

EVOLUTION OF

THE MODERN DIET



STUDENT GUIDE

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INTRODUCTION

LEARNING OUTCOMES

- ▶ Articulate the significance of a person's connection to their body's innate wisdom and the role of real food in health.
- ▶ Identify key milestone of the modern diet and lifestyle practices and how they affect our health.
- ▶ Explain how the corporatization of farming practices and food production has impacted the nutrient content in food.
- ▶ Describe the work of nutritional pioneers and researchers that contribute to a broader understanding of nutrition and global ancestral patterns.
- ▶ Highlight cultural differences in food sourcing, preparation, and rituals around the world.
- ▶ Explain the importance of epigenetics and bio-individuality on health.



SEE VIDEO 1: INTRODUCTION TO THE EVOLUTION OF THE MODERN DIET FOR AN OVERVIEW FROM
NTA FOUNDER GRAY GRAHAM

INNATE WISDOM

Like all other organisms on the planet, human beings have been gifted with instincts that guide us towards foods and habits that help us survive and thrive. This innate wisdom often operates at a subconscious level, naturally guiding us toward optimal health and vitality through instinctual choices instead of rational thought.

In Video 1: Introduction to the Evolution of the Modern Diet we use the example of a deer in the garden to illustrate how innate wisdom leads the body towards the foods and nutrients it most needs in the moment.



REFLECT ON A TIME WHEN YOUR CRAVINGS AND INTUITION LED YOU TO EAT JUST THE RIGHT FOOD FOR YOU AT THAT TIME.

Here are some general responses to a meal that matches the “just right” needs of your body:

- ▶ You feel satiated but not overstuffed
- ▶ You have balanced energy to last until your next meal in 4 to 5 hours.
- ▶ You don’t leave the meal craving more, even though you are physically full.
- ▶ You do not experience sweet cravings at the end of the meal.
- ▶ You feel mentally and emotionally balanced.
- ▶ You don’t experience any digestive discomfort during or following the meal.

Unfortunately, humans have grown more and more disconnected from their food and the environments in which they grow. In the long term, this disconnect has led to food choices that contribute to the development of a myriad of chronic health symptoms affecting all systems of the body including, mental and emotional health,

hormonal balance, autoimmune and allergic symptoms, systemic inflammation, and cardiovascular disorders. By reconnecting with our innate wisdom, however, and finding the diet that is just right for our bio-individual needs, balance can return to the body— reducing symptoms across the board.



FOR FURTHER READING ON THE VARIOUS FACTORS THAT INFLUENCE OUR BIO-INDIVIDUAL NEEDS AND WHY OUR INNATE WISDOM MAY LEAD US TO CERTAIN FOODS OVER OTHERS, SEE THE LINK TO DR. NATASHA CAMPBELL MCBRIDE'S ARTICLE, "ONE MAN'S MEAT IS ANOTHER MAN'S POISON" IN THE RESOURCE SECTION

THE MODERN DISCONNECT

There have been a number of factors that have led to the modern disconnect between humans, their environment, and their food. For many of us, this means that our innate wisdom has become confused and less able to discern what we need to achieve optimal health. The imbalances created in the body and in our environment may cause us to crave foods and other substances that harm us rather than help.



There are a number of ways that modern food systems interfere with and confuse the innate wisdom of the body:

- ▶ Chemical components in modern foods can increase hunger levels and turn off normal hormonal cues for satiety.
- ▶ Eating nutrient-poor, calorie-rich processed foods leads to increased appetite as we continue to eat in search of sufficient nutrients.

- ▶ Corporate farming practices have resulted in extreme nutrient loss in soils. Subsequently, even most whole foods are less nutrient dense than they would have been historically.
- ▶ Packaged foods can appear more attractive than real, whole foods covered with dirt and bugs.
- ▶ Access to real food is not universally available in all communities. Many turn to refined, packaged foods since it's the only option available.
- ▶ The rapid rise in food reactions can contribute to both picky and disordered eating.
- ▶ Imbalances in the gut microbiome can cause cravings for foods desired by the microbial populations rather than their host.

As you go through this module, as well as throughout the course, we hope you'll gain a better understanding of the ways in which the modernization of food systems has impacted the health of individuals and societies as a whole.

MODERN FOOD PROCESSING, PRODUCTION AND CONSUMPTION

HYPERPALATABILITY

Many of the foods eaten today can be best described with one word: **hyperpalatable**. In just a few hundred years, humans have switched from eating

whole, nutrient-dense foods that are grown within walking distance and cooked in one's kitchen, to prepared foods bought at a shopping center, stored in the freezer, and heated in a microwave. These new foods are designed to be very palatable but are far less nutrient-dense. This bypasses our normal hunger regulation systems and leads to the somewhat paradoxical problem we have today: overconsumption of palatable food but underconsumption of nutrients.

Food is essential to human existence. Pleasure in certain flavors— notably sugar, salt, and fat— as well music, socializing, sex, and certain addictive drugs are processed in a region of the brain called the hedonic center (Kringelbach & Berridge, 2010). As you might guess, these regions of the brain are related to pleasure, novelty, motivation, and reward-seeking behaviors. The hedonic centers use a variety of neurotransmitters such as endorphins and endocannabinoids, but, dopamine is probably the most well-known and best studied. While dopamine does not create the actual feeling of pleasure, it has been shown to create a sense of wanting. In Wired to Eat, Robb Wolf states,

“STIMULATING THE DOPAMINE CENTERS OF THE BRAIN CREATES A FEEDBACK LOOP IN WHICH ONE DESIRES MORE OF THE SUBSTANCE OR ACTIVITY THAT ELICITED THE INITIAL GOOD FEELING.” (WOLF, 2017)

In essence, dopamine signals not satiation or even “liking”, but a desire for more. Dopamine also comes into play with the use of such potentially addictive substances as caffeine, nicotine, and cocaine. In the same way that the dopamine response can lead to substance addiction if overstimulated, the supernormal stimuli of hyperpalatable food can cause food addiction or, at the very least, cravings for more highly palatable food.

Humans evolved to seek foods containing substantial quantities of fat, sugar, and salt. These foods were scarce, though, so dopamine provided needed motivation to find these rare quantities.



SEEKING OUT ENERGY-DENSE FOODS AND EATING BEYOND IMMEDIATE HUNGER SERVES TO INCREASE ENERGY STORES AND PROVIDE PROTECTION AGAINST FAMINE. (GEARHARDT, CORBIN, & BROWNELL, 2008)

Eating as much of these calorically dense foods as possible made sense, since they would only be available for a short time. Today, hyperpalatable foods have come to dominate our food choices. Sadly, our biological drive to consume them has not changed, leaving (particularly those of us with lower dopamine and/or dopamine receptor levels) susceptible to overconsumption and food addictions. Wolf writes,

“THE PROBLEM TODAY IS THAT WE HAVE A NEAR INFINITE VARIETY OF FOODS THAT COMPLETELY BYPASS OUR NEUROREGULATION OF APPETITE. THESE FOODS PRODUCE A DEGREE OF STIMULATION IN THE BRAIN THAT LEAVES NORMAL FOOD LOOKING AND TASTING AWFUL.” (WOLF, 2017)

We can retrain our palates to learn to enjoy and love simple foods again. By reducing our intake of hyperpalatable foods and increasing our intake of whole foods in their minimally prepared forms, we can bring balance back to our appetite and cravings.

