Wise Traditions

IN FOOD, FARMING AND THE HEALING ARTS

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President's Message

This issue of *Wise Traditions* focuses on the fat-soluble vitamins A, D and K_2, the crux of the Foundation's message. Dr. Price discovered that levels of these nutrients were ten times higher in traditional diets than in our diet today. Therefore, we make a special effort to consume foods rich in these substances, foods like liver, cod liver oil, poultry fats, butter and egg yolks from pastured animals, fish eggs and shellfish.

This message has critical importance in today's world, which finds itself in the midst of an outbreak of coronavirus COVID-19. We are hearing endless reports from the media about illness and death, yet the media say precious little about building immunity to the virus.

The fat-soluble vitamins are key to a healthy immune system, starting with vitamin A, well known to protect us against viruses of all types. Media articles that do talk about immunity give useless advice, such as consuming colorful fruits and vegetables (unfortunately not good sources of vitamin A) or taking a vitamin D supplement (a good way to deplete your vitamin A stores). As we have consistently advised, you need all three of the fat-soluble vitamins together and, as the articles in this journal explain, the best way to get them is from food.

In addition to the fat-soluble activators, many other facets of the Wise Traditions diet can help you build and maintain a healthy immune system: saturated fats (essential for lung function) and coconut oil (kills lipid-coated viruses, like the coronavirus); gelatinous bone broth (helps detoxify and supports immune function); lacto-fermented foods (supply vitamin C and healthy bacteria for the gut); red meat and shellfish like oysters (to supply zinc, a key factor in the immune system); raw dairy products (for complete nourishment and immune system support); and unrefined salt (critical for digestion and for protection from pneumonia).

Meanwhile, we are working hard on our upcoming conference, November 13-15 in Portland, Oregon—long enough in the future for the coronavirus to subside (as viruses always do). We will have a star-studded cast this year, with Robert F. Kennedy, Jr. delivering the keynote address and Del Bigtree to inspire us at the closing ceremony. Robert Lustig, MD, will be addressing us on the dangers of sugar, and Natasha Campbell-McBride, MD, PhD, will be with us this year to talk about the GAPS diet—plus many other new speakers and our perennial favorites. So, mark your calendars and stay tuned for conference announcements.

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5G MORATORIUM NEEDED

The *Caustic Commentary* in the last *Wise Traditions* journal (Winter, 2019) has a section entitled "Mental Problems," in which you state that 50 percent of "millennials" (ages 23-38) and 75 percent of "Gen Zers" (ages 18-22) have quit their jobs because of psychological issues, while only 10 percent of "baby boomers" (ages 55-73) have reported leaving a job because of mental illness (*The New American*, Oct. 14, 2019).

You stated that this is being blamed on "rising work loads, limited staff and resources, and long hours," and you go on to mention poor nutrition and over-vaccination as more likely causes.

But you ignore the elephant in the room. Millennials began using cell phones when they were in high school and college. Gen Zers began using them when they were three years old. Neurological problems have long been listed as an adverse effect of extensive exposure to non-ionizing radiation. Safety regulations for cell phones are from 1994 tests, for a duration of six minutes, on dummies with heads of jelly, not real people. Dr. Martin Pall from Washington State University reported on February 26, 2020, at Gonzaga University on a study of rats exposed to pulsed microwave non-ionizing radiation at the age of two months—the rats showed signs of dementia at the age of fifteen months (rats live for about thirty-six months). When they were exposed to continuous non-ionizing pulsed wireless radiation, as is proposed by our government through 5G, they developed *all* the markers for Alzheimer's by the time they were six months old.

Many people have heard that T-Mobile and Verizon are currently rolling out 5G, but they don't know anything about it. According to former Harvard University researcher Susan Clarke, microwave radiation is absorbed by any part of the body the same size as the radiation's wavelength, which includes our brains and our children's brains and organs. And with 5G millimeter waves, the size affected includes cells and DNA. Clarke states that cell phone radiation is xenobiotic, that is, foreign and very harmful to all biological systems.

