off is crucial. If you are lucky enough to be home when your kids get back, have a snack to refuel and chat about their day.
- Cleaning out backpacks. Pulling out lunch and snack bags, cleaning them out and loading them into the dishwasher.
- Take out school folders, paperwork etc. and come up with a to do list of homework.
- Homework
- Play time, down time, chores etc.

Routines for teenagers

Establishing regular habits with teenagers can be quite challenging. Still, the *benefits of healthy routines* are significant and far reaching:

Seemingly simple routines like preparing a healthy lunch or finishing school projects on time help establish important lifelong habits. Teenagers who have never followed routines often struggle later on in life when they are on their own.

Routines make life easier between you and your teenager, reducing misunderstandings and arguments. Establishing clear routines makes sure that everybody knows what their job is and what is expected of them. For example, having to set the table every other day, finishing homework before playing outside or bringing electronic devices downstairs every evening before bedtime leaves little room for arguments. Teenagers who never had a chore or homework routine may find it difficult later on in life to do the laundry, clean up or meet a work deadline. In short, chores teach teenagers to take on responsibility.

Example of a morning routine for teenagers and adults

- Wake up with enough time to have a relaxed morning. Figure out your wake up time based on what time you need to get to school or work and how long your routine may take. Build in a cushion in case you run late.
- Have a positive wake up experience. Wake up with cheerful music, use a rising sun alarm clock or whatever makes you feel good when you open your eyes. Avoid annoying alarm clocks with high-pitched repetitive noises. Open your eyes and breathe in and out a few times. Take in the feeling of your body with a couple of minutes of mindfulness. Get up and do a few stretches to get your blood flowing.
- Feel free to throw in a short yoga session (such as the sun salutations) or breathing exercises. Even if you are not a morning person, the benefits of even performing a gentle yoga sequence in the morning has numerous benefits. It may take a few days to get into the routine, but you'll soon miss the sessions on the days that you are skipping them. You can focus better on the day ahead, boost your energy levels, reduce your stress levels, boost

your metabolism, improve your digestion and tone up. Assign your yoga sessions to certain days of the week, for example, every Tuesday, Friday and Sunday.

- Make a healthy breakfast a daily routine. Studies show that breakfast is an important meal because it gives you the energy and nutrients to get through your day. A whole-food plant-based breakfast minimizes the risk of having a mid-morning slump or low blood sugar, which can make you cranky and unfocused. Always include the following three foods in your breakfast: Fresh fruits, especially purple colored ones if possible such as blueberries, blackberries and dark blue grapes (see anti cancer foods). Plant based yogurt, sugarless with live cultures. Seeds and nuts especially flaxseed, chia and sesame seeds.
- To save time in the morning, I set the dinner table the night before and I prepare whatever can be prepared for breakfast the night before, such as cutting fruits..
- While in the kitchen in the morning, I get snacks and lunches done. Fresh fruits like apples, bananas and dried fruits (without additional sugar added!) are a convenient choice if you are running late. More recipes that can be prepared in advance can be found in the recipe section. Always have a healthy snack with you to avoid unhealthy options when you feel hungry. Fill your water bottle.
- Develop a bathroom routine to be efficient in the morning and avoid getting stressed.
- If you find it difficult to decide on an outfit in the morning, lay out your clothes and accessories the night before.
- Grab your bag, food and drink and be set for a good day. Have everything ready the night before- checklists on what you have to bring each day come in quite handy if you tend to be forgetful. The longer you stick to your routine, the more automatic everything will work.

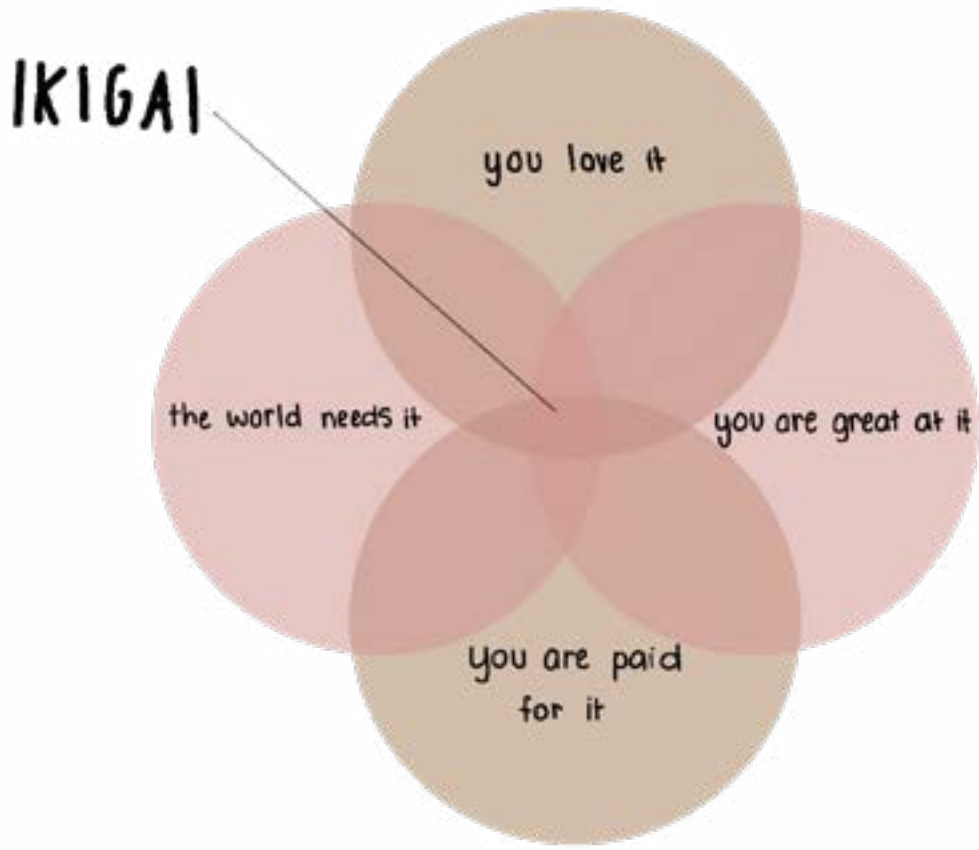
Example for a night time routine

- Prepare for the next day: This minimizes your risk of being late and helps to have a stress free morning.
- Keep your bedroom free of any unnecessary devices. Turn off or silence your phones. Teenagers should not have any electronic devices in their bedrooms.
- Create a cozy bedroom with a comfortable temperature of about 64-75°F/ 17-23°C. Block out any sources of light. If you need a nightlight, consider a non-stimulating color such as red.
- Stick to a fixed bedtime. This helps regulate your body clock and can help you to have a more restful night.
- Shift into bedtime mode. After a long day, your body needs time to relax and wind down. Give yourself ideally an hour before your bedtime to slow down. Avoid electronics or devices if you can because they stimulate your brain, making it hard to relax and fall asleep. Dim the lights in your room to signal your brain and body it's slowly time for sleep.
- Establish a bedtime ritual. As you shift into bedtime mode, follow a pre-bed ritual. Activities to relax and prepare you for bed may include reading in dimmed light, drinking herbal tea, taking a warm bath, talking with your partner, breathing exercises or a guided meditation.

Ikigai

"Iki" in Japanese means "life", and "gai" describes value or worth. Your ikigai is your life purpose or your bliss. It's what brings you joy and inspires you to get out of bed every day. Ikigai has a lot to do with longevity and living a happy life. Although it has had some historical shifts in meaning, ikigai has usually been cited as both a personal pursuit and one of benefit to others. In the end, ikigai brings meaning, purpose, and fulfillment to your life, while also contributing to the good of others. This state of wellbeing that arises from devotion to activities one enjoys also brings a sense of fulfillment. The Japanese psychologist Michiko further distinguishes ikigai from transitory pleasure and aligns it with *eudaimonia*, the ancient Greek sense of a life well lived, leading to the highest and most lasting form of happiness.

The concept of ikigai is captured by the well known ***ikigai diagram***



Ikigai is in the center where all four spheres overlap.
You can determine your own ikigai by filling in the spheres with the appropriate content. Working on such a diagram can help clarify where we stand in our search for ikigai and which adjustments we would need to make to attain this way of being.

The Difference Between Pleasure and Happiness

The difference between pleasure and eudaimonia- or happiness- has been well documented. Although pleasure and happiness both convey positive emotions, they differ fundamentally- in regards to their chemical structure as well as to their mechanisms of action.
Pleasure is being mediated by the neurotransmitter dopamine. The release of dopamine can be triggered by an addictive substance such as sugar, cocaine, alcohol or nicotine or by a potentially addictive behavior such as gaming, gambling, shopping etc. Dopamine sends the message “This feels good, I want more”. This reward feeling can ultimately lead to addiction.
Happiness, on the other hand, is *serotonin* mediated and conveys the message “This feels good, I don’t need any more”. In our society, too often we confuse happiness with pleasure and in the pursuit of happiness we get caught up in chasing pleasure. As our dopamine level goes up, our serotonin level drops. In other words, the more pleasure we seek the more unhappy we get.

Pleasure		Happiness
Short lived		Long lived
Visceral emotion Visceral feelings are feelings that you feel very deeply and find it difficult to control or ignore, such as being drunk or high		Feeling of peace and being content
Taking		Giving
Is experienced alone		Is experienced in a group
Can be achieved with substances		Cannot be achieved with substances
Can lead to addiction		We can't get addicted to too much happiness

As soon as we become aware of the significant difference between pleasure and happiness the more we can avoid getting caught up in pursuing pleasure and instead, can focus on seeking happiness.

References

Buettner D, Skemp S. Blue Zones: Lessons From the World's Longest Lived. Am J Lifestyle Med. 2016 Jul 7;10(5):318-321. doi: 10.1177/1559827616637066. PMID: 30202288; PMCID: PMC6125071.

Christakis NA, Fowler JH. The spread of obesity in a large social network over 32 years. N Engl J Med. 2007 Jul 26;357(4):370-9. doi: 10.1056/NEJMsa066082. Epub 2007 Jul 25. PMID: 17652652.

https://www.gutenberg.org/files/16287/16287-h/16287-h.htm

Rothbart MK, Posner MI. The developing brain in a multitasking world. Dev Rev. 2015 Mar 1;35:42-63. doi: 10.1016/j.dr.2014.12.006. PMID: 25821335; PMCID: PMC4371544.

Arain M, Haque M, Johal L, Mathur P, Nel W, Rais A, Sandhu R, Sharma S. Maturation of the adolescent brain. Neuropsychiatr Dis Treat. 2013;9:449-61. doi: 10.2147/NDT.S39776. Epub 2013 Apr 3. PMID: 23579318; PMCID: PMC3621648.

Netz Y. Is the Comparison between Exercise and Pharmacologic Treatment of Depression in the Clinical Practice Guideline of the American College of Physicians Evidence-Based? Front Pharmacol. 2017 May 15;8:257. doi: 10.3389/fphar.2017.00257. PMID: 28555108; PMCID: PMC5430071.

Baer, R., Crane, C., Miller, E., & Kuyken, W. (2019). Doing no harm in mindfulness-based programs: conceptual issues and empirical findings. Clinical Psychology Review, 71, 101-114.

Gilbert, P. (2014). The origins and nature of compassion focused therapy. British Journal of Clinical Psychology, 53(1), 6-41.

Gotink, R. A., Chu, P., Busschbach, J. J., Benson, H., Fricchione, G. L., & Hunink, M. M. (2015). Standardised mindfulness-based interventions in healthcare: an overview of systematic reviews and meta-analyses of RCTs. PloS one, 10(4), e0124344.

Kabat-Zinn, J., & Hanh, T. N. (2009). Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness. Delta.

Khoury, B., Lecomte, T., Fortin, G., Masse, M., Therien, P., Bouchard, V., … & Hofmann, S. G. (2013). Mindfulness-based therapy: a comprehensive meta-analysis. Clinical Psychology Review, 33(6), 763-771.

Linehan, M. (1993). Cognitive-behavioral treatment of borderline personality disorder. New York: Guilford.

Segal, Z. V., & Teasdale, J. (2018). Mindfulness-based cognitive therapy for depression. Guilford Publications.013. Linehan, 1993).

Chapter 3

Reconnecting to Our Environment

Sustainable Diet/ Sustainable Lifestyle

Our food choices as well as the production of our food profoundly impact the health of our environment and our climate. One of our biggest personal contributions to combat climate change is choosing a sustainable diet. An ecological balance can only be obtained if we avoid the depletion of our natural resources. Sustainability means that we are meeting our own needs without compromising the ability of future generations to meet their needs. As environmentalist David Brower puts it *"We don't inherit the earth from our ancestors, we borrow it from our children."*

Compared to any other diet, a ***plant-based diet uses substantially less natural resources and is less taxing on the environment***. When comparing the carbon footprints of different American diets, even the lowest- impact meat and dairy products still cause much more environmental harm than the least sustainable vegetable and cereal growing. The carbon footprint is the amount of carbon dioxide released into the atmosphere as a result of the activities of a particular individual, an organization, or a community. The senior researcher of this study concluded that "A vegan diet is probably the single biggest way to reduce your impact on planet Earth, not just greenhouse gases, but global acidification, eutrophication, land use and water use. It is far bigger than cutting down on your flights or buying an electric car." Two conclusions of this large study should be particularly emphasized:
Firstly, that grass-fed beef, which was thought to have a relatively low environmental impact, was still responsible for much higher impacts compared to plant-based food.
Secondly, freshwater fish farming, which provides two-thirds of such fish in Asia and 96% in Europe, and was thought to be relatively environmentally friendly, has an extremely large impact on the environment.
Another study, published in the prestigious medical journal The Lancet, recommends a largely plant-based diet to meet the challenge of feeding a growing world population. The group of authors, thirty renowned scientists from around the world, state that with a plant-based diet, climate change-inducing gases could be significantly reduced and that enough land could be reserved to feed the world's growing population.

A plant-based diet has the smallest carbon footprint: According to research, a **plant-based diet generates an almost 42% smaller volume of greenhouse gases** in comparison to a meat-based diet. An Oxford University study, published in the journal Climatic Change, shows that meat-eaters are responsible for almost twice as many dietary greenhouse-gas emissions per day as vegetarians and about 2.5 times as many as vegans.
A plant-based diet requires five times less water than a meat-based diet.
A plant-based diet requires less land than an animal-based diet. A plant-based diet cuts the use of land by 76%. Research shows that without meat and dairy consumption, global farmland use could be reduced by more than 75%- an area equivalent to the US, China, European Union and Australia combined- and still feed the world. The biggest analysis to date reveals a huge footprint of livestock- it provides just 18% of calories but takes up 83% of farmland.

The Importance of Healthy Soil

Just a handful of healthy soil contains more microorganisms than there are people on the planet. Just one tablespoon contains about 6 million microorganisms. Our food chain is only possible by the complexity of the underground ecosystem.

These microorganisms including bacteria, fungi, viruses, protozoa, and archaea, perform vital ecosystem functions, such as decomposition and nutrient cycling, and form symbiotic relationships with plants. The fungal mycelium network, indefinite in shape and size, passes on nutrients, water, carbon and acts as a stable structure preventing erosion. Plants absorb carbon dioxide and feed the carbon to the microbes in the soil. Enough healthy soil can absorb all greenhouse gases! The longest study of its kind proves that organic agriculture, which uses no tilling, cover crops and composting,

- surpasses conventional yields,
- uses 45% less energy
- emits 35% fewer greenhouse gases.

This type of sustainable farming, which create a more resilient and more nutrient dense food system, is called ***Regenerative Agriculture.*** And it is very effective- just 1% more organic matter (compost) in the soil can hold 75.000 gallons of water per acre, thereby reducing the risk of droughts and floods. ***Regenerative Agriculture*** may be our only hope to reverse climate change.
A very simple way to start creating healthy soil at home is by using a worm composter. This is an efficient method of turning kitchen waste and small amounts of garden waste into nutrient-rich compost and a concentrated liquid fertilizer. Both can be used to grow plants, in your garden as well as in your apartment. We are basically feeding the soil, not the plants.
Organic food can even be effectively grown in urban settings or small spaces using a variety of techniques including raised bed organic ***GardenSoxx*** systems, vertical towers and hydroponic systems. These can literally be installed anywhere.
Another aspect that I find extremely fascinating is the concept of accelerated soil regeneration. In the middle of Montana, Michael Smith, co-founder of *Algae Aqua-Culture Technologies,* invented and created the ***"Green Powerhouse"***. Is a power plant which is entirely powered by sunlight and waste. It diverts waste from landfills producing electricity and accelerates the regeneration of soil. The byproduct liquid biochar, which is carbon mixed with an algae based transporter, is a powerful root enhancer and prompts the soil to grow insanely healthy plants in an astonishing fast way.

If your plan is for one year, plant rice.
If your plan is for ten years, plant trees.
If your plan is for one hundred years, educate children

Confuzius

Reconnecting to Our Environment

Reconnecting to nature starts out by acknowledging and taking responsibility for the damage we have done to our planet, realizing how unique it is and protecting it with all our might.
Numerous amazing documentaries, such as "One Strange Rock" or "Our Planet", narrated by the wonderful naturalist Sir David Attenborough, highlight the deep connection between every living being and non- living thing on our planet as well as our dependence on healthy ecosystems. We don't have to travel far in order to reconnect with nature- all it takes is to open our eyes to our immediate environment.
Maybe you have experienced the therapeutic value of nature first hand on one of your latest walks or hikes. *Forest therapy* is actually an original Japanese practice, in which people immerse themselves in the atmosphere of the forest. Forest guides encourage participants to engage in activities that require the use of all their senses.
For our family, hiking in the tranquility of the mountains is a wonderful bonding experience and refuels our bodies and our minds. If your time is limited, a simple jog or walk through a forest or even just through a park will do.
For humans, the color green has evolutionary significance. Green stands for a place that offers us the right conditions for survival- food, water and shelter, thus making us feel relaxed and reassured. Green stands for nature and nature equals life. No wonder that green light is the "easiest" for us to see, as it is in the center of the visible spectrum, making it the color of balance.