The Importance of Flavor

Many hyperpalatable foods focus on salt, sugar, and fat for flavor; often to the detriment of other flavor profiles. (Ziauddeen, Alonso-Alonso, Hill, Kelley, & Khan, 2015) The current science belief is that humans have the capacity to taste five basic flavors: sweet, salty, sour, bitter, and umami. However, indigenous medicine traditions described flavor through observation and included other sensations in their understanding of taste. For example, in the videos for this module, we referenced the five flavors traditionally recognized by both eastern and western herbalism: sweet, salty, sour, bitter, and pungent. Traditional Chinese Medicine (TCM) also recognizes these five flavors. (Tastes and Actions of Chinese Herbs, Subhuti Dharmananda- Institute for Traditional Medicine). The Ayurvedic tradition

includes the same five plus a sixth— astringent. (Yarema, Rhoda, & Brannigan, 2014). These traditions found that each flavor or sensation had specific actions in the body. See figure below for more information.

Taste of the five basic flavors (sweet, salty, bitter, sour, and umami), or gustatory perception, is sensed when a substance binds with a special receptor— mostly on the tongue, but also in other soft tissue— and is sent through the XII, IX, and/or X cranial nerves to the gustatory cortex of the brain. Cranial nerve V carries information about non-taste food perceptions, such as the pungent and astringent sensations mentioned above (in addition to sensations such as coolness, metallicness, and fat). (Beauchamp & Jiang, Comparative biology of taste: Insights into mechanism and function, 2015)

FLAVOR, FOOD SENSATIONS, AND THEIR ACTIONS IN THE BODY

FLAVOR/SENSATION	ACTIONS	FOODS
Sweet	calm nerves and help build tissues	fruit, grains, natural sugars, milk
Salty	boost digestion and lubricate tissues	natural salts, sea vegetables

FLAVOR/SENSATION	ACTIONS	FOODS
Sour	cleanse tissues and improve mineral absorption	sour fruits, yogurt and other fermented foods
Bitter	boosts digestion and support detoxification	dark leafy greens, herbs and spices
Pungent	boost digestion and support a healthy metabolism	chili peppers, garlic, herbs and spices
Astringent	absorb water, tighten tissue, and dry fats	legumes, raw fruits and vegetables, herbs
Umami	increases appetite, enhances other flavors, stimulates salivary reflex	meat, tomatoes, mushrooms, fermented and cured foods

The most recent addition to the list of basic perceived flavors, “umami,” is a Japanese term coined by University of Tokyo scientist, Kikunae Ikeda about a

century ago that means “a pleasant savory taste.” (McQuaid, 2015). Umami is thought to indicate the presence of proteins, in general, and the amino acid glutamate, in particular, and functions as a overall flavor enhancer. Monosodium glutamate or MSG is often added to products by food companies in order to trigger the umami sensation. Cooking, curing, and fermentation all naturally increase the umami flavor in food.

Studying the roll of umami in elderly individuals with impaired sense of taste, scientists at Tohoku University in Sendai, Japan have found that as the ability to taste umami diminishes, the result is loss of appetite, weight loss, and general poor health. They found that umami stimulated the salivary reflex and that adequate saliva production is necessary for individuals to detect the umami flavor. Tohoku scientists discovered that treating dry mouth improved umami sensations in their subjects and, along with it, their eating habits and health. (Sasano, Satoh-Kuriwada, & Shoji, 2015)

"THE RECEPTOR FOR SWEET TASTE IS CODED FOR BY 3 GENES AND IS ABLE TO DETECT SUGARS. THE RECEPTOR FOR UMAMI IS SIMILARLY SIMPLE AND DETECTS AMINO ACIDS. SOUR TASTE IS MEDIATED THROUGH 2 DIFFERENT RECEPTOR SUBTYPES, ABLE TO DETECT HYDROGEN IONS. WE HAVE A RECEPTOR FOR FATS AND ANOTHER FOR SALT. EACH OF THE ABOVE RECEPTORS IS MANUFACTURED FROM THE INFORMATION STORED IN 3 TO 5 GENES, CONSISTS OF ONE TO THREE DIFFERENT SUBTYPES, AND BINDS TO A SMALL RANGE OF SUBSTANCES... BUT THE BITTER TASTE RECEPTOR FAMILY, KNOWN AS THE T2R RECEPTOR FAMILY, IS MADE OF OVER 20 DIFFERENT SUBTYPES, CODED FOR BY SOME 34 GENES, AND ABLE TO DETECT OVER 100 OFTEN COMPLETELY UNRELATED CHEMICAL COMPOUNDS." (MASÉ, 2013)

Though its benefits to the digestive and detoxification systems are well known, bitter may be the most maligned flavor in the modern diet. We tend to dilute it with sweet foods until the bitter component is lost. For example, most people consume naturally bitter cacao and coffee by drowning them in sugar and cream. One way we can begin to bring balance to our diets, is to introduce simple whole foods with a bitter component and to begin to retrain our palates to enjoy the bitter flavor without masking it. Common bitter foods you can introduce into your diet include: greens such as mustard, kale, and many salad greens, naturally cured

olives like Kalamata (not those watered down, flavor-deficient olives that come in a jar), vegetables such as Brussel sprouts, eggplant, and broccoli, and citrus fruits like lemons, grapefruit and oranges (enjoy the white pith with the fruit to get more of the bitter compounds).

Modern agriculture has attempted to breed much of the bitter flavors out of the most commonly consumed produce. Venturing off of the beaten path and seeking out older varieties and less common fruits and vegetables is one way to begin to bring bitter back to your diet. Wild foods tend to be higher in bitter compounds as well. Dandelion is a common plant that grows in much of the northern hemisphere and is often maligned as a weed but can be a wonderful food to add to the diet. Plus, its status as a weed means that it can often be found growing wild and free for the taking in yards, gardens, parks, and neighborhood sidewalk cracks.

An animal's sense of taste is something that evolves with the species and drives it to eat the foods that will sustain it. For example, many carnivores do not have the ability to sense sweet flavors, as they do not require plant foods for survival. Sea mammals such as dolphins and sea lions have extremely limited sense of taste, presumably because their diet consist of fish and other sea creatures swallowed whole. (Beauchamp & Jiang, Comparative biology of taste: Insights into mechanism and function, 2015) Because humans can sense all five basic flavors and many taste sensations, we likely evolved with them in our diets and have physiology that relies on them. Eating should be a celebration of this flavor diversity!