On December 11, 2019, a broad coalition of scientists, doctors and advocates sent a National 5G Resolution letter to President Trump demanding a moratorium on 5G until potential hazards for human health and the environment have been fully investigated by scientists independent of the telecom industry. The letter references scientific studies demonstrating harm to human health, animals, bees and the environment.

Two years ago, health-conscious people sent twenty thousand emails and phone calls to Wasco County, Oregon in defense of Azure Standard Farms in response to the county's demand that Azure spray their eighteen-year-organic farm with Roundup to eliminate wild morning glories. The county backed down. What would be the result if the president received twenty thousand emails backing up the 5G resolution sent by the doctors and scientists? It's easy to write the president. Just click on whitehouse.gov/contact, click "Contact the President" and leave your message. Or call the Whitehouse comment line: (202) 456-1111. State that you request a moratorium on the rollout of 5G because published scientific studies demonstrate harm to humans and the environment from current wireless technology; 5G will dramatically increase the general public's involuntary daily exposure to radiofrequency electromagnetic fields and is adding new technology never safety-tested by either industry or the FCC.

On the Isle of Wight, where 5G is already fully rolled out, gardeners are reporting no bees or insects and no fruit on their plants. In Australia, a report prepared by botanist Mark Broomhall to UNESCO documents the exodus of species—mostly birds—from the Nightcap National Park World Heritage Site, corresponding with an increasing amount of electromagnetic radiation from the Mount Nardi telecommunications tower complex. 5G was also launched in Wuhan, China just weeks before the coronavirus (a previously mild virus) reportedly broke out and began killing people.

New wireless antennae are rapidly being attached to streetlights and utility poles directly in front of homes and schools. Around five thousand of the planned twenty thousand 5G satellites have already been launched, littering the sky, interfering with migratory birds' flight patterns and spewing millimeter-wave radiation upon the earth. We must stop 5G now. And as Susan Clarke can tell you (https://scientists4wiredtech.com/susan), there are ways to do it. Both governments and

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the general public have been lied to for twenty-four years about the meaning of section 704 of the Telecommunications Act; recent decisions have given municipalities across the nation the tools to stop the telecommunications companies from putting up new towers, as well as the ability to force them to remove the towers already present.

Please contact the president now, and then forward this letter to everyone you know. If we could generate twenty thousand emails to save Azure Standard Farms, surely we can generate twenty thousand emails to save the planet. We do not have time to wait.

Anne Wilder Chamberlain
Priest River, Idaho

Thank you for this excellent letter. We will follow up with an action alert to our members. At the same time, poor diet and vaccinations are very likely factors in the current epidemic of depression and stress disorders.

DON'T FREAK OUT
OVER CORONAVIRUS

A few things to consider regarding the massive government and media freak-out (of which Big Pharma will surely be taking advantage) concerning the Wuhan, China coronavirus ground zero outbreak.

Wuhan is a city that has been victimized—for years—by the most polluted air, the most polluted water, contaminated Frankenfoods, minimal sun exposure, and has also recently had massive highly toxic 5G network installations added all over the city. The tens of thousands of dangerous (untested for safety, either short-term or long-term) 5G units are on public buildings every few blocks all over the area. Surely the brand new thousand-bed hospital just built in a record ten days has 5G transmitters installed on it.

What our so-called public health "community disease experts" are not considering is the following short list of cofactors that would make any given person's (or community's) immune system far more susceptible to the dangerous effects of a virus that are likely to be inconsequential for people not exposed to these risk factors:

1. The massive disease-producing, immune-system-polluting 5G networking that was recently inflicted on the Wuhan population just over the last months of 2019;
2. The massive pollution of the air (and lack of sunlight and therefore vitamin D) of urban cities like Wuhan;
3. The massive pollution of the water in Chinese cities like Wuhan;
4. The massive over-vaccination of most Wuhan residents with aluminum adjuvants, mercury preservatives and other vaccine toxins that make vaccine recipients much more susceptible to many viral and bacterial illnesses;
5. The high incidence of smokers among adult males in Wuhan.