Reconnecting to Other Living Beings

How is it that we deeply care for our pets, spend millions on veterinary care, that we feel repelled by the thought of eating a dog and are outraged about whaling while at the same time, we have no problem eating a piece of pig with our eggs or fish with chips? The cruel ways we produce animal foods stand in sharp contrast to our love for certain animals. Even with the knowledge that factory farming is not only horrific but also unsustainable, many of us still manage to enjoy eating meat. When studies have tried to find an explanation for the meat paradox, they found that by denying animals mental qualities, aka minds, people are able to dissociate meat from animals. They also show that humans are rather persistent in finding ways to justify their consumption of animal products. Most of us have grown up eating meat, the consumption of animal foods is embedded in our culture. Naturally, we do our best to protect our cultural practices from threats. The meat and dairy industry happily assist us in our efforts to ignore where our food comes from. While ads show happy cows grazing on green meadows, animals are being transported in the cover of darkness and factory farming is hidden from the public eye. Gag laws forbid undercover filming or photography on farms without the consent of their owner.
I deeply believe that we can extend our circle of compassion to include all animals by learning more about these amazing sentient beings.

Chickens are caring, intelligent and social beings. They are self aware and have a complex way of communication with at least 24 distinct vocalizations. Chickens perceive time intervals and can anticipate future events. They have unique personalities, display a form of empathy and mourn the loss of loved ones. Chickens will go head-to-head with foxes and eagles to protect their family. They live in stable groups of about thirty animals with a social hierarchy. They all know and recognize each other.

Cattle
Science shows that cows are bright and emotional individuals who can remember events for a long time. They interact socially in complex ways, form friendships and can even hold a grudge. Cows are extremely affectionate mothers and the bond between mother and calf is very strong.

Pigs
Pigs are truly amazing creatures and the fourth most intelligent creature on earth. IQ tests show that their intelligence is beyond that of a three-year-old human. Their level of cognitive ability allows pigs to play joystick-controlled video games, they display abstract thinking, use tools, recognize their own names, and follow commands. Pigs are not only curious and insightful, but they are also very social animals. They constantly communicate with each other, snuggle close to one another and prefer to sleep nose to nose. They dream, much as humans do. Newborn piglets learn to run to their mothers' voices and recognize their own names. Mother pigs sing to their young while nursing. In their natural surroundings, pigs spend hours playing, sunbathing, and exploring. Contrary to general belief, pigs are very clean animals. If given sufficient space, they will be careful not to soil the area where they sleep or eat. Because they are unable to sweat, they like to bathe in water or mud to keep cool, but they actually prefer water to mud. Pigs have an amazing sense of smell and a good sense of direction. They can even find their way home over great distances.

Fish
Fish are sentient animals with minds and lives of their own. They form friendships, have complex social lives and experience positive emotions. They can go to great lengths about caring for their offspring. Some fish from different species even team up to join their powers, like the moray-grouper team. For a long time, scientists believed that fish were deaf because of their lack of external ears. Quite the opposite is true- they can hear just fine. Their ability to hear depends on their natural habitat and features a variety of sound perception organs. Fish are also capable of making noises- they can growl, bark, click, hum, whistle, and croak. Studies have shown that individual fish can remember events, tasks, tests, and even other fish for months and even years. Above all, fish can feel pleasure and pain. Fish can feel pain as acutely as other animals, they feel when they are suffocating on a boat deck, being crushed in nets, having their fins cut off or when they suffer injuries from rapid decompression.

There are numerous amazing facts and stories about all kinds of animals. Luckily, we are able to access them easily and can watch eye opening documentaries such as "Mission Blue"and read fascinating books including "What a Fish Knows: The Inner Lives of our Underwater Cousins".

Our green and blue planet is our one and only home. It was created against all odds and houses lots of places we have yet to discover and understand. Our actions should be driven by our desire to keep it not only alive but thriving. I could not phrase it better than the Dalai Lama who once said

> “It is our collective and individual responsibility …
>
> To preserve and tend to the world in which we all live.”
>
> *Dalai Lama*

References

https://josephpoore.com/Science%20360%206392%20987%20-%20Accepted%20Manuscript.pdf

Craig WJ, Mangels AR, Fresán U, Marsh K, Miles FL, Saunders AV, Haddad EH, Heskey CE, Johnston P, Larson-Meyer E, Orlich M. The Safe and Effective Use of Plant-Based Diets with Guidelines for Health Professionals. Nutrients. 2021 Nov 19;13(11):4144. doi: 10.3390/nu13114144. PMID: 34836399; PMCID: PMC8623061.

Samuel Soret, Alfredo Mejia, Michael Batech, Karen Jaceldo-Siegl, Helen Harwatt, Joan Sabaté, Climate change mitigation and health effects of varied dietary patterns in real-life settings throughout North America, The American Journal of Clinical Nutrition, Volume 100, Issue suppl_1, July 2014, Pages 490S–495S, https://doi.org/10.3945/ajcn.113.071589

Berardy, Andrew & Fresán, Ujué & Matos Chamorro, Rodrigo Alfredo & Clarke, Abigail & Mejia, Alfredo & Jaceldo-Siegl, Karen & Sabaté, Joan. (2020). Environmental Impacts of Foods in the Adventist Health Study-2 Dietary Questionnaire. Sustainability. 12. 10.3390/su122410267.

Scarborough P, Appleby PN, Mizdrak A, Briggs AD, Travis RC, Bradbury KE, Key TJ. Dietary greenhouse gas emissions of meat-eaters, fish-eaters, vegetarians and vegans in the UK. Clim Change. 2014;125(2):179-192. doi: 10.1007/s10584-014-1169-1. Epub 2014 Jun 11. PMID: 25834298; PMCID: PMC4372775.

Vanham, D., Comero, S., Gawlik, B.M. et al. The water footprint of different diets within European sub-national geographical entities. Nat Sustain 1, 518–525 (2018). https://doi.org/10.1038/s41893-018-0133-x

Vanham, D., Comero, S., Gawlik, B.M. et al. The water footprint of different diets within European sub-national geographical entities. Nat Sustain 1, 518–525 (2018). https://doi.org/10.1038/s41893-018-0133-x

Part III

The Reconnect Program™

Step by Step Into a Healthy Lifestyle

The 12- week long Reconnect Program™ is a step by step, easy to follow guide to a healthy and sustainable lifestyle. The overall outline of the program has been designed to cater to families and addresses different age groups. However, the program can be easily customized according to your own and your family's needs. We all come from various backgrounds, have our own history and experiences and different incentives for changing our lifestyle. Some of us may have more time to incorporate new concepts into their daily lives, while others may be caught up in their daily routines and may only be able to gradually implement small changes at a time. Some readers may have experience with practices such as mindfulness or yoga, others may be more knowledgeable when it comes to dietary topics. For some, the contents of the Reconnect Program™ will be completely new. Whatever your story and your motivations are, the goals of the Reconnect Program™ are universal for all of us: to open our hearts and our minds, to bring our families and our communities closer together and to adopt a highly nutritious, healthy and sustainable lifestyle.

In this step by step guide the contents of each step -with the exception of the first step- are divided into the three categories: nutrition, mindset and physical activity. The goals of each individual step are designed to give participants enough time to implement changes without being overwhelmed. I recommend to familiarize yourself with the upcoming step on Friday evening and Saturday and start the new step on Sundays. This way you have ample time to organize yourself, plan and shop for the upcoming week. Although the individual steps are very manageable, if you are ill prepared you will more likely fall back to old habits, particularly during a busy week. For example, fresh fruits need to be easily accessible or even precut for family members to eat them. If it takes too much effort or too long to fix a meal, you may fall back to unwanted old habits such as fast food.

Whether you are introducing the Reconnect Program™ to your family or follow it on your own, the number one rule is to avoid frustration and possible failure by setting *realistic goals and expectations*. Changing old habits we have grown accustomed to can be quite challenging. Even more so in an environment that does not necessarily support, oftentimes criticizes, or even openly opposes our actions. Visualizing the positive changes in your life has proven to be a very successful technique to achieve goals by using the power of positive thinking.

The most rewarding experience of your lifestyle change should be the intrinsic feeling of pride and accomplishment once you have mastered your goals for the week. Still, it doesn't hurt to add some extrinsic rewards in the early stages of the Reconnect Program™. Children in particular may be in need of some extra motivation to stick with the program. After all, we are asking them to cope with significant changes in their lives and therefore, we need to support them as much as possible. Even adults may be thrilled to receive an extrinsic reward. Celebrate your new healthy lifestyle by getting yourselves cool reusable drink bottles or coffee mugs, sustainable lunch boxes, new running shoes, hiking poles, a yoga mat or a mindfulness app.

Before starting with the Reconnect™ steps, let me give you some tips that I have found very valuable over the years:

You don't need to be super motivated

The majority of us are waiting around until someone or something gets them excited, when in fact, it is the other way around: ***action leads to motivation, which in turn leads to more motivation.*** All you need to do is pick a date and start the program.

Don´t be intimidated

I believe that quite often a large goal such as a healthy diet or lifestyle can feel quite intimidating. That's why the Reconnect Program™ uses incremental steps which help you to focus on ***small, gradual changes***. Just start by concentrating on the first step of the program! The rest will follow. Any action is better than no action at all.

You don't need to be perfect

Not always will you find the energy and time to bake banana bread on a Sunday evening, ferment cashew cream cheese or cook a balanced meal at the end of a tiring day. That's perfectly fine. What matters is that you are on the right path, giving your best.

Think positive

Instead of dwelling on what you haven’t done or should have done, focus on your accomplishments. Even seemingly small things such as sharing a family meal or practicing a few minutes of mindfulness are important acts. You can do this!

Be proud of yourself

Remember that you are doing what´s best for yourself, your family and our environment. You deserve a pad on the back!

Giving up is not an option

Whenever you think you failed, pick yourself up and start again. Overcoming challenges makes us stronger.

You are not alone

Remind yourself that there are hundreds of thousands of like minded people all over the world, facing the same challenges as you. Draw strength from this rapidly growing plant-based community, reach out to get support or join a group.

Reconnect Program™ Step 1
Week 1

Let's do this! You may be all fired up to implement the first changes but hold on for just a few more days. In this important initial step of the program, we'll focus on establishing your own/your family's baseline and define goals.

Finding Your Family's Baseline

When planning a trip, we have to know at least two things- our destination and our starting point. The destination stands for the goals we would like to achieve with the Reconnect Program™, and your current lifestyle represents the starting point.

Most of us seem to underestimate the extent to which bad habits have, mostly slowly and unnoticed, sneaked into our lives. According to surveys, we generally misjudge the time we spend on screens and overestimate the time we spend exercising. Also, our perception of physical intensity is routinely distorted- a casual stroll may be considered a moderate exercise. The majority of us believe that they are eating quite well when in fact, they are not. Becoming aware of our habits allows us to identify problem areas and define our goals.

The most efficient way to establish your family's baseline is to **write down the details of a typical week in your life.**
Make sure to take notes throughout the day or at least every evening in order to accurately remember the facts.
With the help of the ***Reconnect™ Baseline Table***, which you can download and print on the Reconnect website, record the following information for each family member:

1. Foods and Drinks

When, what and how much (cups/servings/cans/bottles/bags)

2. Screen time

How much time everyone is spending on a device (how long and how often)
Content: work, reading an ebook, social media, movies, documentaries, games etc.

3. Sleep schedules

Record bedtimes and wake up times

4. Family activities

Record activities in which the whole family is involved such as family dinners, board games, outdoor play time etc.
Record what and for how long

5. Outdoor time

Record time spent in nature.
Record when and for how long

6. Physical activities

Anything such as walking, yoga, Nordic walking, cycling, running, gym time etc.
Record what and for how long

7. Mental exercise

Record mindfulness, meditating, breathing exercises etc.
Record what and for how long

8. Energy level

Record everyone's daily average energy level on a scale of 1 to 10 with 10 being the highest energy level

10. Stress level

Record everyone's average daily stress level on a scale of 1 to 10 with 10 being the highest stress level

11. Medication

List what medication you are taking, why you are taking them, include supplements

After this first week, I encourage you to analyze and discuss your findings. How does everyone feel about the results? Are you surprised or concerned about some of your entries?

Setting Yourself Goals

Use your baseline to define individual goals as well as family goals. By formulating specific goals, you are taking active control over your life. What is it that you would like to change the most?
Personal goals may be more general such as spending more quality family time together, eating healthier or reducing screen time.
Personal goals can also be quite specific such as slimming down to be able to play your favorite sport again, run around with your children or grandchildren, bring down high cholesterol levels, get rid of diabetes, or reduce other chronic conditions and/or medications.
Whatever your personal goals are, make sure to **WRITE THEM DOWN.**
The act of actually writing them down on a piece of paper requires a level of clarity that thinking or talking about them doesn't. According to research, writing down your goals on a regular basis ***increases the likelihood of achieving your goals by 42 percent.***

Using SMART goals

The Reconnect Program™ is a goal oriented program for a reason. Research has shown that so-called ***S*MART goals** facilitate long lasting lifestyle changes. They help us define and implement intentions by creating a sense of ownership and personal importance. *SMART goals* are not only used in healthcare settings but they are also used successfully in business and educational settings.

- ***S Specific***: Rather than saying, "I want to get in shape," set specific activity-related goals such as "walking for 30 minutes after dinner".
- ***M Measurable:*** "Walking for 30 minutes" instead of just "taking a walk after dinner".
- ***A Attainable:*** If you have a weight loss goal in mind, you may want to break it up into smaller, more attainable goals.
- ***R Relevant:*** Your goals should be meaningful, make sense and be set by you.
- ***T Time bound:*** Rather than saying "I will get fit this year", set yourself a reasonable schedule "I will walk after dinner for 30 minutes four times per week for 10 weeks", which provides you with a finish line.

Make sure you can see your goals - Place your list of goals on the fridge, the bathroom mirror or the doors of your closet. Repeat your goals throughout the day and visualize the outcome. Imagine yourself running around, feeling full of energy, laughing etc...
Also, reviewing your goals on a regular basis helps you to stay on track.

Reconnect Program™ Step 2

Week 2 & 3

This step is super exciting because it marks the actual implementation of your first lifestyle changes. Although each step of the Reconnect Program™ contains several goals, the proposed changes are quite manageable and can usually be implemented into your life within a couple of weeks. In case you need more time, feel free to take longer than two weeks for each step. After all, the journey you are about to embark on compares more to a marathon rather than a sprint and you have the freedom to find your own pace.
Since we usually have more time on the weekend, I would recommend familiarizing yourself with the next step on Friday and Saturday and start with the next step on Sunday. From the Reconnect website, feel free to download and print your own template of the **Reconnect Program™ Week 2 and 3 Schedule** and add your chosen goals.

The table below features your goals for the next two weeks.
From this table, choose 3-5 goals for week 1 and add the remaining goals in week 2.

Below this table, you'll find detailed descriptions of the individual tasks, what they entail and how an example of a two week schedule could look like.

Reconnect Program™ Step 2 Week 2 & 3	
Category	Goals
1. Nutrition	Cleaning Out& Restocking Your Kitchen Part I
	Healthy Drinks
	Healthy Snacks
	Basic Recipe: Homemade Yogurt
2. Mindset	Setting Screen Times
	Family Time
	Nature Time
3. Physical activity	Start moving. Pick 2-3 days per week

Here is how a weekly schedule could look like:

Reconnect Program Step 2 Week 2 Example

GOALS	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Cleaning Out and Restocking the Kitchen	X						
Healthy Drinks	X	X	X	X	X	X	X
Morning Snack	Seasonal Fruit	Energy Balls	Carrots, Bell Pepper and Hummus	Peanut Butter and Apple Slices	Fruit Salad	Popcorn, fresh fruit	Kale Chips
Afternoon Snack							
Basic Recipe: Yogurt						X	
Screen Times		X	X	X	X		
Family Time	Family Dinner					Family Dinner	X
Nature Time	X						X
Physical activity	Evening Walk			Evening Walk			Hiking with Family

1. Nutrition

Cleaning Out and Restocking Your Kitchen Part I

Getting rid of unhealthy foods and replacing them with healthy foods will be your first act in transitioning into your new lifestyle. The less junk food you have at home, the less you will be tempted to consume it. Turn this kitchen cleanse into a positive experience for the entire family and consciously decide to abandon foods that have such a negative impact on everyone and everything.

We'll start out by addressing **snacks and drinks.**

Eliminate the following foods or beverages from your home:

- Sugary drinks, sodas, juices, energy drinks, sweetened sports drinks (unless you're a professional athlete but that´s a whole different story) etc.
- Processed snacks like chips, pretzels, candy and other sweets

Replace them with the following foods:

- A variety of *fresh fruits*, preferably local and seasonal, and dried fruits such as apples, bananas and dates. Make sure you choose dried fruits with no added sugar.
- *Fresh vegetables* to snack on like cucumbers, broccoli, carrots, peppers, tomatoes.
- Organic *corn* kernels to make your own popcorn.
- *Nuts and seeds* such as almonds, walnuts, and different varieties of trail mixes (look for unsweetened varieties without cranberries as they are almost always sweetened)
- *Nut butters* such as almond butter or peanut butter* (recipes see page)
- *Filtered water:* check your local water quality (online or call) and use a filter for tap water. If your tap water quality is compromised, use bottled water but look for recyclable bottles to reduce plastic waste.

If you need to buy food storage containers, choose environmentally friendly materials such as glass. Glass containers will not only beautifully display your ingredients but also inspire you to cook with them. The more concealed a product, the less likely you will use it. Large storage containers also allow you to purchase food items in bulk, which causes less waste and saves you money.
Whole grains and flours should ideally be kept in tightly sealed jars to keep out unwanted insects. Store grains, flours, nuts and seeds which are not frequently used in the freezer.