FARMING & FOOD PRODUCTION METHODS

In addition to the problems posed by hyperpalatability and loss of flavor, modern agricultural practices have produced foods that contain fewer nutrients and more potentially harmful substances. Here are some of the most common harmful substances now found in and on many of the foods we eat:

- ▶ **Hormones**

- ▶ **Steroids**
- ▶ **Antibiotics**
- ▶ **Pesticides, Herbicides, and Fungicides**
- ▶ **Food additives such as MSG, preservatives, food colorings, artificial sweeteners, and fake fats.**
- ▶ **Food packaging introduces contamination from a variety of plastics such as BPA and BPS.**
- ▶ **Genetically Modified Organisms (GMOs)**

Farming methods have a huge impact on the nutrient content of plant and animal products. Modern intensive farming methods tend to prioritize size, pest resistance, and growth rate in fruits and vegetables over nutrition, for instance. As a result, researchers at the University of Texas have found that nutritional data from the U.S. Department of Agriculture shows “reliable declines” in the amounts of nutrients in 43 different fruits and vegetables from 1950 to 1999. These declining nutrients include: protein, calcium, phosphorus, iron, riboflavin (vitamin B2) and vitamin C. (Scheer & Moss, 2011) According to lead researcher, Donald Davis,

“EFFORTS TO BREED NEW VARIETIES OF CROPS THAT PROVIDE GREAT YIELD, PEST RESISTANCE AND CLIMATE ADAPTABILITY HAVE ALL CROPS TO GROW BIGGER AND MORE RAPIDLY, BUT THEIR ABILITY TO MANUFACTURE OR UPTAKE NUTRIENTS HAS NOT KEPT PACE WITH THEIR RAPID GROWTH. THERE HAVE LIKELY BEEN DECLINES IN OTHER NUTRIENTS, TOO, SUCH AS MAGNESIUM, ZINC AND VITAMINS B-6 AND E BUT THEY WERE NOT STUDIED IN 1950 AND MORE RESEARCH IS NEEDED TO FIND OUT HOW MUCH LESS WE ARE GETTING OF THESE KEY VITAMINS AND MINERALS.” (SCHEER & MOSS, 2011)

Prioritizing growth rate and production over nutrition also effects the nutrient content of animal-based foods. Take the example of pastured eggs: Comparing the eggs from hens raised on pasture to factory farmed caged hens, the pastured eggs

have twice the vitamin E and long chain Omega 3 fats, 38% higher concentration of vitamin A, and less than half the ratio of omega 6 to omega 3 fatty acids. (Karsten, Patterson, Stout, & Crews, 2010) In addition to better quality fats, pastured eggs are also higher in both in other vitamins and in minerals. Similar differences in fat quality and nutrient content as well as increases in cancer fighting antioxidants such as glutathione and superoxide dismutase have been found in the grass-fed beef vs. grain-fed. (Daley, Abbott, Doyle, Nader, & Larson, 2010)

Not only do modern industrial farming practices decrease the density of nutrients in food, but they also diminish the microbial diversity, available nutrients, and the quantity of the soil itself. There is hope, however. A number of farming practices that sustain our human bodies, the earth, and other creatures that inhabit it are being studied and undertaken all over the world. **Regenerative Agriculture** can regenerate the health of the soil and the foods that grow within and upon it.

Holistic land management practices leverage the natural power of the sun, plants, microorganisms, and large herbivores to create a sustainable, resilient cycle that is good for the planet and the human population.

FOOD ACCESS

Beyond changes to food itself, another problem faced by many is diminished access to real food. Many parts of the industrialized world can now be considered what are commonly called “food deserts”—locations where it is difficult to access fresh, whole foods. Sadly, such food insecurity disproportionately affects economically challenged areas, people of color, and those living in areas affected most by soil degradation, climate change, and natural disasters.

Karen Washington, the cofounder of Black Urban Growers, an advocacy organization for black farmers and black leaders in the food movement, believes that a better term for this disparity is *food apartheid*. She feels that food desert is an “outsider term” that brings to mind desolate places rather than places of potential. Reframing the question as one of food apartheid helps raise the

question: “What are some of the social inequalities that you see, and what are you doing to erase some of the injustices?” (Brones, 2018)

Washington believes we won't find answers in simply bringing a supermarket in to a neighborhood, teaching someone to grow their own food, or advising them to stop drinking soda. She believes we must open the conversation to include race, economics, and geography to truly understand the challenges that people face. Washington feels that there needs to be greater diversity in the food movement. She started Black Urban Growers because she saw very few faces that looked like hers working in this area. In an interview with the magazine, The Guardian, she likens the food movement to a monocrop:

“AS WE KNOW, YOU LOSE DIVERSITY AND IT WILL TRULY END UP A DESERT BECAUSE YOU’VE NEVER TAKEN THE TIME TO NOURISH THAT SEED, DIVERSIFY THAT SEED, AND YOU KEPT DOING THE SAME THING OVER AND OVER AGAIN. AND YOU KNOW WHAT HAPPENES WHEN YOU CONTINUE TO GROW IN THE SAME SOIL. IT GETS DEPLETED OF NUTRIENTS AND BECOMES BARREN. THAT’S WHAT’S GOING TO HAPPEN TO THE FOOD MOVEMENT IF WE DON’T THINK ABOUT PLANTING SEED OF DIVERSITY, OF NEW YOUNG BLOOD, INTO THE FOOD SYSTEM.” (BRONES, 2018)

Food insecurity is a global challenge. By the year 2050, it is projected that there will be 9 billion hungry humans on the planet. (Breene, 2016) In addition a growing population, climate change, water scarcity, growing food costs, and fewer farmers all contribute to a growing number of undernourished individuals worldwide. The Food and Agriculture Organization of the United Nations (FAO) projections indicate the food production will need to increase by 70% in order to feed the world population in 2050. (Page, 2013) Not only will production need to increase, but the global economic system will need to improve its capacity for distributing food to all populations. The FAO reported in 2010 that despite a global food surplus, “the number of hungry and food insecure people increased to nearly a billion.” (Page, 2013)

One simple, yet powerful way that we can respond to these troubling global realities is to work for a return to local food supply chains. Most people have no

idea where the food they eat originates or how it got from the producer to their plate. Many foods we take for granted as a normal part of our everyday diet travel thousands of miles across the world before they reach our dinner table and many communities around the world are exporting locally produced foods that could be used to feed the local population. Supporting local food growers and producers establishes a more resilient food system that can better weather the increasing challenges of a growing global population and changing climate.



FOR MORE INFORMATION ON FOOD INSECURITY AND FOOD DESERTS AROUND THE WORLD, SEE THE LINKS IN THE RESOURCE SECTION AT THE END OF THIS DOCUMENT

NUTRITIONAL MILESTONES

SIX HISTORICAL MILESTONES LEADING TO THE MODERN DIET

So how did we stray so far from the nutrient-dense whole foods that have nourished our species for thousands and thousands of generations? There are six key milestones that led to the degradation of our food supply and our current disconnection from the innate wisdom of the body:

- ▶ **The Agricultural Revolution**
- ▶ **The Introduction of Refined Sugar**
- ▶ **The Industrial Revolution**
- ▶ **The Rise of Big Food**
- ▶ **The Chemical Revolution**

► The Digital Revolution

Each stage brought both advantages and disadvantages to human health, and it's important for us to know a bit of what happened in the past to help us make more informed decisions today.



FILL IN THE **TIMELINE WORKSHEET** PROVIDED IN THIS MODULE AS YOU READ THROUGH EACH MILESTONE BELOW.