My point is that healthy people exposed to coronavirus—or any viral or bacterial organism, for that matter—may not get infected in the first place or might just have minimal symptoms and then permanent immunity for the future. The fact that our public health officials (even the "respected" Mike Osterholm, PhD—not an MD—here in Minnesota, for example) or the bigwigs in DC are not mentioning the reality of cofactors is deplorable and unforgivable.

Gary G. Kohls, MD
mydutytowarn.org
Duluth, Minnesota

LIVED TO AGE
ONE HUNDRED TEN

Here is a picture of my great aunt who lived to be just shy of her one hundred tenth birthday! This is a picture of her at her one hundredth birthday party. I remember her asking my grandmother why she pasteurized her milk on the farm, it's clear she drank raw milk.

Jane Elder Kunz
Indianapolis, Indiana

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MODERN ASSUMPTION?

There appears to be an assumption lurking beneath the surface of much of the current dialogue and debate regarding traditional diets, and because its ramifications are at least potentially unhealthy, I think it needs to be brought out into the open.

I'm referring to the assumption that, at a certain point in humanity's past, the human physical organism was effectively "finished," and therefore humans today are the same, scientifically speaking, as those who lived at that time. This assertion, if accepted as fact, would seem to establish the parameters for healthy eating for all time. In other words, because these ancestors were at least apparently "the same" as us in the only way that current scientific practice accepts as legitimate (i.e., physically), what was healthy for them must also be healthy for us. It only remains for us to determine the former, so that we can then apply this knowledge in the present.

Obviously this is a thorny, involved issue that requires far more attention than it can be given in a short letter. But the reasoning behind this assumption seems to be that, since modern technology has apparently freed our species from Darwinian selection pressure, evolution (for us) has effectively "stopped."

It isn't sufficiently recognized in our culture (it certainly isn't being taught in the public schools) that our current scientific practice is largely the result of certain very brilliant and influential people having chosen a particular "fork in the road" about four hundred years ago. This doesn't mean that the established scientific method is illegitimate, but it is limited, and the other fork hasn't somehow lost its validity and relevance merely because our culture has chosen not to explore it.

The upshot for present purposes is that we need to be careful about reducing all evolution to Darwin's one-sided rendering of it. I suspect that a rigorously qualitative, non-reductionist scientific approach will reveal that evolution, in its more comprehensive sense, is very much an ongoing process, and human nutritional needs are likely integrally evolving in tandem with this process. In more concrete terms, there are perhaps foods we ate in the past that we shouldn't be eating now, for example, and foods we are eating now that we won't be able to assimilate properly in the future. We should not allow our culture's materialistic biases to prevent us from being open-minded about such possibilities. Our current and future health may depend on it.

Andy Shaw
Alexandria, Virginia

The assumption that our dietary choices should mimic those of our healthy ancestors does not derive from Darwinian theory. Quite the contrary, I think most of our members start with the assumption that human beings were divinely created, and that our magnificent bodies require a wide variety of nutrients at relatively high levels. Even if our current diets do not contain certain specific foods that our ancestors consumed (raw organ meats, the contents of ruminant guts, insects, etc.), it makes sense that we should design our diets to provide a similar nutrient profile.

PRAISE FOR RAW MILK

We have a real "praise report" on our farm's raw milk. We offer milk free of charge to families with a critically ill family member—and a young child battling leukemia is now in total remission after living on nothing but our milk for almost a year during his extensive cancer treatment.

He was two years old when they found he had cancer and once treatment started, he quit eating. He could not tolerate the NG tube so they were losing the fight for his life.

His mother and grandmother had heard of the benefits of A2 raw milk and found us through our listing at realmilk.com. For almost a year, they drove almost one hundred miles one way to get milk from us because their son would drink the milk and said it made his tummy better. As I said, he would not eat or drink anything else.