As you go along, try to be eco- conscious by

- Replacing plastic straws with metal straws,
- Purchasing paper cups and compostable products instead of single-use plastic tableware and cups,
- Buying in bulk to avoid plastic wrappings etc.

The steady increase in availability and range of environmentally friendly products makes it easier to choose more sustainable. Have each family member pick their own sustainable plastic-free drink bottles, snack containers and reusable coffee mug but most importantly: Don’t forget to take them with you when you walk out the front door!

* Conventional peanut butters contain up to 27% pesticide residues including possible carcinogens and hormone disruptors. However, all peanuts are prone to mold. One particularly worrisome product of mold is aflatoxin, which has been linked to liver disease and liver cancer. A certain variety of peanuts called Valencia peanut is being grown in New Mexico, where the climate is very dry and consequently, the peanuts are less susceptible to this aflatoxin. Nevertheless, mold can grow on any peanut that is not stored properly or when exposed to moisture. My recommendation is to choose organic peanut butter made from Valencia peanuts and generally limit the intake of peanut butter by replacing it with other nut butters.

Healthy Drinks

Although most of us have an unlimited supply of clean water to quench our thirst, many of us reach for other beverages throughout the day such as sodas, juices, energy drinks and coffee. Research has shown that incorporating more water into our diet improves our overall health and helps losing weight.

Replace sodas, processed drinks and juices with filtered water.

Feel free to spice up your drink by infusing water with natural flavors by simply adding lemon, orange and/or cucumber slices, fresh herbs such as mint or basil leaves or spices such as cinnamon sticks. Not only will the water taste and smell delicious, but it will also look quite fancy, especially if kept in a clear water jug or water bottle.
Try to limit your coffee intake and replace it with healthy hot tea or a turmeric latte (see recipes below).

Healthy hot and cold teas

Kombucha: If you or your kids like fizzy drinks, introduce them to kombucha, a fermented drink on a tea basis which contains beneficial live cultures. Make sure to choose a raw kombucha variety from the fridge section instead of a pasteurized one. Later on in the Program, you'll learn how to make your own kombucha from scratch, which is much more cost effective.

Green Tea, Black Tea

Tea is one of the healthiest drinks available- at least as long as it hasn't been sweetened with sugar. Make sure to buy organically grown teas. All green, black, oolong and white loose leaf tea (not herbal) contain antioxidants that help keep our bodies healthy. All these different varieties of tea come from the same plant called *camellia senesis*. Therefore, we get very similar benefits regardless of the type of tea we drink. The differences come from the way the teas are processed and oxidized. Drinking tea on a regular basis reduces the risk of cancer, improves the skin, enhances the immune system and promotes good cardiovascular health.

Herbal teas

Herbal teas are not really true teas and are made from herbs, spices, dried fruits and flowers. They come in a wide range of tastes and flavors and make a tempting alternative to water. Enjoy them hot or cold.

Turmeric latte

A delicious alternative for coffee, anti- inflammatory turmeric combined with cinnamon, ginger and black pepper can be easily made at home. We were introduced to this Ayurvedic inspired golden milk a few years back in Australia and have loved it ever since. Having the spice mix on hand allows you to whip up your turmeric latte without any extra prep time.

Turmeric latte spice mix

4 tbsp ground turmeric
2 tsp ground ginger (adjust to taste- my children are very sensitive to ginger flavor and I use less ground ginger in their spice mix)
2 tsp ground cinnamon (plus more to taste)
1 tsp ground black pepper (plus more to taste)

- Mix all ingredients together and store in a closed jar.

How to make turmeric latte

- In the microwave or on the stove, heat 1 cup of plant milk (cashew, almond or coconut milk).
- Stir in 1 heaping teaspoon of turmeric spice mix and 1 teaspoon Manuka honey. You can use a cheaper Manuka for regular use and keep an expensive medicinal type of Manuka in case someone has a sore throat.
- Sprinkle with ground nutmeg or cinnamon and enjoy.

Note: To make iced turmeric latte, add 1 teaspoon of spice mix and 1 tablespoon of hot water to a serving glass. Stir until

well combined. Add a few ice cubes and top with plant based milk of your choice.

Alcohol

Alcohol has become such a regular part of our culture, that we tend to forget the risks that it carries with it. Of course, this does not apply to the occasional glass of wine enjoyed in good company. Still, drinking too much alcohol is associated with a variety of health problems, including being overweight. Alcohol has a lot of calories, but generally offers little beneficial value- with perhaps the exception of red wine due to its high antioxidant content. Resveratrol, in particular, located in the skin and seeds of dark grapes, make red grapes more beneficial compared to green grapes. Resveratrol is part of the grapes' immune system designed to neutralize damaging free radicals, which grapes are naturally exposed to. In humans, resveratrol has been linked to lower risks of cancer, stroke, and heart disease. During the fermentation of grapes, the concentration of resveratrol increases with a rather large fluctuation range depending on the variety and growing conditions of the grapes. Top on the list of healthiest wines seems to be Pinot Noir, which contains the highest amount of resveratrol. The thin skinned grape grows in damp conditions and is often stressed by a combination of pathogenic organisms, temperature and fungi which typically attack in cool damp climates.

Healthy Snacks

Replace processed and/ or sweet junk food, chips with natural options such as raw fruits and vegetables, nut mixes, homemade popcorn, kale chips etc (see below).
Here are a few tips to help you and your kids to transition easily:

- Make sure you send your children to school with food that they like.
- Experiment with different foods and find out what everybody's favorite is. Experiment with texture, color and shapes.
- Be creative and have fun when preparing snack containers. Kids love surprises! I used to draw faces or write messages on bananas, place stickers or handwritten notes in their food containers, or decorate sandwiches in fun ways.
- Introduce new fruits and vegetables on a regular basis to broaden your palates. Remember to be patient as our taste buds need about two weeks to regenerate and we therefore need some time to adjust to new flavors (see page…).
- Make sure to always take healthy snacks along in case you or your kids get hungry, particularly after school/ work or following physical activities. When we get hungry, we are more prone to eat whatever is available- healthy or not- and instinctively choose high caloric sugary and fatty foods. For these occasions, our children kept "emergency" snacks in their backpacks, such as a package of dates or dried fruit/ nut mixes.
- Make healthy foods easily accessible- by assigning them a certain section in the pantry and the fridge or by keeping a bowl of fruit on the kitchen counter or the dinner table. It's easier to choose a healthy snack when it's in plain sight.

Keep in mind that sugar can behave similar to drugs or alcohol and that cutting down on sugar can cause withdrawal symptoms and cravings. The more informed you are about the biochemical reactions sugar initiates, and the more you expect these symptoms to appear, the more prepared you'll be. After a few days of reduced sugar intake, your body will adapt to and symptoms such as headaches, cravings and fatigue will start to disappear.
Due to the fact that the Reconnect Program™ helps you to transition to a plant-based diet gradually, your sugar intake won't abruptly drop overnight. That way, your body can gently adapt, which lessens or eliminates withdrawal symptoms, which in turn helps you stick with the program.

Recipe Ideas

Some people embrace a variety of foods while others don´t get tired of eating the same foods over and over again. Especially children tend to have their favorite foods. Find out what tickles your child's fancy and adjust your meal plan accordingly. Here are some kids approved and tested ideas which also work great for adults- which tend to be less picky:

- ***Fresh fruit salad:*** add mint leaves for additional flavor and include G-BOMBS such as purple grapes and berries

as often as possible

- ***Grab-and-go fruits:*** Our children love to spend their recess running around and playing with their friends and don't want to spend their time eating snacks from a container. They prefer sliced apples or a banana, something that can easily be grabbed and taken along to the playground. To avoid apples or pears from oxidizing and turning brown, drizzle them with a bit of lemon juice.
- ***Nut butters and apple slices:*** We usually use homemade almond butter, which can also be spread on a slice of bread, topped with banana slices and date paste (see *The Reconnect Cookbook*).
- ***Homemade popcorn:*** When prepared with the right ingredients, popcorn is low in calories, heart protective, and surprisingly full of healthy nutrients. As long as you stay away from store bought popcorn or- even worse- movie theater popcorn, which is mostly doused in butter, oil, and/or salt and other ingredients. Your best choice is "naked", air-popped popcorn using a pan or a hot air popper. Microwave popcorn is convenient, but it has its drawbacks. Usually, it contains unhealthy additives. Additionally, the inside of the bag is usually coated with *perfluorinated compounds* (PFCs), chemicals that have been shown to suppress immune function in children and cause cancer in animals. Avoid all these issues by sticking to home made popcorn, which is super easy and fun to make.

  You can either use a *microwave*: Pour 3 to 4 tablespoons of plain organic kernels into a brown paper lunch bag, fold over the top of the bag twice to seal it closed, and microwave for about 2 minutes, or until the popping slows to a few seconds between pops. (Note: Cooking time will vary depending upon the microwave, so it may take you a few tries to figure out the perfect pop time.)
  Alternatively you can use a pan: Add two tablespoons extra virgin olive oil and two kernels to a heavy-bottomed pan that distributes heat evenly. Cover and turn up the heat to medium. Wait for the kernels to pop, which might take a few minutes. Once they pop, remove the pan from the heat and pour in 1/2 cup of kernels. Cover the pan again, and give it a little shake to distribute the kernels evenly. Let the pan rest for a minute to make sure the oil doesn't get too hot before the kernels are ready to pop. Put the pan back onto the stove and continue cooking the popcorn, carefully shimmying the pot occasionally. Once the kernels start popping, tip the lid just a touch to allow steam to escape. Cook until the popping slows to about one pop per every few seconds. Pour popcorn into a bowl and season to your liking.
  Add ons: Salt, nutritional yeast, or a combination of cayenne pepper and salt or chili powder and salt.
- ***Mixes of dried fruits/nuts/ seeds***: dates (perfect food before workouts), apricots, figs, raisins, goji berries or a mix, walnuts, cashews, almonds for example.
- ***Energy balls:*** (recipes in The Reconnect Cookbook)
- ***Raw veggie sticks and hummus:*** store bought or homemade which tastes way better (recipes in The Reconnect Cookbook)
- ***Kale chips*** (recipes in The Reconnect Cookbook)

Basic Recipe Series: How to Make Plant-Based Yogurt

The Basic Recipes series includes plant-based milks, delicious fermented cashew cream cheese or homemade yogurt. These recipes are extremely versatile, can be easily prepared and are part of our everyday meals. As you move through the Reconnect Program™, I will introduce these recipes one at a time.
In the current step, we are focusing on the preparation of plant-based yogurt, which is the main ingredient of the *Reconnect Breakfast Bowl*. The breakfast bowl is part of healthy plant-based breakfasts, which will be introduced in the next step of the program.

A few years back, a dear friend form India introduced me to homemade yogurt. Never before have I seen anyone make their own yogurt and always thought that it was a tricky and laborious process. I was even more surprised when she explained the whole process. It turned out that making yogurt from scratch was so incredibly easy that I thought everybody would be making yogurt at home. In the long run, you´ll save yourself a lot of money (organic plant-based yogurts with live cultures aren't exactly cheap), you are in control of the ingredients (sugar, in particular) as well as the quality and diversity of the microorganisms. Plus, you minimize plastic waste by avoiding packages.

To make yogurt at home, all you need is a plant-based milk, a starter culture and time.

- For the milk, you can use your favorite store bought milk (unsweetened almond, hemp, soy, coconut or cashew milk works really well) or your own homemade plant-based milk (see *The Reconnect Cookbook*). Plant milks from different companies taste very differently and you need to experiment for a while to find the perfect milk for you. I use homemade cashew milk or a combination of cashew/almond milk or cashews/hemp milk in combination with store bought soy milk.
- For the starter culture, use a vegan probiotic powder with a large variety of microorganisms when you are making yogurt for the first time. You can get these cultures either in store or order them from online fermentation stores. Once you have made yogurt for the first time, you can simply use one tablespoon of yogurt to ferment your next batch. After thirty or so batches I would recommend using a fresh culture. Instead of the probiotic powder, you could also use a tablespoon of a store bought vegan yogurt with live cultures (read the label carefully as most yogurts have been heat treated which kills off beneficial bacteria). Keep in mind that probiotic powders contain not only more but also a larger variety of microorganisms.
- Optional add ins: Bourbon vanilla extract, Maca powder
- Optional: Agar-agar (vegan alternative to gelatin), which works as a stabilizer. As a thickener, arrowroot powder or tapioca flour can be used*.

**Note:* Full fat coconut milk gets wonderfully creamy even without the addition of agar flakes and tapioca flour and therefore, doesn't need to be heated. Simply stir in the probiotics into the milk, cover and let ferment for 12-24 hours.

Step-by-step plant-based yogurt recipe:

1. Pour 4 cups/1 liter plant-based milk into a pot.
2. Whisk in about 3/4 tbsp agar flakes and 3/4 tbsp arrowroot powder if using.
3. Gently heat up the milk. Remove the pot from the stove before the milk starts bubbling. Let it cool off to room temperature (the optimal temperature for bacterial growth is 110°F/43°C). If the milk is too hot, it will kill the bacteria. To get a feel for the temperature, I recommend using a cooking thermometer.
4. Once cooled off, stir in 1 tbsp of probiotic powder (or 1 tbsp of the previous yogurt). Pour your mix into a glass bowl or mason jars, cover with a clean kitchen towel or cheesecloth and place them in the oven. Heat the oven to 110° F/43°C, then turn off the heat. Leave the yogurt in the oven for 12-24 hours depending on the room temperature (due to the lower temperatures in winter, the fermentation process takes longer while in summer, the yogurt will be done within 12 hours).
5. Have a taste. Once the yogurt has achieved the desired flavor, transfer and store it in the fridge.

Alternatively, use my quick version of making yogurt

You don't necessarily need to add agar flakes or arrowroot powder when making yogurt- these add-ins just help the yogurt to get creamy. Without them, the yogurt is more runny but still teeming with healthy microorganisms.

I usually prefer this quick version for two reasons:

- Above all, I am always very busy and the quicker the method, the more manageable for me.
- Secondly, with a runnier yogurt, more clear liquid collects on top. This is what I call **plant whey**. I spoon off 3-4 tablespoons, transfer them to a small glass jar which I keep in the fridge to use in batters, the next batch of yogurt, fermented cream cheese and the likes.

The simplified version of making yogurt:

1. Preheat the oven to 110°F/34°C.
2. In a glass bowl, simply combine probiotics and plant-based milk.

3. Turn off the oven and place the bowl in the unheated oven. Ferment for 12-24 hours.
4. Once fermented, the yogurt can be easily thickened by stirring in chia seeds- don´t forget to let them soak for at least an hour. Alternatively, thicken the yogurt by blending it with a banana.

Feel free to use this thinner yogurt as a powerful substitute for plant milk in acai bowls or smoothies.

Practical tip: Blend yogurt with ripe seasonal fruits, fill into popsicle molds and freeze for a delicious ice cream alternative.

2. Mindset

Limiting/ Reducing Screen Time

A healthy relationship with electronic devices is a vital part of a healthy lifestyle. For adults, it's usually easier to regulate their screen time. Most importantly, we should ask as role models for our kids. Limiting screen time for our children is usually met with strong resistance, particularly by teenagers. Nevertheless, they need structure, consistency and leadership from their parents. In Part II of the book I included acceptable screen times for different age groups and described various strategies to implement positive changes. Here are some more tips that have worked for our family:

Using actions instead of words

Don’t let yourself be drawn into an argument, a discussion or even a fight. Simply respond with a short sentence and deliver the consequence (the *“Love and Logic”* technique, as discussed in Part II).
Here is an example of an effective strategy that worked for us:
Begging and whining, upon switching off our kids´devices, was met with a reduction of weekend screen time by 10 minute increments. This effective consequence very quickly put an end to the annoying behavior.
Strategies like these reduce arguments and support a more harmonious relationship with your kids. Less screen time allows for more quality spend with our children.

Always keep in mind, particularly when things get tough, that we as parents have the responsibility to create a healthy environment for our kids and teach them to use digital devices in a responsible way. *Giving up or giving is not an option, it´s just the easy way out for us.*

Usually, after the few first tough weeks, even the most uncooperative kids will get used to the new guidelines and may even appreciate some of them. After all, staying on top of social media sites, chat groups etc can be time consuming and stressful. Not to mention the internal struggle between knowing that the device should be put down and the urge to stay connected due to the addictive nature of screens.
One morning, we had to take our daughter's mobile phone away for a few days as a consequence of watching something secretly at night. After a couple of phone-less days she admitted how relieved she was that the burden of constantly resisting the urge to use her phone was lifted off her.

Keep in mind that consequences are not inherently negative. In fact, they can and should be used as a positive reward when kids respect and apply to the rules.

Here are some age related tips that may come in handy:

Younger children

Children really don't need screen time during the week unless they need a device for homework or want to look something up. In this case they should use their device in a supervised common area instead of their bedrooms. It is also helpful if they set themselves a realistic time limit for their homework, especially when screens are needed.

- Instead of being on screens, they should play, alone or with their friends, be creative, read, focus on homework, enjoy after school activities or simply be bored. If your children come whining because they don’t know what to do, let them figure it out by themselves. Most of the time, our well meant ideas will be rejected anyway.

Instead, respond with “I am sure you’ll find something”. Place board games, toys, paints etc where your kids can see and access them easily. You’d be surprised how fast kids entertain themselves when there is no distraction around. All of a sudden, the marble track provides hours of playtime, Lego is interesting once again or a puzzle is rediscovered.

- Educational games/apps etc should only be allowed if they are truly helpful and as long as they don't include games. Limit their use to a healthy amount of about 10 to 15 minutes.
- If your children are worn out after a tiring day or poor weather prevents them from playing outside and you are ok with them watching something, let them choose a documentary. Remember to give them choices. Instead of asking what they would like to watch, give them two choices of documentaries they may be interested in. Today's documentaries are very different from the ones I grew up with and far from being boring. In the back of the book, you’ll find a selection of some amazing and inspiring documentaries about our planet, the universe, inspiring people, food and restaurants, animals, sports etc. and new ones are constantly coming up.
- On weekends, set clear time limits for screen time. Our children were allowed to have one hour of screen time on Saturday as well as on Sunday, movie nights with friends or family excluded. Before they could go on their screens, they had to finish their homework as well as their chores. If you allow more screen time, a good rule of thumb is for your children to „buy“ additional screen time with the same amount of outside play time. Sometimes, they will even forget about their screens because they are having such a fun time playing with friends. Basically, you want them to be active before they slump down on the couch.