HUNTING, GATHERING, AND BEYOND



Until roughly 10,000 to 12,000 years ago, all humans were what is commonly referred to now as “hunter-gatherers”. This term encourages a picture of pre-agricultural peoples wandering through wild landscapes and just happening upon food. While this foraging strategy may accurately describe the food gathering techniques of some groups, there is evidence that many indigenous groups had and continue to have widespread influence on the habitats supplying their food.

Writing about the native groups of the forests in the eastern United States in their text, [Edible Forest Gardens](#), Dave Jacke and Eric Toensmeier maintain that indigenous groups “managed the forest to increase and diversify their food supply and to improve their living conditions in general.” (Jacke & Toensmeier, 2005) Fire as a management tool, for instance, was common across North America from New England forests to the savanna's and prairies and the oak woodlands and fir forests of the west coast. (Jacke & Toensmeier, 2005) Native people of California used fire to help ensure an abundant harvest of the acorns they relied on as a primary staple:

“MANY OF THE GAME SPECIES MOST FREQUENTLY USED BY THE INDIANS PREFER HABITATS DEPENDENT ON OR ENHANCED BY FIRE. THESE FACTS APPEAR TO BE TRUE ACROSS NORTH AMERICA. IN CALIFORNIA, FOR EXAMPLE, WE NOW KNOW THAT THE HIGHLY PRODUCTIVE OAK WOODLANDS FOUND BY COLONIAL SETTLERS DEGRADE WITHOUT CAREFUL BURNING. THEY THEREFORE LOSE PRODUCTIVITY, DIVERSITY, WILDLIFE VALUE, BEAUTY AND USEFULNESS TO HUMANS.” (JACKE & TOENSMEIER, 2005)

Another common method of habitat management is the creation of swiddens or temporary gardens within the forest. Used by indigenous groups in the eastern U.S., this technique has also proven to be key to successful human occupation of the Amazon rain forest. (Bodley, 2011) Also known as shifting cultivation, modern peoples of the Amazon still grow and harvest food from small, temporary, and diverse plantings that minimize erosion and loss to insects and disease. These gardens cause minimal disruption on the ecosystem and rely on the healthy forest to maintain soil quality, regulate the climate, recycle nutrients and water, and sustain fish and game resources. Using a forest fallow system, plots are used for an average of 1-3 years and then left fallow for at least 25 years. In this way they are able to maintain fertility and yield in the soils in a way that continuous planting would not. (Bodley, 2011)

These examples and more lead some to suggest that the term “hunter-gatherer” is limited. Hunter-gatherer-horticulturalist may offer a more well-rounded name for the diverse ways in which indigenous peoples were in relationship with their environment. Others have suggested that we should turn the term on its head and say instead “gatherer-hunter” because foraging of non-animal foods—often done mostly by women—most likely made up the majority of caloric intake for many indigenous groups.

THE FIRST HUMAN DIET

Early human diets represented a great deal of variability and variety from location to location and season to season. Living in diverse communities and climates across the world, humans saw a wide range of available foods and procured what they could from their landscapes.

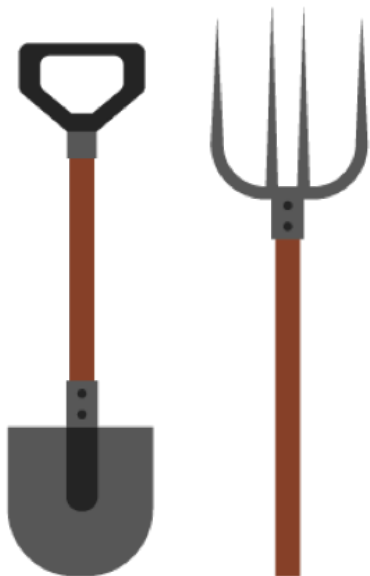


Contrary to some modern beliefs, there was no single “Paleo” diet. For example, some populations ate a significant amount of fat and very little carbohydrates, while other groups ate the exact opposite. Some ate mostly animals while others ate more plant foods. Despite so much diversity, there are some key commonalities that tied all early human societies together, and make them far different from what we see humans consuming today:

- ▶ **Foods were nutrient-dense, seasonal, locally sourced, and minimally processed.**
- ▶ **Basic food processing techniques increased the density and availability of nutrients.**
- ▶ **Societies were omnivorous. Though some societies relied heavily on plant foods, no early human diets were completely free of animal foods.**

Living this way, societies were largely free from many of the chronic diseases that are widespread today, including obesity, diabetes, heart disease, and cancer. Because of this, many of these disorders are now called “Diseases of Civilization.” Though much has changed in human culture over the last 40,000 years, our genes remain 99.9% the same. From a biological perspective, we have the largely the same nutritional needs as our pre-agricultural revolution ancestors.

THE AGRICULTURAL REVOLUTION



The Agricultural Revolution marked a major departure from the hunter-gatherer-horticulturalist lifestyle that defined the vast majority of human evolution. Occurring about 10,000 to 12,000 years ago (a relatively short amount of time in evolutionary terms), it was marked by the increased reliance on farmed food crops and domesticated animals as well as the development of larger, permanent settlements in the form of towns and cities. The resulting food surpluses also created the opportunity for systemic division of labor and “the creation of intellectuals, artisans, traders, soldiers, and ruling elites.” (Pearce & McMichael , 2002-2011)

It is important to note that the “Agricultural Revolution” was not one isolated incident that occurred in one place at one time. The revolution happened independently in at least five areas of the world: southwest Asia, China, Mesoamerica, the Andes of South America, and the eastern United States. (Pearce & McMichael , 2002-2011) The reasons that agriculture developed in these areas and not others is not entirely understood. The availability of foods to cultivate and animals to domesticate probably helped. In some areas, agriculture enabled larger, denser populations. In other areas, larger, denser populations necessitated agriculture. In yet other areas, agriculture was forced upon groups of people via colonization.

While agriculture offered many seductive benefits, it came with a high cost:

- ▶ **Fewer and less-diverse nutrients**
- ▶ **Rapid loss of bone density**

- ▶ **Habitat loss and soil degradation**
- ▶ **Increased spread of communicable diseases**
- ▶ **Societal hierarchies, inequality, slavery, and genocide**

Like with food, however, it's important to remember that agriculture is not necessarily good or bad. It is simply a choice that comes with consequences. There are many ways to do it in a sustainable, equitable way that produces ample quantities of nutrient-dense foods. There are growing numbers of farming communities throughout the world that are striving to feed their people while working in harmony with nature. Learning from the land as well as ancient practices of land management like those used by indigenous groups prior to the advent of modern, corporate agriculture—contemporary, regenerative farmers strive to create farming practices that rebuild the soil, increase ecological diversity, and reverse the environmental destruction created by previous generations.

THE INTRODUCTION OF REFINED SUGAR

Let's fast forward now to the next major milestone in nutritional degradation: the proliferation of processed sugar. When it was first introduced in the 1600s, processed sugar was a luxury typically enjoyed only by the wealthy. But as production grew cheaper, it was consumed by more and more of the population. In just a few hundred years, average sugar consumption went from a few pounds per person, per year, to somewhere between 150 and 200 pounds annually today!