Once he completed treatment and was in remission, his oncologist questioned the parents on what they did to change things with their son. Now I didn't tell you that the father of the child is a pediatrician and agreed to giving his son whole raw milk with open eyes and good base knowledge.

The father explained the way they had gotten nutrition in their son when he was losing his battle with cancer and how he turned around using raw whole A2 milk. The oncologist couldn't argue with success!

The family could well have paid premium for their milk and we chose to donate to their son's care as part of our ministry of our farm! So that's a little success story on the health benefits of raw whole milk, even in a child with

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suppressed immunity due to cancer treatment! It saved his life!

Thank you, WAPF, for the part you played in the young man's survival!

Jen Massey
Detroit, Michigan

CONVENTIONAL NUTRITION

I felt like thanking you, since my master's program recently ended and I believe you are a big part of what made it possible.

During the program I learned a lot of good stuff. I am especially glad that now I am more aware of how the health system and the food industry work, but the nutrition classes often made me mad and sad, and there were many times I said something in class that wouldn't get people's support.

So, during all this time, being able to spread the word through the Spanish Facebook and being in contact with WAPF, has played a big role in keeping me going. I thank you for the opportunity to work for the WAPF and for all the support I find in you. I absolutely admire how brave you are and how much you care for people's health! Saludos desde Perú.

Verónica Belli Obando
Lima, Peru

JOURNAL PRAISE

Thank you so much for your recent journal (Fall, 2019). I read it cover to cover and much of it out loud to my husband as we drove to work each day. You are really educating us and that is saying something. Hats off to you all!

Specifically thank you for the article "Why We Cook." I just read it for the second time along with all the sidebars. It was a very clear and well laid out article with tons of science-based information and observations to back it up.

But, as I said, I read the whole magazine and found the articles on the danger of ultrasounds, the microwave and fake burgers very helpful. The book review section along with Tim's DVD reviews are awesome as well. And wrapping up with that Vaccine Update—holy cow! Good data!

Thanks so much. WAPF does valuable work and is truly appreciated.

Mary Fitzgerald
Brooksville, Florida

CANNABIS DANGERS

I read your article in the journal last year (Spring, 2019) about cannabis and it really fit what I saw in my daughter. She suffered a severe psychotic break three years ago after being prescribed medical cannabis. I still don't know what for. She had violent behavior and paranoia. She thought people were spying on her, that people wanted to kill her, steal her children, that there were cameras in the house and that they were being observed from space. That is only part of what happened to her.

She is doing much better now but she still has some paranoia, and she has not left their property for two and a half years. Thank you for publishing the truth about this terrible drug.

Leslie Adams
Boise, Idaho

RAW MILK SAVED MY LIFE

I'm very pleased to be able to give my testimony for raw milk. Two years ago I was diagnosed with diverticulitis. After reading about the options I actually had, which were horrible (tearing out half my intestines), I did all the research I could to find out how to heal my gut. I knew my doctor's advice would end up in endless pill-taking and I didn't want to go that route.

Where I live, small dairy farms have sprung up on the outskirts of town. After getting on a waiting list I finally was called to pick up my fresh raw milk. I had to travel twenty miles to get it, but it was well worth it. In the initial stage of recovery I drank mostly raw milk and organic beef bone broth—hardly any solids for about six weeks. (It was the hardest thing I've ever done.) By the two-month mark my intestines relaxed and I was able to take in some pureed foods. I stayed on a strict diet, avoiding my intolerant and allergenic foods for a couple years, and today I feel great. When I start feeling like my bowels are upset in any way, I know that I'm not drinking enough raw cow's milk.

The short and long of it—raw milk is liquid gold. It healed my guts, it helps me beat the blues in the winter seasonal depression, and gives me a glow that causes people to say, "You look great, what are you doing?" I cannot say enough about this super food that God has given mankind for nourishment. We do indeed live in a land flowing with milk and honey. Go find it!