  By the way, children don’t need and should not have a TV in their bedrooms.
- Set rules for screens while driving. Driving together is a great opportunity to spend time together and allows time for chatting with each other. Our family tipping point is two hours. Less than two hours in the car is spent reading, talking, singing or just looking out the window. If we drive longer than two hours, devices are allowed.

Teenagers

Screens and teenagers can be a very challenging combination. Although most of our kids´ social interactions require a device nowadays, we have to teach them how to use their screens in a healthy way. Not an easy task for parents and I can't say I have found the ideal approach.

What I find most important is to *include the kids* in establishing guidelines instead of forcing them onto them. With some teenagers, this approach may work, while others are just not yet strong enough to stick to the guidelines. After all, we know ourselves how addictive screens are.

- In general, while doing homework, electronic devices should be kept in a common area such as the living room or kitchen, rather than in their bedrooms. This avoids constant temptation and distraction and enables kids to focus on their homework.
- Agree on healthy time limits for online games, chats etc.
- After dinner, all electronic devices should be placed in a designated family area and switched to flight mode.
- During the week, we use parental control to shut down their internet access between 8/9pm and 7am and it’s our kids’ responsibility to bring their devices downstairs in the evening and charge them. Your teenager has a much better sleep quality and increased overall wellbeing when reading, listening to calm music or practicing a few minutes of mindfulness before dozing off (practicing mindfulness is the only time an app may be required and should be allowed). Ideally, you want an hour of screen free time before going to sleep.

Adults

Even adults need to protect themselves from the powerful attraction digital devices exert on us.

- Phones should generally be banned from our bedrooms. Or at least only be used to wake us up in the morning or to be available in case of an emergency. If you need to have your phone on your bedside table, turn on sleep mode so incoming messages and alerts do not disrupt your evening routine.
- Before going to sleep, a much better alternative to being on a screen is to read a book, have a chat with your partner or practice a few minutes of mindfulness.

- In the mornings, resist the urge to check your feeds, the news or whatever else it is as soon as you open your eyes. Instead, enjoy the moment and focus on your morning routine. Prepare breakfasts, snacks and lunches mindfully, appreciate a good breakfast and have a chat with your family. Only use your phone for important tasks like checking the traffic or the weather forecast.

We found it very helpful to agree on a family screen time contract. This contract is a way to set healthy screen time boundaries for everyone in the family, including parents.

Feel free to print out the following contract and/or adapt it to your own family's needs:

THE _____ FAMILY SCREEN TIME CONTRACT

1. School Nights & Weeknights
Our family shuts down all our devices at _____o'clock. The devices remain off until the next morning. Devices will not be turned back on until everyone has finished breakfast.

2. Weekends & Holidays
Our family limits screen time on weekends and holidays to _____hours/minutes per day. Additional time can be bought with time spent outside.

3. Driving/ Travel/ Vacations
Screens are only allowed when we have to drive longer than 2 hours. After arriving at our holiday destination, everyone in our family limits screen time to _____ minutes a day. We leave our devices in our hotel or vacation home and don't take them on activities, such as hiking, going to the beach, cycling, etc. If needed, one device may be designated to be used for directions, photos or emergency calls.

4. Screen Time Blackouts
We agree not to use our devices when we have:
___ Meals together
___ Family gatherings
___ Friends visiting
___ Playdates
___ Sleepovers
Add your personal family guidelines here: _____
_____

5. Device Storage & Charging
Our family does not store or charge tech devices in our bedrooms or playrooms. Instead, we all keep our devices in a communal space, which is our _____.

7. TV
We agree that no TVs should be kept in our bedrooms.

6. Screen Time Privilege
Devices aren't available after school until homework and chores are completed. Chores may include:
___ Making beds
___ Tidying up rooms
___ Doing dishes
___ Taking care of pets
___ Helping prepare dinner
___ Setting the table
Add your additional family chores here: _____

7. Alternatives to Screen Time
Our family recognizes that too much screen time is unhealthy. As a family, we each have weekly physical and creative activities such as: (check at least three)
___ Exercise
___ Sports
___ Musical instruments
___ Art
___ Dance
___ Reading for pleasure
Add your own special activities here: _____

8. Web Use and Passwords
To protect our children from inappropriate material and frightening images on the internet, children in our family under____years old are not allowed to surf the web unsupervised. Parents also keep records of all passwords, including social media, and don't allow secret accounts. Parents are always informed and asked when an app/ software etc is downloaded.

9. Social Media Behavior
Our children/ teenagers agree never to use social media to be hurtful or mean to others. Children/ teenagers agree to inform their parents about any harmful content or behavior they might discover.

10. Violations
Our family recognizes that screen time is a privilege not a right. If someone in our family repeatedly breaks the family contract, devices will be taken away. Parents will decide for how long.

DATE: _____

SIGNATURES: _____

Family Time

Enjoying meals together

Try to squeeze in family meals as often as possible, ideally at least once a day. This is a great opportunity to come together, share experiences from your day, discuss things, laugh, support each other and bond. If possible, create a cozy, relaxed atmosphere which can include background music, a nice table setting etc. Engage in genuine conversations with each other and listen without being distracted by electronic devices. Research has even shown that family meals help prevent obesity and that kids are less likely to get involved with addictive substances, are less violent and have fewer psychological problems.
As often as possible, make the most of the time spent together.

In our family, we like to come up with three positive things that happened to us during the day, something that made us feel good or brightened up our day. Even on the most dreadful days we can always find something good- a kind word from someone, having helped someone, enjoyed lunch, read something interesting or were just happy to come home again.
My husband an I share challenges we overcame or are currently facing and ask about our kids´challenges. We found that as we open up, so do our kids.
Share and celebrate successes.
When a family member can't think of anything positive, it´s our chance to turn their day around- with cuddles, reading together, by taking a walk around the block or playing a short game- or simply by sitting around the table together, listening. There is hardly anything more powerful than listening to each other.

Increasing family time on weekends- choose at least one activity together

Come up with activities the whole family enjoys like playing board games, working out together, going bowling, making a puzzle (which- by the way- is an excellent opportunity to have chats and bond), going for a walk together, and many more. Involve the kids when choosing activities. Feel free to come up with a project that involves building something (a rocket, birdhouse, robots etc) or doing something together like taking a course or classes together and learning a new skill.
Don't stress out about finding the perfect and most meaningful activity. *What you are doing together is less important than the fact that we are spending quality time together.*

Nature Time

Spend time in nature- at least once a week

Boost your mood and reconnect to your surroundings by taking a walk through a forest, having a picnic, going for a swim in a river or lake or simply by taking books along and reading outside. Besides flooding your body with happy hormones, this is a great opportunity to bond and spend quality family time together. Use all your senses to take in your natural surroundings, feel the fresh air, the sunshine and the wind on your skin. Observe all the different animals and take in the sight and smell of various plants.
All too often, the prospect of family time doesn't sound overall exciting to teenagers. They may be annoyed or even refuse to join in at all. Here are a few strategies to help you tackle these situations:

- Let your teenager choose the activity by giving two choices such as "Would you rather drive to the lake or go on a hike?" or decide on the duration of the activity „Would you rather be back home in 3 hours or in 5 hours?".
- Connect something your teenager would love to do with the family activity „You can go to the movies with your friends once we are back from our hike".
- Choose an attractive fun and/or new activity like bouldering, kayaking, taking a class in climbing, going roller skating etc.
- If your teen keeps whining and acting out during your family time, simply make your activity last even longer by adding ten minutes increments to your hike/ walk etc if the whining continues. You can also let your teenager walk alone in front of you or behind you, stating „If you want to continue whining, please do it alone". Try really hard to block out the whining and enjoy your time with the rest of the family. Next time your teenager asks you for a favor, kindly refuse by saying something like „I love to do something for you if you do something for us".

My husband and I have found that no matter how negative our kids' original attitude was towards an activity, once we were on the trail, cycling etc they ended up enjoying themselves, even if it took some time. In this case, suppress the urge of saying "I told you so".

- If no strategy seems to work, leave your teenager at home without another comment. Next time your teen asks you for a favor like driving him/ her somewhere, having a sleepover etc politely refuse for at least two consecutive occasions. Depending on the previous behavior, you can keep declining for a long time until you „feel fine again".

3. Physical Activity

Toddlers

Toddlers should have **at least 30 minutes of structured physical activity** such as dancing, playing hide and seed, or ball activities per day and **at least 60 minutes of unstructured, active free play.** Feel free to include some easy yoga stretches showing them how to "reach to the sky and keep reaching," to "touch your toes," or to "bend to the side."

Children/ Teenagers

You kids may be actively involved in school or after school sports but many schools had to cut back on physical education and reduced the variety of activities offered.

In that case, enrolling your kids in after school physical activities is essential for their physical and emotional health (see page.). Even low-to-moderate intensity activities for as little as 30 minutes a day are crucial for them. For the physical and mental wellbeing of teenagers, **60 minutes of moderate to vigorous physical activity on most days** are recommended. Activities may include dancing, running, swimming, cycling, roller blading, football, jumping rope, hiking, soccer etc.

Adults

Oftentimes, the biggest challenge for us is to get ourselves out the door. Remember that motivation follows action. So just do it.

- Setting ourselves a specific goal with fixed days makes it a lot easier to get into an active routine.
- You can set yourself additional goals such as signing up for a public walking or running event. If you feel like company would boost your motivation, find yourself a walking/ running/ cycling buddy or join a group or club.
- Some of us get encouraged by tracking their progress with a fitness app or watch. Find what works best for you.
- Depending on your level of fitness, adapt the program to your needs. If you start from scratch, begin as follows:
- Introduce **20-30 minutes of continuous movement twice or three times a week** like walking, Nordic walking, cycling, running, swimming. Even just a walk around the block will get you started. Make sure you warm up and cool down for a few minutes in order to avoid injuries and keep hydrated.
- If possible, be outside surrounded by nature, in a park or in the woods for instance.
- Train mindfully. Connect with your surroundings, take in scents, colors and noises. Feel your heartbeat and your breathing, feel the sun on your face or take in the movements of the clouds.

Reconnect Program™ Step 3
Week 4 & 5

Congratulations! If you are reading this, you have successfully implemented your first healthy lifestyle changes. This is a time to celebrate and give yourselves a pad on the back. Before you move on to the next step, take a moment to reflect and review the goals you set yourselves at the start of the program. Are you moving in the right direction? Have you already accomplished a goal, do you need to adjust some of your goals? How do you feel overall?
If you don't feel ready for the implementation of the next goals, don't hesitate to spend another week on step 3.

The table below features your goals for the next two weeks. From this table, choose 3-5 goals for the first week and add the remaining goals in the second week.

Reconnect Program™ Step 3 Week 4 & 5	
Category	Goals
1. Nutrition	Cleaning Out and Restocking Your Kitchen Part II
	Preparing Plant-Based Breakfasts
	Basic Recipe Series: Homemade Cashew Creme Cheese, Date Paste, Super-Seed Blend
	Exploring the Neighborhood
2. Mindset	Introducing Mindfulness
	Increasing Your Knowledge
3. Physical activity	Keep Moving (3x/week)

1. Nutrition

Cleaning Out and Restocking Your Kitchen Part II

As we start introducing healthy breakfasts, we need to *get rid of and stop purchasing unhealthy breakfast items* including

- Cereals, non fermented breads, oatmeal, premade pancake and waffle mixtures, muffins, pastries, eggs, sausages, bacon and other animal foods as well as everything processed.

Replace these unhealthy items with the following delicious and natural items:

- Fresh or frozen fruits, with an emphasis on everything purple and dark blue such as berries and dark grapes (anthocyanides), dates
- Unsweetened dried fruits such as raisins, plums, dates, sulfur free apricots etc.

- Nuts and seeds including sunflower seeds, hemp seeds, pepitas (hulled green pumpkin seeds), chia seeds and flax seeds, almonds, walnuts and Brazil nuts
- Additional add ons/superfoods such as bee pollen, Manuka honey, açai powder, spirulina, maca powder and raw cacao

Preparing Healthy Breakfasts

A healthy breakfast provides us with important nutrients and energy for the next hours so we can focus on our tasks, give our best and be in a good mood. Preparing healthy, whole-food plant-based breakfasts is actually quite easy and doesn't take much time at all.
If your mornings are super busy, prepare as much as you can the night before- blend yogurt with fruits, wash and cut fresh fruits and make sure you have Super Seed Blend on hand or alternatively, soak chia seeds overnight.

Below, I have included three basic recipes that will get you through a busy week. Feel free to experiment with different ingredients and adjust them to your liking.

For relaxed weekends, find slightly more time consuming recipes for pancakes or French toast in the recipes section of the book.
Previously, you have learned how to prepare fermented plant-based yogurt and ideally, you should have a batch waiting in the fridge by now. If not, now would be a good time to make it. Alternatively, feel free to purchase plant-based yogurt. Make sure it is organic and contains live cultures but no added sugar.

Recipe No 1 - The Reconnect Breakfast Bowl

The Reconnect Bowl contains three basic ingredients, which can be easily swapped to add some variety to your breakfast:

- ***Plant-based yogurt with live cultures:*** use plain yogurt or puree plain yogurt with your choice of fresh or frozen berries and/ or soft fruits such as ripe persimmons and/ or a banana. For an acai bowl, blend yogurt with banana and acai powder or frozen acai. Add a bit of date paste if you prefer a sweeter taste. Alternatively, mix in a bit of Bourbon vanilla, cinnamon or Maca powder.
- ***Fresh fruits.*** Add fresh berries, in particular blue and purple varieties such as blueberries, blackberries and purple grapes whenever possible. If you can't find fresh organic berries, purchase frozen berries, which you can either thaw overnight or blend with the yogurt.
- ***Seeds and nuts.*** Stir one tablespoon of Super Seed Blend (see recipe below in the basic recipe section) into each yogurt bowl, top your bowl with grated Brazil nuts (one nut per person) once or twice a week, and sprinkle your bowl with dehulled hemp seeds, activated sesame seeds, pumpkin seeds and sunflower seeds (see page…).

Optional: Top your bowl with superfoods such as bee pollen and Manuka honey.

Here is an example of one of our daily summer bowls:

- Blend 1 $^{1}/_{2}$ cups of homemade yogurt with 1 banana, 1 cup of fresh or frozen blackberries, 2 tbsp Super-Seed blend and 1 tsp maca powder. If using frozen fruits, add a splash of plant-based milk. For this, I usually use a simple immersion blender. If using frozen berries or if you are preparing a larger amount of yogurt, I would recommend a high speed blender.
- Divide the yogurt among four bowls. Top with fresh berries such as blueberries and raspberries.
- Sprinkle with bee pollen, hemp seeds, activated sunflower seeds and pepitas.

If berries are out of season use whatever ripe fruits are available and/or include frozen fruits. Here is an example:

- Blend one ripe persimmon with 1 cup cashew yogurt and one banana.
- Divide among bowls.
- Cut two persimmons into smaller cubes. Divide among bowls.

- Add half a passionfruit on top of each bowl. Alternatively, use an orange.
- Sprinkle with grated coconut, hemp seeds, grated Brazil nut, sesame and bee pollen.

Other fruit options include thinly sliced or grated apples or pears, pomegranate seeds, peaches etc.

Troubleshooting: If your kids aren't keen on eating nuts and seeds, you can either blend them into a smoothie or you let your kids choose:

"Would you rather drink them in a smoothie or eat them on the side?"

" Would you rather eat them as a snack in combination with dried fruits or have them in your yogurt bowl?"

"Would you rather have 3 nuts or 6 nuts?"

"Would you rather eat the Brazil nut whole or have me grate it?"

Tip: In case your child is not fond of nuts and seeds, grind them and blend them into the yogurt/smoothie.

Along with the yogurt bowls, feel free to serve long fermented whole-grain sourdough bread. Choose jams with low sugar content or use my all time favorite **date paste** as a spread. You can also easily make you own **raw jam with fresh fruits and chia seeds:**

- Puree one cup of fresh or frozen berries (e.g. strawberries) with a tablespoon of water if needed. Stir in 1 tablespoon of chia seeds and let sit in the fridge for a few hours.

Recipe No 2 - The Reconnect Super Smoothie

Depending on your location and the season, a smoothie may be a great option for you. While our kids love smoothies all year round, I enjoy them only during the hot summer season. Usually, I need something warm- or at least not cold- in the morning. According to Ayurveda, a warm meal gently awakens the digestive system, as the food is already at "operating temperature", and requires less energy to digest. Feel free to take the smoothie along for a late morning snack.

Although a healthy breakfast is an important meal, some people feel better and mentally fitter without it. In that case, try a warm and nutritious glass of Turmeric latte (recipe see below) and take a smoothie along.

Ingredients (Serves 2):

1 banana, fresh or frozen
1 cup dark berries such as blueberries or blackberries, fresh or frozen
1 tbsp date paste (see below)
1 tbsp *Super Seed Blend* (see below)
1 tbsp raw cacao powder
$^1/_2$ cup plain unsweetened plant yogurt
1 cup unsweetened plant milk (e.g. almond, hemp, cashew milk)
Optional: a handful of organic spinach leaves

Method:

- Blend all ingredients until smooth.

Remember to enjoy your smoothie slowly rather than gulping it down as important enzymes are found in our saliva.

Important note:

Remember that raw spinach contains large amounts of oxalates which interfere with your body's absorption of important minerals. Therefore, I recommend adding raw leafy greens only occasionally to your smoothie.