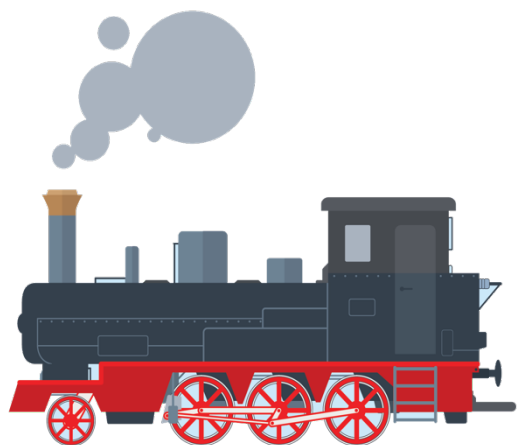


As Gary Taubes writes in his book, [The Case Against Sugar](#), sugar is not just harmful because it lacks useful nutrients. In its processed form, sugar has unique biological

effects that are harmful to human health, especially in the large quantities that most people now consume. Yes, most chronic diseases today are complex and have multiple causes, but, as Taubes argues:

“...SUGARS LIKE SUCROSE AND HIGH-FRUCTOSE CORN SYRUP ARE FUNDAMENTAL CAUSES OF DIABETES AND OBESITY, USING THE SAME SIMPLE CONCEPT OF CAUSALITY THAT WE EMPLOY WHEN WE SAY SMOKING CIGARETTES CAUSES LUNG CANCER.” (TAUBES, 2016)

THE INDUSTRIAL REVOLUTION



The Industrial Revolution significantly changed how most people live, work, and eat. As more and more people began flocking to cities, and away from where food is produced, city dwellers began buying food instead of raising and harvesting their own. And much of what was sold needed to be processed so it wouldn't spoil as quickly when transported from farms to cities. But as shelf life increased, nutrient-density decreased.

The Industrial Revolution also rapidly increased the number of people doing all of that living, working, and eating. In just the first one hundred years from the dawn of the Industrial Revolution to the mid 1800s, the world population nearly doubled from 700 million to 1.2 billion. It then doubled again in the next 100 years to 2.5 billion and increased by a factor of 3 in the next 100 years, to today's total of over 7 billion people. That's a lot of hungry mouths to feed!

The Industrial Revolution changed not only how we eat, but also how we live, work, and use our bodies. For the first time in history, machines began to replace the physical work of humans and animals, which greatly increased industrial output.

This ever-increasing production introduced new products, but also introduced new chemicals and toxicants into the environment.

As Chris Kresser, L.Ac, puts it:

“THERE’S NO DOUBT THAT AGRICULTURE LED TO A SIGNIFICANT DECLINE IN OUR OVERALL HEALTH, BUT THE INDUSTRIAL REVOLUTION WAS REALLY THE KNOCKOUT PUNCH. IT BROUGHT US TO WHERE WE ARE TODAY, WHEN WHITE SUGAR, FLOUR, AND VEGETABLE OIL MAKE UP OVER 50 PERCENT OF THE CALORIES THAT THE AVERAGE PERSON LIVING IN THE INDUSTRIALIZED WORLD CONSUMES EACH DAY. WE’RE MORE SEDENTARY THAN WE’VE EVER BEEN BEFORE. WE SIT WHILE WE WORK, AND WE SIT WHILE WE PLAY. WE’RE CHRONICALLY SLEEP DEPRIVED. A THIRD OF AMERICANS NOW SLEEP FEWER THAN SIX HOURS A NIGHT, WHICH IS UP FROM JUST 2 PERCENT OF AMERICANS IN 1965. WE’RE WORKING HARDER THAN EVER. FINALLY, MANY OF US LIVE AND WORK IN ISOLATING AND ALIENATING SOCIAL ENVIRONMENTS, WHERE WE FEEL DISCONNECTED FROM THE NATURAL WORLD THAT WE EVOLVED IN.” (KRESSER, 2018)

THE RISE OF BIG FOOD

Piggybacking on the rise of processed foods, a number of new food companies sprung up in the late 1800s and early 1900s, many of which went on to be the very name brands many people now love or love to hate! Three of the most popular soda brands today, Dr Pepper, Coca-Cola, and Pepsi, were all launched in the 1880s.

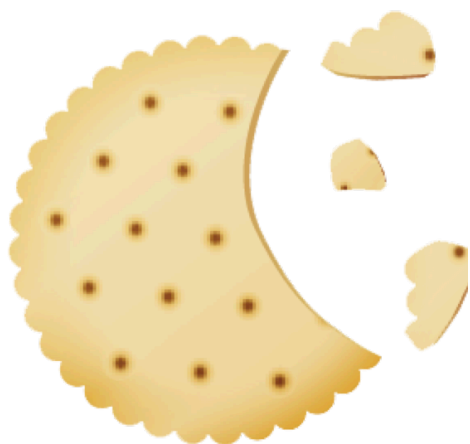


Nestlé, started in 1866 by Henri Nestlé, is now one of the world’s largest food companies by revenue and the 33rd largest public company according to the 2016 edition of the Forbes Global 2000 list. Kellogg's and Post cereals, for example, were both started in the early 1900s with noble intentions to nourish patients at “sanatoriums” (treatment centers for wealthy people of the day with chronic digestive issues). Kellogg’s was started in 1906 by physician John Harvey Kellogg, who, along with his brother Will Keith Kellogg,

discovered a way to transform wheat into a flaked cereal by steaming grains and rolling them into flakes. John was a member of the the Seventh-day Adventist Church, and believed that vegetarianism and frequent trips to the bathroom were the paths to good health. Post was started by C.W. Post, a former patient and eventual competitor of John Kellogg, whose Grape Nuts actually became a commercial success years before Kellogg's Corn Flakes. Numerous competitors and copycats followed, many of which you can still see on the shelves today.

Though some of these food giants may have begun with good intentions, all are now motivated more by generating profits than nourishing the world. In his book, [Salt, Sugar and Fat: How the Food Giants Hooked Us](#), Michael Moss writes about how modern food corporations use that hyperpalatable combination of fat, sugar and salt to find the “bliss point” with their products where consumers (or users as the Coca Cola company refers to their biggest customers) get hooked. (Goodman, 2013) He also explores how these companies market to children, in particular, in an effort to influence their parents' buying patterns and to create lifelong customers. (Moss M. , 2013) Thanks to the vast fortunes these companies have earned selling low-cost, profitable, and highly palatable foods, these multinational corporations now have tremendous influence over public policy and research, helping them fight off efforts to demonize their products the way tobacco was in the last half of the 20th century.

THE CHEMICAL REVOLUTION



Of all the milestones we've discussed, the Second World War arguably had the most dramatic effect on our modern food supply. With millions of soldiers spread across the planet, new processing techniques were developed to create rations that were lighter and longer lasting. Many people might not realize that their Goldfish® crackers, granola bars, and juice pouches are actually derived from

military inventions in the 40s.

As nutrient-dense foods like butter and meat were preferentially channeled to troops, civilians were encouraged to consume new-fangled products like margarine and hydrogenated oils. And many never went back even after the war, convinced by flawed studies that these fats were more heart healthy than the natural saturated fats they tried to replace.