Teresa Plew
Vancouver, Washington

A KEFIR STORY

We started our daughter Anja on raw milk kefir at six months as I was unable to breastfeed any longer. Even though she initially made a number

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of interesting facial expressions, she never resisted being fed it—in fact, she enjoyed it.

She would eat it about two times a day. When she got pickier with the various foods we wanted to feed her, I started hiding her liver, spinach and broccoli in the kefir or would just top her food with it. She still eats it every day for breakfast and lunch or dinner. It's a great meal on the go and it's filling. Using the Weston A. Price guidelines and recipes, I also was making fermented taro, sweet potato and fermented sparkling fruit drinks. I also was giving her egg yolks and bone broth.

When she's sick, I kick up her kefir because it's a great source of probiotics and immune boosters. She's never sick for more than a week at most and more often than not, if she picked up anything it's just for a day or so. At night when she wakes up and is hungry, we give her some kefir sometimes with a little drizzle of honey on top. She eats it and falls right back to sleep and sleeps through the rest of the night.

Kefir has been a lifesaver when she's not in the mood for most foods. It allows her to eat her liver and get those nutrients. She continues to love it at age three when this picture was taken. The white moustache was of her own making after she drank the thick kefir.

Monica P.
Las Vegas, Nevada

ISOLATED BY INFORMATION

I like to spread information about the Foundation to anyone who brings up the topics of health and food, because I think it is absolutely invaluable. I was born in Ukraine and as a child I still recall the food that my parents used to buy at the Kiev farmer's market. Ukraine was the bread basket of the former Soviet Union, while many republics suffered food shortages. One of my childhood memories is that of drinking the milk after it turned sour and curdled, and it was still delicious. And I recall the aromas of farm fresh tomatoes, cucumbers, apples and melons.

The produce had wonderful aromas. So many people today do not know what naturally raised food should be like. A few weeks ago I told the mother of my daughter's friend that I now drink raw milk. She reacted as though I were some mad woman.

I also keep sharing information about the dangers of vaccines with anyone who mentions the topic.

I would also like to share with you the fact that my son was diagnosed with certain genetic abnormalities, and he experienced severe intestinal issues just as he hit puberty. There was an anxiety component as well, which exacerbated the symptoms. In the end he was diagnosed with IBS and prescribed digestive enzymes. A lot went into getting him back to where he could be pain-free. He is twenty-two years old and doing better now. He is extremely bright and plans to go to law school.

However, all that illness has resulted in damage to his physical development, as all this hit him during formative years. When he was little, I noticed side effects on several occasions after he was vaccinated. Typically, the pediatrician brushed me off. I am fully convinced that all that he went through was a result of vaccinations.

Anastasia Russel
Fresno, California

IN MEMORY OF
JANE HENDERSON

I write to inform you that my mother, Jane Henderson, recently passed away. A WAPF member since 2009, she attended at least three Wise Traditions conferences. She followed the WAPF dietary guidelines and was a great influence and teacher in that regard to many people in her community. She was known at church for her wonderful and healthy cooking, and many people benefited from her healthy meals and bone broth when sick or in need.

Just two months before her death she was kayaking, canoeing, swimming at the lake, attending various exercise and stretching classes five days a week, and walking a couple of miles around her neighborhood regularly. She did all her own cooking and cleaning, she read voraciously, and she ministered to

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people in her community.

Her death was caused by adverse reactions to Tagrisso, a chemotherapy drug that was prescribed for her stage IV lung cancer, which was diagnosed in February 2019 after a year of coughing that began after she had the flu. Coughing was her only symptom. However, she had atrial fibrillation for about sixteen years, managed well with only a low dose of Eliquis. That was her only medication until she received three different professional medical opinions recommending that she start Tagrisso once daily. She began Tagrisso on April 29 and immediately began declining. By mid-June she was hospitalized. She died on August 13 when her lungs finally stopped making the CO2 exchange. All of her doctors, including her oncologist, agreed that what happened to her was adverse effects of the Tagrisso. The doctors and nurses were stunned at what they witnessed happening to her, and so quickly. She leaves behind six grandchildren, two daughters and two sons-in-law, and a husband of fifty-nine years.