Recipe No 3 - The Warm and Cozy Reconnect Breakfast Bowl

I usually prepare a larger batch of cooked grains and pseudo grains at once and store them in the fridge for a few days. This way, I can always whip up a warm breakfast bowl without any fuzz. In the next step of the program, we will focus on the proper preparation of grains. For now, I only want you to get familiar with the preparation of a healthy warm breakfast bowl. Use different grains and pseudograins. Quinoa is one of our favorites as it has softer and less chewy texture compared to other grains.

Ingredients

1 1/2 cups plant based milk
1 small banana
1 tbsp date paste (see recipe below)
1/2 tbsp cinnamon or a blend of cinnamon/turmeric (pre-made spice blends can be found in supermarkets)
3 cups cooked grains e.g. quinoa, pearl barley, spelt berries
1/4 cup raisins
Optional toppings: Fresh fruits, thinly sliced or cubed; chopped nuts, seeds, etc; Super Seed Blend

Method:

- Blend milk, banana, date paste and spices with an immersion blender until smooth.
- Transfer the mixture to a medium sized pot. Add raisins and gently heat up.
- Stir in the grains/pseudograins and warm up.
- Divide among bowls and add toppings to your liking.

Note:
In winter, I like to add thinly sliced apples and pears to the pot and gently cook them along with the grains until soft. In summer, I grate fresh apples on top of the warm cinnamon bowl.

Supplements

As part of your morning routine, add the following important vitamins:

- *Vitamin D:* As most of us don't get enough sunlight throughout the year (see page), take a daily vitamin D supplement of 4000 IU for a 70 kg person
- *Vitamin B12:* Take either 1000 microgram every other day or 2500 microgram every third day
- *Omega-3 supplement:* If you don't consume algae products on a regular basis, I would recommend taking a vegan algae based omega-3 supplement just to be on the safe side. Make sure that children get enough omega-3's. You need to check the labels very carefully, as most omega-3 products include fish oil. Make sure to choose an organic, purely plant-based algae product.
- *Probiotics:* If you don't consume fermented live foods on a regular basis, I would recommend taking a probiotic powder mixed with water a couple of times a week

Basic Recipe Series

1. Everyday Super Seed Blend

This blend is best used on a daily basis and can be mixed into the Reconnect bowl or smoothie. I recommend a minimum of one tablespoon Super Seed Blend per person per day.

1. In a blender, grind 1/4 cup organic flax seeds and 1/4 cup chia seeds- you can either pulse them a few times or use a special “grinding grains" setting.
2. Transfer the blend to a glass jar (I use a mason jar) and keep tightly sealed in the fridge to avoid oxidation.

Flaxseeds and chia seeds have very hard outer shells which impedes their digestion and inhibits the absorption of their nutrients. Grinding them breaks up their shells. Alternatively, soak chia seeds overnight and use sprouted flax seeds.

2. My Beloved Date Paste

Date paste is extremely easy to prepare and only needs the two ingredients: dates and water. It is the perfect sugar substitute and can be used in pretty much any recipe in lieu of sugar. I use it every morning as a delicious spread instead of jam.
This is how you make your own sweet and delicious date paste:

1. Place 2 cups or a package of organic dried dates in a blender, cover them with lukewarm water and let them soak for about 10 minutes. No need to use expensive Medjool dates for this purpose- keep those for an energizing snack or a sweet treat.
2. Blend until smooth.
3. Transfer the date paste to a glass jar, let cool off, then store in the fridge for up to three weeks.

3. Fermented Cashew Cream Cheese

Cashew cream cheese is one of my most versatile ingredients and can be used in different combinations as well as in a variety of sweet and savory dishes. Again, the word fermented indicates that this item belongs to a group of highly nutritious foods. In order to ferment cashew cream cheese, all you really have to do is to leave it on the counter for a while and wait. During this period, microorganisms will feast on the cashew cream and multiply, thereby transforming it into a powerful probiotic food. During the fermentation process, the cream cheese naturally develops a slightly acidic flavor similar to the one found in yogurt. Because of its mild and pleasant taste, this dish is a great way to introduce fermented foods to your family.

Let me walk you through the steps of making fermented cashew cream cheese:

1. Add 3 cups of organic cashews to the container of a high speed blender. Completely cover them with lukewarm water and let them soak for about 30 minutes up to a few hours. I would not recommend soaking them longer than 6 hours because the nuts have the tendency to become slimy after a while.
2. Rinse and drain the cashews and place them back in the blender.
3. Add $^1/_2$ cup filtered water, $^1/_4$ tsp salt and blend until creamy. If needed, slowly add more water until the mixture has reached the desired consistency (keep in mind that cream cheese naturally thickens as it cools off).
4. Transfer cashew cream cheese to a glass or ceramic bowl and stir in 1 tsp of probiotic powder* or plant based whey (see page…). Cover the bowl loosely and transfer to the oven.
5. Heat the oven to 110°F/ 43°C, then turn it off. Leave the cream cheese inside for 24 hours. At that point, it should have reached your desired level of tangy-sourness. Keep in mind that the fermentation process is temperature dependent and will take longer if the kitchen is colder in winter and will take shorter when it is hot during the summer months.
6. Once the cream cheese has reached the desired tartness, store it- covered- in the fridge for up to 3 weeks.

This basic cream cheese recipe can be used in a variety of ways by adding different ingredients.
Here are some of our *top cream cheese varieties*:

- Stir in some fresh lemon juice and lemon zest (according to taste).
- Blend it with nutritional yeast flakes to achieve a slightly cheesy flavor. Nutritional yeast is deactivated yeast, and full of cheesy, nutty flavor as well as vitamins and minerals.

- Thin out the cream cheese with water and lemon or lime juice and drizzle over avocados, roasted veggies, baked sweet potatoes, or quinoa salad. You can also use it as a dip for sweet potato fries.
- Stir in chipotle or cayenne pepper for a spicy dip.
- You can also use it in a pasta dish (see page…pine nuts, red cabbage, radicchio, cream cheese) to achieve a creamy white sauce.
- Stir in grated carrots, lemon juice and chopped fresh dill.
- For a sweet version to be used as frosting for cupcakes, for example, stir in date paste and/ or some maple syrup and vanilla bean powder.

*For fermenting, I recommend a high quality, active, probiotic powder with a diverse range of microorganisms- usually these products need to be refrigerated. Because probiotics are quite pricey, I use them once to make my own yogurt, then save some of the whey in a small glass jar to use for my next fermentation projects.

Exploring the Neighborhood

Have fun exploring your neighborhood. You'd be surprised how many plant-based places you'll find. Connect with the people that grow and prepare your foods. Purchasing local produce at farmer's markets opens up the opportunity to get in touch with the people who grow our food, experience seasonal changes with different fruits and vegetables, get to taste and smell ripe aromatic produce while at the same time supporting the local economy and promoting food independence. Small farms, particularly organic farms rely strongly on our support.

Try to locate:

- **An artisan baker:** There is nothing more delicious than freshly baked bread. Find a bakery which offers long fermented sourdough bread, preferably made from organic stone ground flours.
- **A local farmers market**
- **A community garden:** Community projects such as growing plants together offer neighbors of all ages, skills and physical abilities with the opportunity to work on a common project, thereby connecting people and strengthening the community. They motivate and excite people and enable the transfer of knowledge. Community gardens in particular draw people outside, make them more active and greatly reduce stress. They supply us with affordable, organic, seasonal and healthy foods and provide an opportunity to reconnect with nature. Last but not least, nothing tastes better than fruits and vegetables you have planted and taken care of yourself.
- **Plant-based restaurants and cafes:** Depending on your area you may find a few plant-based, vegan or organic restaurants. Pay them frequent visits because they depend on our support and need our encouragement. In case you don't find any of these restaurants in your vicinity, find restaurants that offer at least some plant-based dishes. A steakhouse might not be the best place to find lots of plant-based foods, but Asian, Indian and Italian restaurants usually offer a wide range of plant-based choices. Since plant strong diets have become more mainstream, restaurants have increasingly started to include at least one vegan dish in their menu.

2. Mindset

Introducing Mindfulness

Mindfulness meditation encourages you to observe wandering thoughts as they drift through your mind. The intention is to become aware of these thoughts, to notice them without judging them or getting involved. Mindfulness also teaches us to become aware of the moment, instead of thinking of the past or the future. Too often, we are so occupied that we don't even notice how quickly time passes by. Even, and especially, on a busy day, you can teach yourself to take a few moments every now and then to notice how you feel, to take in your surroundings with all your senses and be in the moment. For me, this is a very calming practice which helps me to find and maintain my inner balance.

Younger children

Use mindfulness techniques for children described earlier (page) a few minutes before turning off the light to calm them down and provide the basis for a peaceful sleep.
Feel free to practice together. Occasionally, the four would lie comfortably next to each other on our bed and listen to a guided beach meditation, hearing the waves and feeling the sand underneath our feet. We used to live close to the beach and listening to a beach meditation always brought back beautiful memories. Guided meditations for children can be found on various apps. We have found the app *Headspace* very helpful for people all ages.

Teenagers and adults

Practice 5-10 minutes of mindfulness a day, without any distractions. Before you start, set an intention, e.g. being less stressed, increasing your focus, etc. Using an app with guided meditation/mindfulness helps you get started and is more likely to keep teenagers engaged.
Although not necessarily needed, picking a certain time and place makes it more likely that you'll stick with your mindful/ meditation routine.

A good time for practicing might be early morning before getting up or- if you find a quiet place- during your lunch break. In the evening you might be too tired and doze off during your practice. Nevertheless, you can be mindful anywhere you are and practice alone, with another family member, or even with a group of people online, an option some apps offer.

Simple mindfulness meditation for beginners

1. Sit or lie comfortably.
2. Inhale deeply through your nose and exhale through your mouth. Repeat three times.
3. Close your eyes and let your breath return to its normal rhythm. Make no effort to control the breath; simply breathe naturally.
4. Focus your attention on the breath and on how the body moves with each inhalation and exhalation. Notice the movement of your body as you breathe. Observe your chest, shoulders, rib cage, and belly. Simply focus your attention on your breath without controlling its pace or intensity. If your mind wanders, return your focus back to your breath.
5. After a few minutes, focus on the sounds around, becoming aware of your surroundings.
6. Open your eyes and go on about your day.

A slight variation to the above technique is a body scan.

Body scan

A body scan brings your attention to the present moment and trains you to notice feelings inside your body, without trying to fix or change anything. There are wonderful free online guided body scans, which I would encourage you to use, particularly in the beginning of the practice (e.g. Jon Kabat-Zinn, Headspace). Otherwise, please feel free to use the following instructions:

1. Lay down comfortably, maybe with a pillow under your knees. You might want to cover yourself with a blanket. Alternatively, you can sit, especially if you tend to fall asleep during the practice.
2. Once you are undisturbed and comfortable, close your eyes.
3. Breath in and out deeply three times, then let your breath return to normal.
4. Notice touch and pressure where your body makes contact with the seat or floor.
5. Start scanning your body from head to toe, moving along at your own speed. Are there sensations such as tingling, pressure, pain, tightness? Does the body part feel light or heavy? Simply notice the sensations and move along. If your thoughts wander off, notice them and bring them back to your body.
6. Focus on your breathing, feel the air move through your body. Feel free to count breaths if your mind tends to wander off. Gently bring your focus back to your breath.

7. At the end of the body scan, open your eyes and take in your surroundings again. Any sounds, wind etc.

The more often you practice, the less your mind will wonder. In fact, this quality of attention is so fundamentally important, that in his famous two-volume book written in 1890, philosopher and psychologist William James dedicated a whole chapter to attention, saying “the faculty of voluntarily bringing back a wandering attention over and over again is the very root of judgment, character, and will”.

Increase Your Knowledge and Be Inspired

Watch documentaries, lectures, TED talks or read books about the benefits of a whole-food plant-based diet, the beauty of our planet as well as today's environmental problems, the status of our health and the connection between our lifestyle and our healthcare crisis, the amazing lives of animals as well as the threats they are facing, inspiring people all around the globe who try to change the world in different ways and grassroots movements.
At the very end of the book, I have attached a list of my recommendations.

3. Physical Activity

Movement creates energy!

Don´t wait to have enough energy to be active. Instead, start moving and feel how energy is building up inside of you. If you can´t summon up the motivation to work out, if you feel energy deprived, blue or depressed, put on one of your favorite dance floor hits, crank up the volume- and I mean really crank it up- and dance! Nobody can resist a great beat!
Your energy level will shoot up in no time and so will your mood! The song that always turns my mood around is “Jump Around”.

Keep moving- or dancing- ***3-4 times a week and gradually increase the intensity and/or duration of your exercise.***

Reconnect Program™ Step 4
Week 6 & 7

You have already introduced healthy breakfasts, snacks and drinks to your life, which is a big accomplishment! Now it's time for even more nutritious foods.
During the next two weeks, we'll add whole-food plant-based lunches to your weekly schedule, and continue working on the physical exercise and mindfulness routine.
We'll also introduce a new variety of foods to prepare on the weekend for the upcoming week.

Add three goals from the table below to your schedule for week 6 and add the remaining goals in week 7. Notice that quinoa and lentils need to be added to week 6 and the preparation of beans to week 7.

Reconnect Program™ Step 4 Week 6 & 7	
Category	Goals
1. Nutrition	Introducing Whole-Food Plant-Based Lunches
	Preparing Foods Part I **Week 6:** Quinoa and Lentils
	Preparing Foods Part I **Week 7:** Beans
2. Mindset	Keeping up Mindfulness Practice
	Establishing a Morning Routine

1. Nutrition

During the next two weeks, we'll not only add whole-food plant-based lunches to our weekly schedule but I will also walk you through to the proper preparation of some ingredients, which we need for this step as well as for the Step 5.

Even though the proper preparation of certain food groups plays such a vital role in our nutrition hardly anyone seems to know much about it.
Last week, you may have prepared fermented cashew cream cheese as outlined in Step 3. If not, please read up on it and get it ready because plant-based cream cheese is an integral part of the lunch recipes. Feel free to add whole-food plant-based lunches to your schedule every day of the week or add them gradually, whatever works best for you.

Preparing Foods Part I

First on our list is the preparation of lentils and quinoa, which we need for the lunch recipes in this step. In week two, we'll

prepare beans for the upcoming dinner recipes in Step 5.

I would recommend preparing these ingredients on the weekend, but once you have become familiar with the whole process, feel free to soak and sprout them whenever you have time. Quite often, I find myself cooking sprouted quinoa or pressure cooking beans while getting breakfast ready in the morning. Once you know what to do, it's really not much of a hassle.

Preparing quinoa and lentils

The pseudo-grain quinoa can be sprouted very easily. In Part II of the book, I have outlined the ways of preparing different food groups. To avoid having to go back and read up on it, I have outlined the steps for sprouting quinoa and preparing lentils below.

Sprouting quinoa

1. Pour a package of quinoa into a glass bowl or a ceramic bowl. Completely cover with room temperature filtered water.
2. Add a tablespoon of an acidic substance such as lemon juice/apple cider vinegar or plant based whey (the clear liquid on top of plant based yogurt).
3. Cover with a clean kitchen towel and soak at room temperature for 6-12 hours. Quinoa (as well as buckwheat) contain quite a lot of saponins which will turn the soaking water foamy and gray.
4. Pour quinoa into a mesh and rinse thoroughly.
5. Leave the quinoa in the mesh and position it over the bow. Cover with a clean kitchen towel and wait. Feel free to rinse the quinoa after a few hours and stir it with a spoon. After 8-12 hours, you will see small buds appearing. Rinse again and transfer to a pot.
6. Fill with hot water, add a bit of salt and bring to the boil. Reduce the heat and simmer for 4-5 minutes.
7. Pour quinoa back into the mesh and rinse it with cold water. Use right away or let it cool off completely and store in the fridge for up to a week or in the freezer for up to 3 months. Rinse and cook until soft. Soaking or sprouting grains greatly reduces their cooking time- typically by more than half. Use the cooked grains right away or store them in the fridge for up to three days or in the freezer for up to 3 months.

Soaking/cooking lentils

1. Soak lentils in twice the amount of water for 24 hours, changing the water every few hours (roughly 8-12 hours).
2. Rinse them, then transfer them to a pressure cooker, which is the most effective cooking method. Add an inch long piece of Kombu seaweed for an increase in minerals and added flavor. Cook the lentils. They are very soft- it’s better to overcook than to undercook them. Cooking times vary depending on the type of legume, usually I use 25 minutes for brown lentils (timer starts when the pressure in the pressure cooker has reached the desired amount).
3. Let the lentils cool off, transfer them with their liquid into a glass jar or other container. Store in the fridge for up to two weeks or in the freezer.

Notes:

As opposed to other types, red lentils don't have to be soaked but can be used right away. This makes them a perfect ingredient for quick meals such as red lentil dahl (see recipe section of the book).

If sprouting buckwheat, remember to rinse it very well, because it is extremely starchy and will otherwise become slimy. During soaking, change the water as necessary and during the sprouting time in the mesh, rinse it every couple of hours, using your fingers to really swish it around.

From now on, please use sprouted quinoa and buckwheat for the hot Reconnect Breakfast Bowl instead of unsprouted psedograins/grains.

Preparing black beans or kidney beans

In week 7, please start to prepare beans the same way we prepared lentils. We will need them to make burritos and patties in the next step.

Introducing Whole-Food Plant-Based Lunches

There is such an abundance of plant-based lunch ideas that I will give you some overall tips but encourage you to sit down on the weekend and look up recipes for the week and prepare ingredients ahead of time.

- Have some of the following ingredients ready and use them to make a salad, sandwiches or combine them with grains.
- Discuss food options with your family to find out what everybody likes.
- Make sure to include a large variety of different foods.
- If you don't have enough time to prepare everything from scratch such as pesto, use store bought items but make sure to read the labels and choose carefully.
- Be organized. I always prepare a large batch of roasted vegetables on the weekend, which usually gets us through the week. I also cook more for dinner and save leftovers for next day's lunch. Our kids love Asian bowls with rice noodles and a variety of vegetables, legumes and lettuces.
- Be creative. Use the prepared ingredients in different ways. Roasted vegetables, for instance, can be layered in a sandwich in combination with pesto and chopped sun-dried tomatoes, but can also be can be mixed with roasted quinoa and drizzled with diluted cashew cream cheese or be used in a salad.