In addition to changes in what we ate, World War II also led to major changes in how food is produced. Many of the chemical compounds originally used to produce bombs and nerve gas, for example, were eventually repurposed for use as fertilizers and pesticides on farms back at home.

The result of all this? Food that is cheap, abundant, highly processed, non-perishable, and covered in chemical fertilizers, herbicides, and pesticides. Some of these industrial foods may satisfy our taste buds, but they leave our bodies hungry for nutrients. So, what's the solution? It's time for us to heed the wisdom of our ancestors and start eating real food again.

THE DIGITAL REVOLUTION

The last major milestone is The Digital Revolution, which marks the beginning of what's now called "The Information Age." This technological revolution saw a rapid shift from mechanical and analogue technology to digital electronics, computing, and communications. The Digital Revolution has brought many advantages in the realm of nutrition and health education. In fact, the NTA program would not exist to the extent it does today without digital advances. The digital revolution has also allowed us to connect and create grass roots food



movements & raise awareness in a way that was not possible in previous generations. However, it has also significantly impacted the way we eat, move, sleep, work, and live in ways that are less than ideal. As we consume more and more digital media, for example, our quantity of physical activity and outdoor leisure continues to fall. Regular, diverse movement is a basic requirement for many aspects of good health.

Digital media and modern information work have also negatively affected our posture, which— together with movement— has a significant impact on the function of our digestive system. The worse our posture, the worse our ability to digest and absorb the nutrients we need to thrive.

The increased exposure to the blue light from our device screens may affect our sleep quantity and quality, while the electromagnetic frequencies (EMFs) produced and received by our devices may have deleterious effects on our bodies at a cellular level.

These topics are controversial and there is much debate about if— or how much— the products of the Digital Revolution have harmed our health. One thing is certain: in many ways, we are less healthy now than ever before. The road back to health starts with finding balance in our use of digital technology--using it as a tool towards increasing our knowledge and building skills that will allow us to eat, move, and live in ways that honor the hunter-gather genes we've inherited!

NUTRITION PIONEERS & CONTRIBUTORS

As the detrimental effects of the modern diet have become more and more clear, a number of pioneering researchers and practitioners have worked to show the connections between poor nutrition and physical degeneration, and how we can

reclaim our health by eating nutrient-dense, properly prepared, whole foods. Let's review teachings from over a century of nutritional research.

DR. WESTON A. PRICE



Dr. Weston Andrew Price (1870–1948) was a career dentist who founded the National Dental Association research institute, which later became the research division of the American Dental Association. He was the NDA's chairman from 1914-1928. He later traveled the world studying traditional cultures and contrasting their diets and health with that of industrialized countries.

Given the unique historical timeframe, Price was able to directly compare the health of related individuals who still ate traditional diets, and those who had recently adopted Westernized foods. Wherever he traveled in the world, he observed a rapid decline in health when previously healthy populations gave up traditional diets and began consuming modern, processed, nutrient-poor diets. He concluded that tooth decay, poor bone development, and chronic “diseases of civilization” are primarily caused by nutrient deficiencies and the nutrient-poor foods found in modern, industrialized diets, especially refined flour, sugar, and processed vegetable oils. He shared his findings, observations, and photographs in his 1939 book *Nutrition and Physical Degeneration*.

In addition to connecting nutrient-deficiencies with poor health, Dr. Price also made a number of other observations that are as important today as they were in the early 1900s. Dr. Price concluded that there is no one ideal diet for all societies. He observed a great variety of healthy diets around the world, which differed significantly in the types of foods eaten and in the ratios of macronutrients consumed. However, he also observed that there are certain dietary laws that are inflexible and unchangeable:

- ▶ **We must obtain some fat-soluble vitamins from animal sources.**
- ▶ **We most consume properly prepared foods in their whole forms.**

Dr. Price observed a number of other key commonalities among healthy diets around the world:

- ▶ **They contained no refined or denatured foods.**
- ▶ **They all used some type of animal products, with some consumed raw. Dr. Price's greatest disappointment was that he could not find a vegan culture that was truly healthy.**
- ▶ **Diets were 4 times higher in calcium and other minerals and 10 times higher in fat-soluble vitamins compared with the modern Western diet.**
- ▶ **Diets made use of bones, usually in bone broths.**
- ▶ **Diets included foods with high enzyme content.**
- ▶ **Seeds, grains, legumes, and nuts were soaked, sprouted, fermented, or naturally leavened.**
- ▶ **Fat content varied from 30% to 80% of total calories, but only 4% came from polyunsaturated fatty acids.**
- ▶ **Diets contained nearly equal amounts of omega-3 and omega-6 fatty acids.**
- ▶ **Diets contained some unrefined salt.**

DR. DAME HARRIETTE CHICK

Dr. Dame Harriette Chick (1875-1977) was a British doctor devoted to addressing the nutritional deficiency diseases of scurvy, beriberi, and rickets. In 1905, she became the first woman to obtain a position at the Lister Institute of Preventive Medicine in London.



Chick began her nutrition studies in 1916, conducting animal studies aimed at learning how to prevent beriberi and scurvy in soldiers fighting during World War I. Beriberi is a disease-causing inflammation of the nerves and heart failure. Scurvy is characterized by swollen bleeding gums and the opening of previously healed wounds. She concluded that army rations should include whole-grains, pulses, dried eggs, and yeast, but not milk or cheese, to prevent beriberi. To prevent scurvy, she recommended fresh meat and freshly germinated pulses when fresh vegetables and fruits were not available.

In 1920, Chick was invited to research nutritional support for rickets at the University of Vienna. Rickets, a condition marked by soft bones, bowed legs, deformed spines, dental caries, swollen joints, large heads, and mental health problems, was thought at the time to be caused by an infectious disease. Dr. Chick, together with her Australian colleague, Dr. Elsie Dalyell (1881-1948), proved the disease was related to nutrient deficiencies and could be cured by the administration of vitamin D and A rich foods like whole milk and cod liver oil. (Carpenter, 2008)

DR. FRANCIS M. POTTENGER, JR.

Dr. Francis M. Pottenger, Jr. (1901–1967) was the son of another doctor, Francis M. Pottenger Sr., who co-founded a sanatorium in California that treated tuberculosis. After completing his residence at Los Angeles County Hospital in 1930, the younger



Francis M. Pottenger assisted his father full-time at the sanatorium and began what would come to be known as the “Pottenger Cat Study.” He designed a number of experiments that showed a direct connection between species inappropriate food and physical degeneration.

As we learn in the Nutritional Pioneers video, Pottenger’s study offers a fascinating look at how nutritional choices may affect not only the individual but their children and descendants. Let’s take a deeper dive and look at the methodology and potential implications of this study.

While Pottenger was researching the treatment of respiratory disease patients with adrenal cortex, using the cats as test subjects to standardize adrenal glandular therapies in human subjects, he stumbled upon an observation. His clinic was housing more cats than could be fed on the standard dietary regime of cooked meat scraps and had to outsource additional food (raw meat instead of cooked meat scraps). This random influence seemed to create more optimal short and long-term health, and eventually, generational health, in his cat test subjects.