Have fun exploring numerous websites offering free whole-food plant-based for every taste and every skill level!

Sandwiches/ Salads/Bowls

Bread

Preferably, use long fermented sourdough bread. Alternatively, choose a light spelt or rye bread from a bakery with no additives. Avoid wheat whenever possible. Feel free to buy more fresh bread at the bakery, slice and freeze.

Spreads etc.

- Fermented cashew cream cheese (recipe see step 3),
- Different pestos (traditional pesto with basil, red pesto, pesto with rocket, kale etc)
- Different types of hummus (My favorite hummus recipe is from Israeli-born British chef Yotam Ottolenghi)

Roasted vegetables such as:

- Mushrooms
- Pepper
- Eggplant
- Zucchini
- Caramelized onion rings: cut a sweet onion in 1/2” rounds, brush lightly with olive oil and bake in the oven until slightly brown. Add fresh thyme leaves and sprinkle with salt and pepper. Use in combination with cashew cream cheese in a sandwich- absolutely divine!
- Red beets

Cooked vegetables such as:

- Sweet corn
- Broccoli
- Chickpeas
- Lentils
- Beans (see proper preparation below or in chapter..): Until you have settled into a routine to properly soak and cook beans at home, feel free to buy store bought ones. Remember though that they are harder to digest because they have not been properly prepared, which can lead to digestive problems such as bloating. As soon as you find time, I strongly encourage you to cook all legumes at home. Besides the fact that they are easily digestible, you'll save a lot of money by buying dried beans (especially when you buy them in bulk) and you limit your household waste by avoiding tinned foods.

Raw vegetables such as:

- Sweet corn
- Sun-dried tomatoes: they add an amazing flavor the a roasted veggie sandwich
- Olives
- Avocados
- Carrots: grated, cut thinly or in matchsticks
- Tomatoes, cut thinly, seeds discarded
- Cucumber

Properly prepared and cooked grains such as:

- Quinoa: Feel free to use the sprouted quinoa from week 6 for the second week
- Buckwheat
- Spelt berries
- Pearl barley
- Farro
- Noodles: e.g. rice noodles, Kamut noodles

Greens

- Different varieties and colors

Fresh herbs

Anything, really.

- Cilantro, parsley, dill (especially in combination with lemon juice, carrots and cashew cream cheese), oregano (with roasted vegetables), mint, etc.

Other

- Tofu, cubed and fried

Dressings:

For individual recipes please refer to *The Reconnect Cookbook*.

If you take a salad along, pack the dressing separately and add them just before eating it. I find mason jars a great option to prepare salads-in-a-jar. Add the dressing first, then layer grains, legumes and fresh and cooked veggies. Herbs and greens go on top. Before enjoying the salad, give the jar a good shake to mix the dressing with the remaining ingredients.
For school, use a non-breakable container instead of a glass container.

Examples For Whole-Food Plant-Based Lunches

Salad in a jar: click on link to jump to the recipe (link, page...)

Mediterranean sandwich

1. Toast 2 large slices of long fermented sourdough bread.
2. Spread with basil pesto.
3. Layer grilled vegetables such as onion, zucchini, eggplant.
4. Season with salt and pepper.
5. Add thin rounds of a large tomato. Alternatively, use sun dried tomatoes.
6. Add rocket.

Sandwich with caramelized onions and mushrooms

1. Heat a bit of olive oil in a pan.
2. Cut an onion in half and thinly slice it.
3. Saute onions for about 10 minutes on low/medium heat until slightly brown.
4. Meanwhile, cut mushrooms in thin slices (you can use portobello, button or oyster mushrooms in which case you have to tear them into pieces).
5. Remove onions from the pan and turn up the heat to medium/high. Fry the mushrooms until golden brown. remove from the heat.
1. Toast 2 large slices of long fermented sourdough bread.
2. Generously coat with cashew cream cheese.
3. Add mushrooms and onions. Season with salt and pepper. Sprinkle with fresh parsley or thyme.

Roasted quinoa and lentils

1. Heat a bit of olive oil in a pan.
2. Saute $^{1}/_{2}$ chopped onion.
3. Add sprouted and cooked quinoa and cook for a few minutes on medium heat.
4. Add cooked lentils and season with salt and pepper. Cook until hot, then remove from the heat.
5. Cut an avocado in slices and drizzle with lemon or lime juice.
6. In a small jar, mix 2 tablespoons of cashew cream cheese with grated lemon, salt and water until you have achieved a runny consistency.
7. Fill small ramekins with the quinoa mixture. Place a plate upside down onto the ramekin and quickly turn over. Drizzle with cashew sauce and serve with avocados.

Pearl barley with roasted vegetables and basil pesto

1. Sprout pearl barley just like you sprout quinoa. It will probably take another rinse/drain cycle to start the germination process. Cook until al dente (tender to the bite).
2. Combine barley with roasted vegetables (red beets, cubed and roasted are a perfect pairing!). Drizzle with pesto.
3. This dish can either be enjoyed cold or hot. In case of the latter, roast barley in a bit of olive oil before adding the vegetables.

2. Mindset

Increase the Duration and Frequency of Your Mindfulness Practice

Remind yourself to reconnect with yourself during the day, whether you are sitting in the car, having a coffee or lunch

break. Take deep breaths and check in on your feelings. According to a Harvard study, as few as 10 deep breaths every hour effectively reduce high blood pressure.

I would recommend starting with a mindfulness course. *Headspace*, for instance, offers a wide variety of courses focusing on different areas.

Establish a Morning Routine

The way you start your day defines your mood for the rest of it. Better start it right then.
A strong routine is a routine that works for you and gives you the energy to be motivated for the rest of your day. Take a pen and a piece of paper and start outlining what needs to be done as well as what you would like to include in your routine. Do you feel like stretching for a few minutes would make you feel good? A few minutes of mindfulness in bed before getting up? Would you like to get up a few minutes earlier and go for a walk or a run? Have a coffee before getting busy in the kitchen? Just by thinking about what's important to you and how to structure your mornings is an essential part of reducing your stress and making you feel great.

Even the smallest chores can transform our day. According to Admiral William McRaven, even making our beds can change the world. *"If you make your bed every morning you will have accomplished the first task of the day. It will give you a small sense of pride, and it will encourage you to do another task and another and another. By the end of the day, that one task completed will have turned into many tasks completed. Making your bed will also reinforce the fact that little things in life matter. If you can't do the little things right, you will never do the big things right."* (Quote from a speech delivered as the commencement address to the graduates of The University of Texas at Austin on May 17, 2014).

3. Physical Activity

Add 10-15 minutes of simple stretches.

Experience the power of stretching, breathing and yawning. That´s right, yawning. A close friend of mine and former professional ballet dancer introduced me to a concept called Gyrotonic ™ / Gyrokinesis™, and yawning was part of our weekly routine. Gyrotonic™ and Gyrokinesis™ advocate flow movements that involve the whole body and include circular and spiraling patterns to promote strength, balance, flexibility, and efficiency of movement. The principles and exercises have been created in 1977 by dancer Juliu Horvath, who originally referred tho them as "Yoga for Dancers". While Gyrotonic ™ uses specially designed machines, Gyrokinesis™ can be practiced on a mat, a stool or standing. The movements leave you with a sense of freedom, greater strength and more agility. Don´t be intimated if you are not a ballet dancer, the exercises are adapted to fit anyone's ability.
It´s hard to explain a sequence of movements in a book. Therefore, I would encourage you to find a local studio or online classes.

There are certainly many other schools you can choose your exercises and stretches from, including yoga and pilates. Feel free to join a nearby studio or sign up for online classes. There are even free classes available online, with my favorites being offered by Tim Senesi. He has an incredible portfolio of available classes, but some prior experience is recommended for most of his sessions.

One of the easiest yoga routines are sun salutations. Once you have mastered this short flow, take your time to truly enjoy the movements and focus on your breathing.

Reconnect Program™ Step 5

Week 8 & 9

In this important step, we'll not only add whole-food plant-based dinners to our weekly meal plan but also focus on our gut health. Because these goals are slightly more comprehensive and time consuming, we'll focus on only these few goals.

Choose 2-3 goals for the first week and add the remaining ones in week 2.

Reconnect Program™ Step 5 Week 8 & 9	
Category	Goals
1. Nutrition	Introducing Whole-Food Plant-Based Dinners
	Activating/ Preparing Foods Part II- Nuts &Seeds
	Introducing Probiotics
2. Mindset	Establishing an Evening Routine
	Visualization

1. Nutrition

By now you probably have gotten a feeling for plant-based cooking and it’s time to move on to plant-based dinners.

Whole-Food Plant-Based Dinners

In the previous step, you were asked to prepare certain ingredients for this step. If you have not yet sprouted quinoa and soaked/cooked beans please prepare them now as you will need them for our dinner recipes.

Start out by preparing whole-food plant-based dinners 3-4 times a week. Then gradually replace more and more traditional meals with healthy plant-based meals.

- The key to serving healthy dinners is *organization*. Set your **weekly meal plan** at the beginning of the week, prepare foods on time and stock up on emergency foods such as canned beans, premade pesto, precooked white rice, frozen vegetables, or even premade frozen dinners to fall back on. ON my website, I have attached a pdf template of a weekly meal plan for you to print out.
- Especially in the beginning, make sure your family is on board and choose recipes together. In the recipe section of the book, you'll find a wide selection of family approved, whole-food plant-based versions of popular foods such as burritos, patties, pasta bolognese, red beans and rice, mac and cheese etc.

- Plan ahead on Saturday morning or even as early as Friday evening and create your weekly meal plan with the corresponding shopping list.
- Share chores such as shopping, cooking, setting the table, cleaning up etc.
- Feel free to cook more than you can eat and use leftover foods for the next day or freeze them. Patties, pasta bolognese or red beans and rice are great examples for frozen dishes.
- Make a conscious effort when setting the table and avoid disposable cutlery and tableware.
- As often as possible, serve salads along with your meals and have beans and dark leafy greens as often as possible (read below).

The following **three basic, easily prepared and highly nutritious side dishes** can be served as an appetizer or in combination as a main dish. Please find the detailed recipes in *The Reconnect Cookbook*.

- ***Sautéed spinach***
- ***Cooked white cannellini beans with onion:*** When cooked, these beans have a tender texture and a slightly nutty, mild flavor.
- ***Quick Italian salad "Insalata Mista":*** In a salad bowl, combine mixed greens, radicchio, tomatoes (preferably large beef tomatoes which have less seeds) and thinly sliced carrots and raw fennel. Remove most seeds from the tomatoes, drizzle with balsamic vinegar and good quality extra virgin olive oil.

Switching to Healthy Meals

When it comes to dietary changes there are- at least in my experience- two categories of people: the *all-in overnight group* and the *gradual group*. While the first group switches to a whole-food plant-based diet right away, the second group transitions over time, slowly but steadily replacing unhealthy foods with healthy plant foods. Find out what works best for you and your family.

During the transitional phase of a whole-food plant-based diet you may experience the occasional meat or cheese craving. Fake meat and vegan cheese are great temporary options or may come in handy once in a while, but keep in mind that the majority of these foods, with the exception of some fermented plant-based cheeses, are highly processed and contain chemical additives and preservatives. Before you purchase them, check out the food labels.

Finding a support group may be crucial for long term success. To my knowledge, the largest online community of like minded people is the ***Whole Food Plant Based Support Group***. This non profit organization provides educational services and shares recipes and resources.

Activating/Preparing Foods Part II- Nuts & Seeds

Activating nuts and seeds can be used in salads, breakfast bowls and as snacks. Please find a detailed description on the activation of different types of nuts and seeds in Part II of the book.
Even if you are not much of an activation person, I would recommend to activate at least **green pumpkin seeds** (also called *pepitas*) and **sunflower seeds** and make them a part of your breakfast routine due to their high nutritional value.

Introducing Probiotics

Integrating probiotics as well as plenty of prebiotics into your daily routine is an essential part of a healthy diet. Even if you are not fully committed to the Reconnect Program™, this is the part you don't want to skip. Just a reminder: **Probiotics refer to living bacteria** while **prebiotics refer to fiber** which the microbes feed upon.

Make it a habit to start your day with a plant-based yogurt bowl teeming with beneficial bacteria. Throughout the day, add as many fermented foods as possible.
If you or a family member don't consume enough fermented foods throughout the week (with live cultures, not

pasteurized!), I recommend taking a probiotic powder 2-3 times a week. This powder can be mixed with water and consumed before a meal. Make sure to wait a few minutes before drinking it. Additionally, your gut bacteria need to be fed a fiber rich plant strong diet.

2. Mindset

Bedtime routine

Establish your own bedtime routine using the guide and examples in part II of the book.

Visualization

Visualization is more than seeing pictures in your mind. In fact, it is a powerful tool. When we play past or present events in our mind, we experience them as if they are happening to us in the present moment. We can use this immense power to create the outcome we desire by visualizing it first.

The benefits of visualization are numerous:

- Finding ***clarity***: Before we start visualizing what we want, we need to figure out what it actually is. Visualization helps us to clearly state what we want and move in the right direction.
- Increases our ***motivation***: By visualizing the outcome before it manifests itself increases our motivation to move towards achieving your goals.
- C***onfidence boost***: Visualizing the process of achieving our goal develops our confidence and determination as our brain perceives it as an actual experience.
- Reduces ***stress***: Visualization, also known as mental imagery, is a proven technique for stress reduction.
- Enhancing our ***performance***: In a 2021 study, researchers looked at the effect of visualization and self-efficacy on athletes' performance. They found they could obtain the highest performance with visualization and high self-efficacy exercises. It means that visualization can help you perform better at any task if you strongly belief in yourself.

There are two types of visualization:

Outcome visualization

In this type, we envision a certain outcome as an end-point in the future as if it's already in our present using all our senses.

For example, if your goal is to get a certain job, visualize yourself getting a job offer. See yourself either receiving a call or an email. What do you feel at that moment? What do you see or hear? Make the outcome as vivid as possible.

Process visualization

In this type, we envision *every step* towards achieving our goal with all our senses engaged.

Using the same example with getting your dream job, visualize yourself being invited for an interview, having a successful interview with your potential employer, feeling confident and worthy, passing the test, and then getting the job.

How to Use the Power of Visualization Step-by-Step

Here are six steps to kick start your visualization practice.

1. **Decide on what you want.** Before you get started, you want to clearly identify what it is that you desire. It has to be something you are really excited about. The more specific your goal, the better.
2. **Add your feelings to the outcome**. According to Mindvalley's founder Vishen Lakhiani, fulfillment differs from

person to person “You may not know how to get there, but you know how good it feels. So you want to ignore the how and go straight to feelings. Your inner self knows the best way to bring what you want”.

3. **Add a color.** Imagine the color associated with the desired outcome. Replace all dark spaces, spots, and blank spaces with your chosen color. As you do, you eliminate your subconscious blocks.
4. **Make it brighter.** Make your chosen color as bright as possible.
5. **Imagine possible setbacks** and how you deal with them with ease and poise as you move forward toward your goal.
6. **Think about the next easiest step** you can take to make your desired outcome come true. Take that step.
7. **Write down** your desired outcome and read it when you get up and before you go to sleep.
8. At the beginning, visualize for as little as half a minute, but **repeat** several times a day. Gradually, you will be able to build up longer, more detailed visualizations.
9. **Expect** things to happen. In other words, when you are done with your visualization, you need to expect it to come to you.

Tip: It may be difficult to start from zero and jump right into the challenge of using all your senses while visualizing your goals. A more structured, step by step approach may be useful to start out. Online, you can find multiple of these exercises to practice visualization.

3. Physical Activity

Find a routine that works for you. Have you settled into a suitable routine? You might want to spice things up by trying new activities, whether as an individual or as part of a group.

Reconnect Program™ Step 6

Week 10 & 11

In this step, we'll focus on **healthy baking and how to turn a traditional dessert recipe into a healthy one.** A healthy diet doesn't mean that you have to deprive yourself of anything sweet. You might be surprised how easy it is to prepare delicious whole-food plant-based sweet treats, which also happen to provide you with important nutrients. Consciously enjoying not only desserts but meals in general not only prevents us from overeating but offers many benefits such as lowering our stress levels, increasing our empathy, appreciating our food, and overall increases our level of happiness. Every time we sit in front of a plate, we can take the opportunity to practice mindfulness and below, I'll share some thoughts with you on this topic.

In our busy world, we need to keep reminding ourselves to be in the present moment. I, for example, consciously remind myself every morning when I enter the kitchen to focus on only one thing at the time, be it feeding and petting our animals, cutting fruits, preparing breakfast bowls and school snacks etc. and to keep my mind from being distracted. When I am done, I will allocate a few minutes to sit down and think about my day ahead. During breakfast, I remind myself to focus on my family and enjoy my meal, and not to check my phone etc. Lunch time presents a great opportunity to reconnect with myself again. Even when I spend my lunch time with coworkers, I make sure to have a few moments to myself, breathe and zoom in on myself. I find that this practice makes me calm and grounds me. To end the day on a positive note, start a gratitude journal and see whether that brings a smile on your face and happy thoughts before you fall asleep.

Reconnect Program™ Step 6 Week 10 & 11	
Category	Goals
1. Nutrition	Whole-Food Plant-Based Baking
	Turning a Traditional Sweet Recipe Into a Nutritious Plant-Based Recipe
2. Mindset	Mindful Eating
	Starting a Gratitude Journal
3. Physical Activity	Keeping up Your Yoga/Exercise Routine

1. Nutrition

Whole-Food Plant-Based Baking

Eating healthy doesn't mean we need to sacrifice any tasty treats. Most people I meet can't believe that my desserts are made without the typical traditional ingredients and that they still taste amazing or even better than traditional desserts! After following a whole-food plant-based diet for so many years, I can´t imagine baking any other way.

With a little bit of guidance and experience, even most traditional recipes can be turned into healthy ones. But there will always be the occasional recipes that simply cannot be turned into a nutritious plant-based version. These are the ones

simply live without. Allow your body a few weeks to get used to the more natural, less sweet treats and to get rid of any sugar cravings and to let our taste buds get accustomed to new flavors.
When I was a student, I found the taste of coffee horrific and could only drink it with added sugar or sweet syrups. Of course, I had to find a way to like it as it was something you did as a grown up and carrying a cup of coffee around was just plain cool. Years later, when I drastically reduced my sugar intake, I stopped adding sugar to my coffee. It took me a few weeks to get used to the new taste but eventually, I started to really enjoy the genuine taste of coffee. Now, I can't stand the taste of sweetened coffee and have trouble understanding how anyone in the world can drink it.

From the dessert section of the book, choose one recipe that you would like to prepare for each week.

I usually bake muffins on the weekend to send along to school or have as an afternoon snack together with fruits or banana ice cream. On weekends when things are more relaxed, try out my healthy version of a French toast or pancakes. Leftover pancakes, together with fresh fruit or apple sauce for dipping, make a wonderful snack. Use leftover pancakes as a snack the next day. Simply spread nut butter on them, add thin banana slices and a bit of date paste or honey and put them together sandwich style.
If you stick to the following basic steps of baking, you can combine ingredients to your own liking:

- **Mix together dry ingredients**
- **Mix together wet ingredients**
- **Pour wet mixture into dry mixture**
- **Stir**
- **Fold in add-ins such as dried fruits, nuts, frozen berries etc**
- **Bake**

Adding unsweetened dried fruits to batters not only adds flavor and texture but also naturally sweetens your desserts.

Turning a Traditional Sweet Recipe Into a Nutritious Plant-Based Recipe

The most common unhealthy ingredients in everyday baking recipes can be replaced with healthy ingredients using the following guide:

Milk

- Replacing milk is probably the easiest of all ingredients to replace. Feel free to use any unsweetened plant-based milk you like.
- To replace buttermilk use 1 cup of soy milk whisked together with 1 tsp of cider vinegar or 1 tsp lemon juice for every 1 cup of buttermilk. Let the mixture rest for about 10 minutes- you'll see how the milk will curdle up.

Eggs

Replacing eggs in a recipe can either be incredibly easy or impossible, depending on what you're trying to make. There are several options, each of which will work well in different recipes. ***Substitute one egg with the following ingredients:***

- Freshly ground ***flax seeds***: Mix 1 tbsp of ground flax seed with 3 tbsp of water and let thicken for 10 minutes. Ideal for earthy flavors and recipes including muffins, cookies etc.
- ***Egg replacement powder***: Follow the directions on the packet in order to make the required amount of egg substitute. Works well for most recipes.
- ***Mashed banana***: 1/2 banana. Works well in muffins, breads and cookies that contain other fruits.
- ***Applesauce***: $^1/_4$ cup
- ***Pumpkin puree***: $^1/_3$ cup
- ***Chia seeds***: 1 tbsp chia mixed with 3 tbsp water. Let thicken for 10 minutes.
- ***Soy yogurt:*** $^1/_4$ cup. Recommended for dense products like brownies or fudge cake, rather than delicate or airy

ones.

- ***Cornstarch***: 2 tbsp cornstarch mixed with 2 tbsp of water.
- ***Aqua faba:*** This is the brine of chickpeas or white beans. Although it might sound strange, it doesn't impart any bean-y flavor at all! Buy canned legumes that have no salt added, or use your own brine which might not be as concentrated as the canned brine- feel free to experiment with the amount of water you cook your beans/ chickpeas in. Substitute 3 tbsp of aqua faba for each egg. Feel free to whip Aqua faba can be whipped up using a hand or stand mixer and used as light and fluffy plant-based whipped cream. You can fold it into the batter for an airy and light texture or use it as a topping.
- ***Silken tofu***: $^{1}/_{4}$ cup
- ***Nothing***: If a recipe calls for only one egg, don't bother replacing it.

Butter/Oil

In vegan baking, butter is usually replaced with vegetable margarine or oil. But when eating whole foods plant-based, you should aim to eliminate these two products all together.

Instead, ***unsweetened applesauce*** can be used as an oil substitute in most cakes and muffins. Use slightly less applesauce when replacing butter/oil, about $^{1}/_{3}$ of a cup of applesauce for every $^{1}/_{2}$ cup of oil or margarine.

Applesauce works great in soft-baked cookies and biscuits, but it will not help you achieve the right consistency in crispy or thin cookies. In this case, ***roasted nut or seed butter***s can be used in combination with applesauce or a plant based milk. Use an equal amount of nut butter to replace the margarine or oil in a recipe. Cashew butter has a very subtle flavor, but sunflower and almond butters also work well.

Sugar

- Date paste- replace sugar with the same amount of date paste
- Mashed bananas
- In moderation: maple syrup, maple sugar, coconut sugar. Although these last three sweeteners are plant-based they aren’t whole food because they do not contain the fiber from the plant. Therefore, in excess they may cause blood sugar spikes and inflammation. However, both contain vitamins and minerals that are beneficial to your health. In order to use less maple sugar with pancakes or French toast, I serve them with a quick and easy raspberry or blackberry dipping sauce (recipes in *The Reconnect Cookbook*) and I add date paste to the pancake batter to make them pancakes naturally sweeter and reduces/eliminates the need for an additional sweetener. Avoid agave syrup as previously discussed.

White flour

As discussed previously, use either refined flour such as kamut or spelt if you don't have the time to ferment the batter. Otherwise, I would strongly recommend using whole grain flour (with at least $^{1}/$ cup of rye flour) and fermenting it for at least 12 hours (see recipe section). If using 100% whole grain flours, the dough tends to be very dense. To get a lighter texture, use 50% white flour and 50% whole-grain flour.

2. Mindset

Mindful Eating

Taking your time

Instead of eating rapidly, slow down and give your body the chance to signal that you are full. It takes 20-30 minutes for your brain to register fullness, which is one of the reasons we often unconsciously overeat. Eating far too much at a meal is soon followed by discomfort, lethargy and possibly nausea. Sit down to eat, remind yourself to chew each bite well, enjoy

the flavors and textures and put your fork down between bites. Avoid multitasking.

Try the following raisin exercise to practice mindful eating. This short mindfulness exercise for all ages encourages present-moment awareness of the senses, connecting with taste, touch and smell while eating a raisin.

- *Holding and touching:* Take a raisin, hold it between your thumb and index finger, close your eyes and feel its texture.
- *Seeing*: Take your time to explore the surface of the raisin as if you have never before seen it. Zoom in on the details, the wrinkles, folds, dark and light places.
- *Smelling*: Hold the raisin up to your nose and inhale its scent deeply. Do you have an interesting feeling in your mouth or stomach?
- *Placing*: Slowly bring the raisin up to your lips. Notice how your hand and arm know exactly how to do that. Now place the raisin on your tongue and notice the sensations of having it in your mouth.
- *Tasting*: When you are ready, prepare to chew the raisin, noticing how and where it needs to be for chewing. Very consciously, take one or two bites into it and notice what happens. Experience any waves of taste that emanate from it as you continue chewing. Without swallowing yet, notice the bare sensations of taste and texture in your mouth and how these may change over time. Also pay attention to any changes in the object itself.
- *Swallowing*: When you are ready, think about swallowing the raisin and notice how your body gets ready, then consciously swallow the raisin.
- *Following*: Focus on the sensations in your mouth and how your body is feeling after the exercise.

Becoming aware of our motivations

We tend to eat emotionally comforting foods which are, for the most part, not nutritionally balanced. But there are plenty of plant-based nourishing foods that are satisfying as well as comforting. Find out which emotions trigger poor nutritional choices and whether you are responding to a physical or an emotional need.

Reconnecting to our food

Think about where your food came from, all the people involved in the meal that has arrived on your plate, the farmers who planted and harvested the food, people who transported and stocked it, the people who sold it. Be mindful of the water, the soil, and all the other elements that made it possible to grow. Think about where your recipe came from, who created, posted or shared it. Being mindful of all of these aspects makes it hard not to feel both grateful and interconnected.

Starting a Gratitude Journal

Too often, we seem to get lost in our stressful daily lives and forget to acknowledge and appreciate good moments. A gratitude journal gently forces you to look back on your day and focus on the positive situations. A small notebook is all it takes. Place it on your nightstand and each night, before going to sleep, write down three things you are grateful for. They can be rather small and seemingly uneventful, like the smile that someone gave you which made you feel good. They can also be large events, like a celebration with friends and family, a promotion or success.

3. Physical Activity

Have you gotten used to a certain fitness routine? Are you enjoying it or are you getting a bit bored? Maybe try out something new, choose an active holiday for your next trip or try a different class at the gym. Even changing your walking/ running route might be a good idea. If you are more like me, you are most comfortable with set routines. In fact, I need certain routines for my mental and physical wellbeing. Workouts that my body performs on auto pilot such as road biking or running, sets my mind free to wander off. I like to refer to these workouts as **“meditative workouts”**. Sometimes, my mind ponders pressing issues and things that bug me, other times it comes up with the most amazing creative ideas. I even experience the occasional “brain explosion”, where I literally have to stop and write down my thoughts to get them out of my overflowing mind. Once, I wrote an entire story at a cafe during one of my bike rides and for a while, kept a pen and a piece of paper in the pocket of my jersey. A lot of ideas and chapters of this current book have been the result of numerous bike rides through the countryside. It has taken a while for my brain to get into this “wandering off” mode but now that I have found this space I almost crave these creative moments.

Reconnect Program™ Step 7
Week 12

Almost done! You are truly a star!

This is the final week of the Reconnect Program and you have come such a long way. I am thrilled that you are still sticking with the program and hope that you have enjoyed your journey so far.
In this last section, we'll focus on the art of fermentation. I will show you how easy and inexpensive it is to lacto-ferment foods at home and how you can make your very own kombucha, the best alternative to unhealthy sodas.

Reconnect Program™ Step 7 Week 12	
Category	Goals
1. Nutrition	The Art of Fermenting Foods: Lacto-fermenting Red Cabbage and Carrots Making Kombucha
2. Mindset	Increase Your Knowledge on Fermentation
	Being Kind& Cultivating Empathy

1. Nutrition

The Art of Fermenting Foods

Not only have you been introduced to the numerous health benefits of probiotics and the importance of a healthy gut, but you are already familiar with the preparation of yogurt and fermented cream cheese. Now, we'll move on to the concept of lacto fermenting vegetables and fruits. Lactic acid fermentation has been used for centuries not only to preserve foods but to also preserve their flavor and texture. No special equipment is needed for the magical transformation of inexpensive vegetables into the healthiest foods teeming with beneficial bacteria. All you need is water, salt and vegetables. During fermentation, the food is being kept submerged in a salt brine without any exposure to oxygen. Traditional lacto fermented foods include pickles, kimchi and sauerkraut.

"Lacto" refers to lactic acid, which is being produced by the salt-tolerant lactobacilli bacteria. They convert natural occurring carbohydrates aka sugars present in fruit or vegetables into lactic acid. While beneficial lactobacilli can tolerate salt, harmful bacteria cannot survive in this environment.
The easiest and most popular foods to lacto-ferment are cabbage, carrots, radishes, cucumbers, garlic and turnips. After you have familiarized yourself with the basic process of lacto-fermentation feel free to try out different combinations of ingredients. The following two recipes are not only very easy to make but have been approved by all family members, kids included. Especially fermented red cabbage on a slice of long fermented sourdough bread with fermented cashew cream cheese tastes absolutely divine.

Recipes

Lacto-fermented red cabbage

Because of its brightly red color, which tends to discolor fingers, I would recommend wearing kitchen gloves for this recipe.

Ingredients

1 head red cabbage,
4 cups water
1 $^{1}/_{4}$ tbsp sea salt (or kosher salt)
1 tsp caraway seeds
8 to 10 dried juniper berries

Method

- Remove 2-3 large outer leaves before cutting the cabbage. Then cut it in quarters, cut out the thick core and stem and slice the pieces very thinly or shred them.
- Transfer the cabbage to a large bowl, sprinkle with salt and add juniper berries and caraway seeds.
- Massage the cabbage with your fingers until it gets soft and starts sweating. This takes about 10-15 minutes. The goal is to have the liquid cover the cabbage completely to provide an anaerobic environment. Don't stress out if there isn't enough liquid- you can add some brine later.
- Place cabbage and spices into a 1 gallon jar or mason jars with airlocks. If you continues to ferment you may want to purchase a proper fermentation vessel which usually comes with a couple of handy equipment including a compounder and weights.
- ***Compress***. Press down very hard using your fists or whatever kitchen tool comes in handy. If the liquid does not cover the cabbage completely, make some brine by dissolving $^{1}/_{2}$ tablespoon of salt in 2 cups of filtered water.
- Pour ***salt brine*** over the cabbage. Gently press down on the cabbage to release any air bubbles. Use the outer leaves to cover the cabbage and place a weight on top to keep the cabbage completely submerged. This step is very important because any cabbage that comes into contact with air will grow mold. As a weight, I usually fill a clear plastic bag halfway with water and close it up. This allows the bag to adapt to the shape of the vessel.
- ***Cover the vessel*** loosely (if closed tightly, the produced carbon dioxide cannot escape and the jar will explode) with a lid, cloth or airlock depending on your choice of fermentation vessel. Place the jar on a plate to catch any overflow that may happen once fermentation becomes active. Don’t be tempted to place it in a closet or pantry where you may forget to check on it. As you learn to ferment it’s helpful to check in daily to observe the small changes in color, activity, smell and taste.
- Leave the jars at room temperature for about 10 days to 2 weeks. During this time, remove the cover at least once a day and check to see that the vegetables are still submerged in the brine. The appearance of bubbles indicates that fermentation is underway. The longer the fermentation continues, the more the flavor will develop. After a week, start tasting the cabbage. Once it has a nice tangy flavor, place and store it in the refrigerator where the cold temperature inhibits further fermentation.

Serving suggestions: Fermented cabbage tastes great in a veggie burger, as a colorful filling in vegan sushi rolls and on fresh sourdough bread with cream cheese and avocado.

Note on the side:
If you detect red or pink mold, black scum or the smell is unmistakably putrid and you have a slimy brine then it’s time to pull the plug and toss your veggies. But don't worry- because of the simplicity of facto-fermentation technique, things rarely go wrong.

Lacto-fermented carrots

Ingredients:

1 1/2 pounds carrots (organic if possible)
3 cups filtered water
2 tsp sea salt
2 pint jars

Optional: Add other flavorings you like e.g. smashed garlic, fresh dill, rosemary and thyme or lemon and ginger (when using ginger I would omit the garlic)

Method

- Wash the carrots. Slice off the stem ends and tips and cut them lengthwise into quarters. Make sure they are not too long for your vessel. You need about 2 inches of 'headspace'. If too long, shorten them.
- Dissolve salt in water.
- Pack the clean jars so tightly with the carrots that you can not squeeze in even one more carrot stick to avoid them floating to the top when brine is added.
- Pour the salt brine over the carrots until they are completely submerged.
- Put on the lid and tighten it just barely. Less than "fingertip" tight. You really just want the lid to be held in place, not tightened down. Place the jar on a plate and set it on the counter out of direct sunlight.
- Ferment for about one week. Remove a carrot stick from the jar and taste it. If it's pleasantly sour and tangy and you like the crunchiness, then it's ready. If you prefer the carrots tangier and less crunchy, replace the lid and check again the following day.
- Once you have achieved the desired flavor, tightly cap with the lid and store in the fridge for up to 6 months. The carrots will continue to ferment but at a very slow rate.

Note on the side:
Lactic acid bacteria thrive in a temperature range of 60-70°F (15-20°C). Lower than that and they can't really get started. Higher than that, they'll multiply more rapidly which means you'll need to keep a closer eye on your jar because your carrots will be done sooner.

Is canning the same as lacto-fermenting?
During the process of canning, the food is boiled long enough to kill any micro-organisms that might be living in the food. After the food is prepped, it must be transferred into hot, sterilized jars, put into a boiling water bath, processed, allowed to cool and then finally stored. During boiling of the jars, a vacuum seal is created which prevents oxygen from reentering the jar and causing the food to spoil. A sealed can or jar of food is shelf-stable for years, assuming that the process was done correctly.
While canning focuses mainly on killing any micro-organisms or exposure to spoilage, fermenting focuses on suppressing bad bacteria and encouraging the growth of good bacteria. Therefore, fermented foods are an important probiotic.

Kombucha

Since our first batch of homemade kombucha, we have been hooked! The way it tastes is incredible- like tart green apple mixed with sour stone fruits, but with an underlying sweetness that keeps it all together. And fizzy! We couldn't believe that something this delicious could actually be made from tea. At home. Which, by the way, is way less expensive than store bought kombucha.
Kombucha starts out as a sugary tea, which is then fermented with the help of a **"symbiotic culture of bacteria and yeast", called SCOBY**, for short. Scoby bacteria and yeast feast on the sugar in the tea, transforming it into a refreshingly fizzy, slightly sour fermented beverage that is relatively low in calories and sugar.
I recommend purchasing a relatively inexpensive kombucha starter kit, which usually consists of a 1-gallon jar, a cheesecloth and a lid. Also, you need to order the scoby online or buy it in a health food store. The scoby has a very cool consistency- it is a brownish, slippery and rubbery thing the size of your palm.
The process of making kombucha at home may seem long or complicated at first. It really is not. Once you get into the rhythm of making it on a regular basis, which is roughly every 10 days, it only takes about 20 minutes from bottling a

finished batch of kombucha and getting the next batch ready.