Pottenger did not set out to study the effects of diet on generational cat health, so the design of his study was not optimal. This brings us to an overriding issue with this study— and with every study we will examine as health professionals. There are confounding factors and biases, uncontrolled variables, and even chance (something that is statistically accounted for in scientific research) that may muddy the waters of the study’s outcome.



REFER TO THE DOCUMENT, “**RESEARCH QUESTIONS - POTTENGER’S STUDY**” FOR MORE INFORMATION.

In Pottenger’s study, one main weakness was that the cats were not selected into groups based on any factors other than their general health— based on how they looked and behaved. Additionally, Pottenger was unaware of the indispensable (or, essential) need for taurine in cats. Taurine is an amino acid that is easily destroyed

by heat. Cats evolved eating a diet comprised largely of raw meat, and therefore, lots of taurine. Because it was so abundant in their diet, they lost the enzymatic ability to produce it from other amino acids. So, it's not a surprise that Pottenger's cats in the cooked meat diet group developed extreme health conditions, some of which were related to taurine deficiency.

Additionally, cats are not humans, so we must be careful extrapolating, or generalizing, any information from animal studies to humans. This is a common criticism of many studies generalized to human populations. Yet another weakness was the lack of standardization of the removal of the adrenal cortex. This impacts the amount of aldosterone to cortisol in the cortex, the two main mineralocorticoids produced in the cortex of the adrenal glands. A final potential weakness is that it isn't completely clear that there weren't unaccounted-for ingredients in the meat given to the animals, potentially skewing the results.

All studies have weaknesses. In peer reviewed work these are openly discussed. In fact, they are part of a good research process. The breadth of these study weakness explorations determine the value of the study and implications of the findings.

So, do a studies' weaknesses mean that we should discredit the findings? It's a fair question, and one that we must consider consistently in reading research and in contemplating how to apply the results in a clinical setting. As responsible clinicians, we must read all information that we are presented with a critical eye. Is the information valid and logical enough to help a particular client?

As the course progresses you will learn more about reading research, as well as how to integrally incorporate many forms of information into your clinical practice. But, for right now, simply be aware of the critical eye one must have when looking at published research studies.



FOR A MORE IN-DEPTH DISCUSSION ABOUT READING RESEARCH FROM TWO EXPERTS IN THE NUTRITION WORLD, CHECK OUT THE CHRIS MASTERJOHN ARTICLE OR CHRIS KRESSER, "**HOW TO READ AND UNDERSTAND SCIENTIFIC RESEARCH**" ARTICLES IN THE REFERENCES AT THE END OF THIS DOCUMENT

DR. STEPHEN LE

Exploration of traditional foods continues today. You will find references to contributors to the modern field of nutrition such as Chris Kresser, Chris Masterjohn, and Robb Wolf throughout this guide. Stephen Le, PhD in Biological Anthropology, is another example of someone who has traveled the world exploring traditional foods and preparation techniques. His book, 100



Million Years of Food, takes a fascinating look at the evolution of the modern diet, why humans have chosen the foods they've eat throughout history, and what we can learn today from those choices. Here are a few of the recommendations he makes based on his extensive research and travels:

- ▶ **Move like your ancestors. Try to walk at least 2 hours every day.** (Le, 2016, p. 216)
- ▶ **Eat traditional cuisines. The older the better.** (Le, 2016, p. 218)
- ▶ **Eat what YOUR ancestors ate to make best use of the genetic adaptations that have occurred in your lineage.** (Le, 2016, pp. 218-219)
- ▶ **Eat sustainably raised plants and animals that adapted to your local environment rather than food shipped from far away.** (Le, 2016, p. 219)
- ▶ **Avoid fad diets. As Stephen points out, "Our bodies are designed to thrive on a wide variety of foods, in the form of time-tested traditional diets."** (Le, 2016, p. 223)



FOR MORE INFORMATION ABOUT THE NUTRITION RESEARCH PIONEERS, PLEASE SEE THE REFERENCES AT THE END OF THIS DOCUMENT

EPIGENETICS & BIO-INDIVIDUALITY

Epigenetics and **bio-individuality** are both important concepts in health. Though the two overlap and influence one another, there is a difference worth noting: Epigenetics is the way in which the environment interacts with our genes, turning some on and others off. Bio-individuality, on the other hand, is a dynamic circumstance governing the body's needs and is informed by both genetic *and* epigenetic factors.

THE HOPE OF EPIGENETICS

In a single person's lifetime, their DNA— or genotype— does not change. Contrary to popular belief, however, the expression of our genes is not static. They are not synonymous with pre-determination. They are dynamic and adapt constantly to our environments.

“GENES LOAD THE GUN, BUT LIFESTYLE PULLS THE TRIGGER.” - CHRIS KRESSER

The term “epigenetics” literally means upon the gene, and it turns out that everything we put in our mouths, everything we breathe into our lungs, everything we do with our bodies, and even everything we think in our heads, all have an effect on how our genes are expressed. Everything we do provides information to our genes and actually changes how genes are expressed. The field of *nutrigenomics* studies the interactions between diet/nutrients and genetic expression. So, instead of seeing food as simply calories or fuel, see it as information that will program your genes and change your physiology.

Our genes don't have to be our fate. We have the power to change our genetic expression today— and that of future generations to come— by changing how we eat and live. The steps in this course are designed to provide a roadmap to eating, moving, resting, playing, connecting, and communicating in a way that does precisely that. By providing your body with the right nutrients and self-care it needs, you will help stack the epigenetic deck in your favor, in the favor of your children, of your children's children, and beyond.

THE IMPORTANCE OF BIO-INDIVIDUALITY

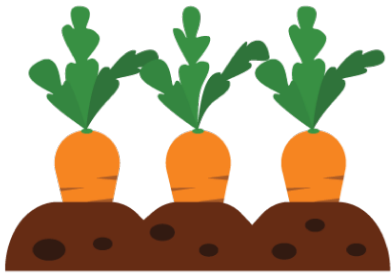
While there are certain nutritional principles that all humans benefit from following, there is no one-size-fits-all diet. Your current circumstances, challenges, environment, lifestyle, bodily strengths and weaknesses all influence what particular foods will serve you best in the moment. Here are few examples:

- ▶ **Pregnant or breastfeeding individuals will have special nutritional needs.**
- ▶ **Those with immune or autoimmune challenges may need to tailor their diet beyond the typical “nutrient-dense, whole food” paradigm to best support their system.**
- ▶ **Digestive dysfunction can benefit from dietary alterations that aren't needed once those imbalances are resolved.**
- ▶ **In the same way, someone with a blood sugar imbalance may need to limit their carbohydrate intake in a way that is not necessary for an individual with balanced blood sugar.**
- ▶ **Athletes and individuals with physically strenuous jobs will need to fuel and support their bodies differently than people who are less physically active.**
- ▶ **Infants and children have particular needs because of their rapidly growing bodies and brains.**

Determining your personal bio-individual needs can feel like a bit of a guessing game but throughout this course we will learn ways to reconnect with our intuition and listen to the language of our bodies so that we and our clients can find the diet that is right for our current circumstances.