Equipment

Large pot
1-gallon glass jar
Cheesecloth, paper towels or clean tea towel to cover the jar, rubberband
Bottles: 1 32-oz plastic or glass bottle (I reuse water bottles) with lids
Plastic funnel
Strainer

Ingredients

1 cup and 3 tbsp filtered water to make the tea base (plus another quart/liter of cold water)
Scant $^{1}/_{2}$ cup of granulated sugar
3 tsp (about 4-5 bags) green tea or black tea
Little bit less than 1 cup starter tea from your last kombucha batch OR store bought kombucha
1 scoby

Optional for bottling:
2-4 tbsp fresh herbs or spices

Method

- ***Prepare the tea base***: In the pot, bring water to a boil. Remove from heat and stir in the sugar to dissolve. Drop in the tea bags and allow it to steep for 10 minutes, then squeeze out the tea and remove.
- Transfer to the ***glass jar.*** Add the remaining quart of ***cold water*** (If the tea is too hot it will kill the microorganisms of the scoby).
- ***Add starter tea.***
- With clean hands, ***add the scoby.*** Cover with cheesecloth and secure it with a rubber band.
- Ferment the kombucha for 7-10 days at room temperature, out of direct sunlight. Within a few days, a new layer of scoby will develop on the surface of the old scoby. Brown stringy bits and sediment collecting on the bottom are all signs of a healthy fermentation. After 7 days, start tasting the kombucha daily by pouring a little out of the jar and into a cup. When it reaches a balance between sweetness and tartness that is pleasant to you, the kombucha is ready to bottle.
- Before bottling, prepare the tea for the next batch of kombucha. Follow step 1 and 2. Once the tea has cooled off, with clean hands, remove the scoby from the kombucha and place it on a clean plate. If the scoby is getting very thick, remove the oldest bottom layer. Again, save some of the kombucha, which serves as your starter tea.
- Using a funnel and strainer, transfer the remaining kombucha to bottles. If you secondary ferment the kombucha, I would recommend using plastic bottles. In case you finish the fermentation at this point, transfer to glass bottles and store them in the fridge. Add herbs or spices you may want to use as flavoring. Leave about a half inch of head room in each bottle. Close tightly and store in the fridge up to month.

Optional step: Secondary fermentation- making fizzy kombucha

- Once you have strained the kombucha into plastic bottles (leave an inch of headroom), lightly screw on the lid and let it ferment for about 12 hours. The bacteria will continue to produce carbon dioxid which will inflate the plastic bottle. Depending on the room temperature, this process can take between 12 and 24 hours. When the bottle feel rock solid, transfer it to the fridge to stop the fermentation process.
- Feel free to add pureed fruits such as raspberries or blackberries or juices (apple or cranberry juice) to the plastic bottle together with the kombucha.

The reason I started to use plastic bottles instead of glass bottles was due to an unfortunate incident in Australia. One summer morning, I forgot to place the carbonated glass bottles in the fridge and went to work. When my husband returned in the evening and started to cook, one glass bottle suddenly exploded in our pantry. Glass shards stuck in the walls and

pink raspberry juice was splashed all over the pantry. What a mess! Luckily, nobody got injured! To this day, we joke about how I tried to kill my husband with kombucha.
The kombucha is carbonated when the bottles feel rock solid. In warmer weather, this process will probably take only 2 days and in colder weather or air conditioned rooms more up to three days. Once hard, transfer the bottles to the fridge to stop carbonation and consume your kombucha within a month. Feel free to strain the kombucha and use the leftover fruits for something else.

Not every kid likes the slightly sour taste of kombucha right away. Feel free to mix it with mineral water and a bit of cranberry or apple juice.

2. Mindset

Increase Your Knowledge of Fermentation

Humans have used the art of fermentation to produce and preserve foods for thousands of years, in the early days primarily in the form of fermented beverages. Evidence of a fermented alcoholic beverage made from fruit, honey, and rice found in Neolithic China dates back to 7000-6600 BC. However, it took a very long time before we understood the science behind fermentation.

In 1900, the young scientist Louis Pasteur was hired by the French industrialist Monsieur Bigo, who made alcohol from beet juice. His business was in trouble due to the fact that instead of being converted into alcohol, a substantial amount of beet juice was souring in their barrels. Pasteur´s observations led him to conclude that live cells were responsible for the metabolic process of fermentation: *"The chemical changes of fermentation are associated with a vital activity, beginning and ending with the latter. I believe that alcoholic fermentation never occurs without either the simultaneous organization, development and multiplication of cells or the continued life of cells already formed. All the results in this paper seem to me completely in opposition to the opinions of Liebig and Berzelius…Now…in what does the chemical act of decomposing the sugar consist; and what is its precise cause? I confess that I simply do not know."* Fermentation is, as Louis Pasteur suggested, *"la vie sans l'air"*, a *"life without air"*.

Biochemically, fermentation is a process through which organic compounds (glucose) are converted into energy without the need of oxygen. There is an incredible diversity when it comes to fermentation, as different microorganisms house different mechanisms for the conversion of glucose into energy. I won't go into too much detail at this point, but encourage you to increase your knowledge on this amazing process and experiment with different techniques and recipes.

Here is a list of some interesting reads on fermentation:

- Fermentation Microbiology and Biotechnology. Third Edition. 3, illustrated, revised ed. CRC Press; 2011.
- Prajapati JB, and Nair BM. The History of Fermented Foods. Handbook of Fermented Functional Foods, edited by Farnworth ER, 2nd ed., CRC Press, 2017, pp. 1–22.
- Wang J, Liu L, Ball T, Yu L, Li Y, Xing F. Revealing a 5,000-y-old beer recipe in China. Proc Natl Acad Sci U S A. 2016;113(23):6444-8.
- Breidt F, McFeeters RF, Perez-Diaz I, Lee CH. Fermented Vegetables. Food Microbiology: Fundamentals and Frontiers, edited by Doyle MP and Buchanan RL, 4th ed., ASM Press, 2013, pp. 841-855.
- Blandinob A, Al-Aseeria ME, Pandiellaa SS, Canterob D, Webba C. Cereal-based fermented foods and beverages. Food Research International. 36 (2003) 527–543.
- Liebig on the Fermentation of Wine and Beer. Scientific American. 1852:34.
- Barnett JA. Beginnings of microbiology and biochemistry: the contribution of yeast research. Microbiology. 2003;149(3):557-67.
- Barnett JA. A history of research on yeasts 2: Louis Pasteur and his contemporaries, 1850–1880. Yeast. 2000;16(8):755–771.
- Buchner E. Cell-free Fermentation. nobelprize.org; December 11, 1907.

- Katz S. The Art of Fermentation: An In-Depth Exploration of Essential Concepts and Processes from around the World. Chelsea Green Publishing; 1St Edition; 2012.

Being Kind and Cultivating Empathy

During the last weeks, we have used the practice of mindfulness as a way to calm down, find peace of mind, focus better, reduce stress, sleep better and feel better overall. This week, let's focus on the people around us. By doing kind acts for others, our body releases serotonin, which causes feelings of happiness and satisfaction. This phenomenon is known as a ***"helper's high"***.

Make it a daily commitment to ***say something nice to someone***, whether it's a family member, a friend, coworker or a complete stranger. Just one kind comment can change someone's entire day.

Random acts of kindness. Each day, do something nice for someone else, whether it´s a family member or a stranger. These small gestures can really brighten a person's day. It can really be anything, from writing special notes to making someone a cup of coffee to helping with chores to getting flowers.

- Writing a sweet, encouraging note and put it in your child's lunch box or under their pillow
- Sending a family member or friend a warm text message
- Taking over a chore
- Making someone a cup of tea
- Slowing down so someone can merge in front of you in traffic
- Letting someone have your parking spot
- Holding the door open for someone
- Giving an unexpected compliment
- Helping someone struggling to carry their grocery bags
- ... and many more

Cultivating empathy

Caring and being kind should not be limited to humans but include all living beings as well as our environment. Actively cultivate the feeling of empathy. Studies have shown that empathetic people have more satisfying relationships and perform better in the workplace. Despite these facts, studies show that we care less and less for others and that empathy has continuously declined over the past 30 years. In fact, between 1979 and 2009, empathy has dropped by a whopping 40%. Among the factors causing this phenomenon the study listed social media and constant exposure to negative news.

Lack of empathy has a impact on our society as a whole and has already transformed our world, with too many of us feeling detached and apathetic in the face of pain and suffering of others. By both giving and receiving empathy, we can strengthen our communities, work together more effectively, and live more happily alongside each other.

Switching to a plant-based lifestyle automatically opens up our hearts, but we can also **actively boost** being more compassionate.

- ***Reading novels***

That's right, just grab a book of fiction and start reading. Researchers have called this phenomenon "narrative transportation theory". It basically means that by getting lost in a story, we put ourselves in the position of another person and consequently, experience a change in attitudes, ideas, and behaviors. It is essential to become truly absorbed in the story. The most ideal spot is a quiet, screen free and undisturbed area.

- ***Listening actively***

Actively listening to someone else's words, taking in their facial expressions and taking in the emotions behind the words

not only increases our own level of empathy, but also evokes positive feelings in the person we are listening to.

- ***Helping others***

Similar to the fact that actions bring about motivation, starting to help people will connect us more deeply with others. In fact, researchers from the London School of Economics have found that by volunteering we feel happier. I have found that when feeling blue or low I can lift my mood instantaneously just by making someone else happy. There are many ways to support and help others, either family, friends or organized programs such as delivering meals, mentoring students, shopping for people in need etc. Note on the side: As important as donating money for a good cause is, it does not evoke the same sense of kindness as actively doing something for someone else.

- ***Practicing mindfulness and meditation***

The numerous benefits of these practices have been discussed earlier but a certain type of meditation, called *compassionate meditation*, has been shown to help feel more compassionate- towards *others as well as ourselves*. It can also help us to deal with the suffering we're hearing about each day and not get overwhelmed.
With different compassionate meditation techniques, we can train our mind to express empathy for those outside of our normal circle of compassion, and learn how to practice compassion for ourselves. This practice has also been shown to reduce bias toward stigmatized groups. The loving- kindness meditation can also be used to cope with someone who frustrates or angers you.

Metta meditation or loving-kindness meditation

- Get yourself into a comfortable position and take a few deep breaths to settle in.
- Next, repeat the following phrases in your mind: “May I be happy. May I be peaceful. May I be free from suffering.”
- As you say each phrase, try to imagine breathing warmth and compassion into your heart area and then breathing out warmth and compassion toward yourself, letting the feeling spread throughout your body.
- Next, direct the same phrase to someone who is dear to you, someone who angered you, a larger group of people.
- When you are ready to return to the present moment, take a few deep, mindful breaths.

Self-compassion meditation

Sometimes, we find it the most difficult to feel compassion for ourselves. This exercise starts out by establishing a connection with someone else first, which can then be directed towards ourselves. Get yourself into a comfortable position and take a few deep breaths to settle in.

- Imagine a loved one standing in front of you. With each exhale, send this person love, light, and warmth.
- Silently direct the phrase “May you be happy. May you be peaceful. May you live with ease“ to that person.
- Now imagine yourself standing next to the person. Direct that same warm, light feeling and love from your heart to that image of you, and repeat the phrase “May you be happy. May you be peaceful. May you live with ease“ over and over. Pay attention to any sensation in your body. Maybe you can feel the warmth spreading through your body.
- When you are ready to return to the present moment, take a few deep, mindful breaths.

Tonglen meditation

This visualization meditation is used in Tibetan Buddhism. Tonglen means *“giving and taking”*. I find it quite easy to practice. While breathing in you take in the suffering of someone, by breathing out you exhale compassion.

- Get yourself into a comfortable position and take a few deep breaths to settle in.
- Bring a person or a group of people to mind that are suffering. Imagine the suffering as a dark cloud surrounding the person/ people.
- As you breathe in, imagine breathing in the dark cloud. As you breathe it in, the cloud transforms into a bright, warm light of compassion in your heart area.
- When you breathe out, you send that warm light back to the person/people, alleviating his suffering.
- Continue breathing in the dark cloud and breathing out warm bright light of compassion.

- When you are ready to return to the present moment, take a few deep, mindful breaths.

Put a smile on your face

The simple act of smiling has a profound effect on us and on the people around us. When we see someone smiling it involuntarily triggers an automatic muscular response in our face resulting in a smile. Countless studies have shown that smiling is indeed contagious. Even if we feel that our day started the wrong way, seeing someone smile will make us feel better. Funny enough, *even just the act of contracting our facial muscles into a smile raises our mood right away*. Give it a try next time when you are driving alone in your car. It may feel weird, but it absolutely works. It will make you feel happy! Even while typing these words, a smile is appearing on my face.
Smiling floods us with happy hormones such as endorphins, other natural painkillers as well as serotonin. Together, they reduce stress, lower blood pressure, reduce pain, and make us feel good. Several scientific studies have noticed that when someone smiles at us, the part of our brain that controls feelings of reward is activated. It feels like we have just been handed an amazing prize.
Especially in situations that make us uneasy and anxious, we are drawn to people who show us that they are friendly and approachable. In essence, consider smiling more at people, regardless of whether you know them or not.

Getting annoyed less easily and less often

Give someone the benefit of the doubt before getting upset right away. Avoid getting annoyed and angry when a driver cuts in front of you or when someone cuts in line while you have waited patiently in a line at the grocery store checkout. We don´t know triggered other people´s behavior. Maybe they had a reason to speed things up or had a terrible day. Maybe a family member had been admitted to hospital, their partner left them, their boss yelled at them or they just lost their job. Maybe they just didn't see you standing in line. You can choose to politely make them aware of the fact that you were already standing in line or you can choose to let it go. And yes, sometimes, people are mean and disrespectful without a specific reason. This is only a sign of unhappiness and we should probably feel sorry for this person. In the end, we are all just human beings struggling to get through life with all our insecurities and fears and problems. So next time someone upsets you, take a deep breath and think about how their day might have been. Remember that being angra and upset ultimately drains a lot of precious energy. Energy that can be used far better for beneficial purposes.

3. Physical Activity

By now, you have probably settled into your own routine. Here are some more suggestions:

- It is never to late to try something new
- You might want to encourage someone else to join you
- What about booking an active and exciting holiday or a yoga or meditation retreat for a change
- Remember to continuously stay active- by taking the stairs instead of the elevator, going around the block during lunch break instead of sitting at desk again, squeezing in a few stretches during work (there are some excellent online videos for workouts and stretches that can be done at work) or enjoying your lunch outside. Even a short activity is better than no activity.

Post Program

Huge congratulations! You have successfully completed the Reconnect Program!

When gradual changes happen over the period of weeks they tend to go unnoticed. I suggest you take out the notes from the beginning of The Reconnect Program and compare where you started out and where you are now. Have you achieved your initial goals, did you change them during your journey? Have you been able to reduce or fade out any medication? What is important to you now? If you feel like it write down reflections, set new goals and explore new directions and ideas.
The Reconnect Program was just the beginning of your own exciting journey and I hope to have been a helpful guide by your side. Now you are ready no fly on your own.

I wish you all the best in establishing a meaningful, connected and fulfilled life!

Recommended Books, Movies & Documentaries

The following recommendations are by no means a complete list of amazing material that is available, but rather a compilation of books and movies that have deepened our understanding of a plant- based lifestyle.

General Reading List:

- *The China Stud*y by T. Colin Campbell & Thomas M. Campbell
- *How Not to Die* by Dr Michael Greger
- *Undo It* by Dean Ornish, M.D. & Anne Ornish
- *Whole: Rethinking the Science of Nutrition* by T. Colin Campbell
- *The Omnivore's Dilemma: A Natural History of Four Meals* by Michael Pollan
- *Plant-Based Diet for Dummies* by Marni Wasserman
- *Eat for the Planet* by Nil Zacharias and Gene Stone
- *Becoming Vegan: Comprehensive Edition* by Brenda Davis, RD and Vesanto Melina, MS, RD
- *Food Choice and Sustainablilt*y by Dr Richard Oppenlander
- *The Brain that Changes Itsel*f by Dr Michael Merzenich
- *The Book of Hope* by Jane Goodall
- *What a Fish Knows* by Jonathan Balcombe

Movies & Documentaries

- Forks Over Knives
- The Game Changers
- What the Health
- Cowspiracy
- Seaspiracy
- Mission Blue
- A Life On Our Planet
- Eating Animals
- Tomorrow
- 2040
- My Octopus Teacher
- Kiss the Ground
- Headspace: Guide to Meditation
- The Need to Grow

Other Resources

- www.nutritionfacts.org
- https://www.ifm.org/find-a-practitioner/
- https://missionblue.org/?mc_cid=b1e531aa15&mc_eid=00fd862f3f

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My ongoing admiration and gratitude goes to the whole-food plant-based community with so many inspiring people, to all organic and biodynamic farmers and visionaries, plant-based chefs, environmental activists, filmmakers, entrepreneurs and every individual who has dedicated their life to promote a healthy and sustainable lifestyle. Thank you so much!

Index

Isabella Richter has switched to a whole-food plant-based lifestyle more than 13 years ago. She has a medical background and promotes a scientific, evidence based healthy lifestyle. Over the years, Isabella has accumulated extensive knowledge particularly on the proper preparation of ingredients as well as gut health and has become an expert in helping people transition into a whole-food plant-based lifestyle. “Reconnect” is more than just a book about a healthy diet. It enables everyone, individuals as well as families, people with or without prior knowledge to introduce healthy lifestyle changes. The recommended weekly steps can by customized and include nutrition, mindset and physical activity. With tables, templates, and a lot of motivation and positivity, Isabella guides the reader every step of the way.

Isabella is an artist, writer, physician and orthodontist
Her work is featured on
www.TheReconnectProgram.com
www.isabellarichter.com

“This is a book everyone should hold closely and read consciously. In a world full of confusion and lots of information the powerful knowledge shared inside this book is a place to reconnect to what truly is important, true health, a guide to honor our body and mind.“

Kirk Haworth
Chef/ Co-founder Plates, London