THE NTA LENS

PRACTICAL WAYS TO BRING ANCESTRAL FOOD TRADITIONS INTO MODERN LIFE



How do we take this historical picture and create a new narrative? How do we establish a connection with our food once again? The nutrition pioneers we discussed have shown us the power that nutrition has to create health and reverse or prevent chronic disease. The evolutionary drive to seek out easily accessible and hyperpalatable foods, however, can push us towards an abundance of junk foods low in nutrients, but high in harmful ingredients.

"WE GET SICK FROM CHRONIC DISEASE BY DOING WHAT WE EVOLVED TO DO BUT UNDER CONDITIONS FOR WHICH OUR BODIES ARE POORLY ADAPTED, AND THEN WE PASS ON THOSE SAME CONDITIONS TO OUR CHILDREN, WHO ALSO THEN GET SICK. IF WE WISH TO HALT THIS VICIOUS CIRCLE THEN WE NEED TO FIGURE OUT HOW TO RESPECTFULLY AND SENSIBLY NUDGE, PUSH AND SOMETIMES OBLIGE OURSELVES TO EAT FOODS THAT PROMOTE HEALTH AND TO BE MORE PHYSICALLY ACTIVE. THAT TOO IS WHAT WE EVOLVED TO DO." (LIEBERMAN, 2014, P. XII)

Mindfulness and intentionality become our friends in this modern age as we work to create a stronger foundation of health for ourselves, our families, and the people we serve as Nutritional Therapy Consultants and Practitioners. Connection to our communities and the natural world further guide us towards a greater connection with the innate wisdom of our bodies and wiser choices about how we eat, move, rest, and live.

Reconnect With Your Food, The Planet & Your Community

Here are some ways you can grow, gather, acquire, and eat food in way that increases your connection to the environment, maintains the health of the planet, better nourishes your body, and connects you with your family and community:



- ▶ **Grow your own food.** Consider a windowsill herb pot, backyard garden, community garden, homestead, or organic farm.
- ▶ **Encourage a healthy microbiome by making your own cultured foods.**
- ▶ **Forage for wild foods.** Walk in nature frequently to remind yourself of the original “grocery store”. Learn how to identify and properly prepare wild herbs and other plants growing in your yard, parks, forests, meadows, and sidewalk cracks near you.
- ▶ **Hunt or fish.** If practical and in alignment your beliefs, consider hunting or fishing for small and large game near you.
- ▶ **Support local farmers and foragers near you.** If you can't grow or gather food yourself, support those who do. Source foods as locally as possible or

support business who do. Join a CSA (Community Supported Agriculture). Shop at the farmers market and farm stands.

- ▶ **Incorporate traditions foods and rituals from your cultural and familial background**—feeding your ancestral body with your personal, ancestral foods and cultural traditions.
- ▶ **Explore and learn from the cultural food traditions of your neighbors and community both locally and around the globe.**
- ▶ **Research the sacred and staple foods important to the people indigenous to your region and explore ways to preserve the ecosystems and habitats in which they grow.**
- ▶ **Make the family meal a ritual.** Rekindle the ceremony of cooking and eating together as a family. Make it a rule to always turn off electrical devices, opting instead to talk, laugh, and express gratitude together around the table.
- ▶ **Think beyond your nuclear family and share food and food preparation with your community:** Hold a fermentation or canning “bee” to preserve foods. Organize a food swap to trade surplus with your neighbors. Start a dinner club and take turns hosting meals with friends.
- ▶ **Bring back feasting.** Celebrate nature, the seasons, community, and real foods by holding seasonal feasts centered around real foods. Celebrations don’t have to be centered around sugary treats.

These acts may seem small, but they can have a profound effect on our personal health and wellness, as well as society and the earth around us. As food and wellness educator Lauren Nixon says:

“FOOD, RESISTANCE, AND COMFORT GO HAND IN HAND IN MY OPINION. WITH SO MUCH OF OUR WORLD BEING PRETTY MESSY AND VIOLENT AND TRAUMA-INDUCING, THE HOME SPACE, IF WE DO THE WORK, CAN BE A NOURISHING SPACE. I THINK THAT COOKING FROM SCRATCH IN OUR HOMES, AND MAKING

THINGS WITH OUR HANDS, IN GENERAL, IS LIKE CREATING A LITTLE WORLD FOR OURSELVES THAT WE CAN CONTROL. YOU CAN'T CONTROL WHAT YOUR NEXT-DOOR NEIGHBOR OR YOUR CROSSING GUARD OR YOUR AUNT ARE DOING. BUT YOU CAN HAVE A REALLY RAD DINNER PARTY WITH PEOPLE YOU TRUST AND ENJOY, CREATE FOOD THAT MAKES YOUR INSIDES HUM AND THE PERFECT LITTLE VIBE FOR YOURSELF. RITUALS ARE A GROUNDING MECHANISM.” (SENSEI, 2017)

The challenges to health presented by modern food systems can seem daunting when viewed in their entirety but, if you take anything away from this module, may it be that there are many ways, small and large, to effect change on our food systems and begin working towards healthier bodies, communities, and ecosystems. As a student of the Nutritional Therapy Association, you are joining a passionate community of individuals planting seeds of change around the world. Welcome!

REFERENCES

ADDITIONAL RESOURCES

Innate Wisdom

- ▶ One Man's Meat, Another Man's Poison: <http://www.doctor-natasha.com/one-mans-meat-another-mans-poison.php>

Food Desert and Food Insecurity

- ▶ USDA Food Access Research Atlas: <https://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas/>
- ▶ Map of the Meal Gap <http://map.feedingamerica.org/>
- ▶ Food Insecurity and Climate Change Map: <https://documents.wfp.org/stellent/groups/public/documents/newsroom/wfp229182.pdf>
- ▶ Food Deserts by Country: https://en.m.wikipedia.org/wiki/Food_deserts_by_country

Regenerative Agriculture

- ▶ "What is Regenerative Agriculture?" <http://2igmzc48tf4q88z3o24qjfl8.wpengine.netdna-cdn.com/wp-content/uploads/2017/02/Regen-Ag-Definition-2.23.17-1.pdf>

Nutritional Pioneers

- ▶ Great Pioneers In Nutrition: <https://www.westonaprice.org/health-topics/nutrition-greats/great-pioneers-in-nutrition-of-the-twentieth-century>
- ▶ Linus Pauling: <https://lpi.oregonstate.edu/about/linus-pauling-biography>
- ▶ How to Read a Science Paper: <https://chrismasterjohnphd.com/2017/03/11/read-science-paper/>
- ▶ How to Read and Understand Scientific Research: <https://chriskresser.com/how-to-read-and-understand-scientific-research/>

The Modern Diet

- ▶ The Energetic Significance of Cooking: <https://www.ncbi.nlm.nih.gov/pubmed/19732938?dopt=Abstract>
- ▶ Evolutionary Perspectives on Human Diet and Nutrition: <https://valeggia.files.wordpress.com/2012/09/leonard-stock-valeggia-2010-evolution-of-diet.pdf>
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