Throughout her hospitalization, Mom never once ate hospital food. My sister and I cooked and transported every single meal to her and my father, who stayed every night with her in the hospital. Even her nineteen-year-old granddaughters took turns cooking for her for a couple of weeks at a time.

It's no wonder she eventually developed lung cancer. She was born and raised in a coal mining town in West Virginia and lived directly across the street from the railroad. Her father was also a heavy smoker throughout his life. Both of her parents died after years of chronic and debilitating illness, not living past seventy. However, Mom was active and healthy and productive up to the end. She had adopted your dietary principles at least thirteen years ago after hearing a presentation on the Wise Traditions diet.

Jane Henderson and her family.

Here is a picture of our family in the hospital with Mom just eighteen days before her death.

Thank you for your work. It has blessed my family in many ways, with ripple effects that cannot be counted.

Amy Knowles
Sparta, Tennessee
Lee Burdett
Altamonte Springs, Florida

GRATITUDE

I'm taking a moment to express my gratitude to the Weston A. Price Foundation, Joel Salatin and everyone in this movement. I'm twenty-nine years old. Five short years ago I was vegan. Today I own twenty-four acres, six beef and dairy cows, fifty meat birds and laying hens, and two goats. I've learned how to ferment my own veggies, fruit and dairy for long-term preservation. I've learned how to prepare compost properly and rotate animals to keep my land productive. I have three perfectly healthy kids under six.

We are not afraid, and perfectly prepared for whatever the markets, medical system and public institutions of all kinds throw at us. I have a very strong sense of purpose that I've never had before. I've discovered all kinds of jobs that are beneficial to people and the environment, ways to save local economies and the world.

Thank you, everyone, for the time and effort. We're one of many families you've saved.

Breanne in Canada

THE EDUCATION MUST CONTINUE

I'm a new WAPF member and have been reading all your material and listening to the Wise Traditions podcast. I am learning how to eat in a way that is truly nourishing me. What y'all are doing to support farmers, ranchers, dairy men and dairy women is huge. The education must continue for my generation (I'm thirty-nine) and for all upcoming ages. I'm finding so much benefit as a recovering vegetarian—living this way

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and eating these nourishing foods.

Thank you for teaching people about the Earth, lifestyle, healing and conservation. Keep up the awesome work!

Elizabeth Meyer
Bellaire, Texas

BEING CREATIVE ON THE SMALL FARM

Running our small farm during coronavirus is different than normal. The demand for raw milk—our main product—has skyrocketed. Its the end of winter so we are not gardening yet, sugaring is just finishing and the lambs are not born yet. Our farm school and craft buildings are temporarily shut down and so I find myself with free time to be creative.

I've been cooking using as many highly nutritious groups of food and herbal tinctures as possible to share with my community here in the mountains of Vermont. I am following the WAPF Timeless Principles of Healthy Traditional Diets focusing mainly on animal fats and seeing what I can produce. Sally shared a podcast recently emphasizing that eating good fat is one of the best things you can do to protect yourself from viruses. So, here are a few things we are cooking to consume more fats.

1. Raw milk colostrum yogurt: I make raw milk yogurt weekly. Our seven-year-old dairy cow, Mercy, recently had a baby bull calf and I made yogurt from the extra colostrum. It is high in antibodies, 100 times higher than milk and I figured that fermenting it would be even healthier and a good way to stretch the yogurt so my community could all have a bit. This yogurt is mild and delicious especially with a few black currents or some added elderberry.
2. Coconut: I am making popcorn for the crew every few days in coconut oil with lots of good Sea90, a mineral rich salt. I store this in ½ gallon mason jars which keeps it fresh for several days.
3. Broth and stews: We raise turkeys, peafowl and chickens and have been making broth and rich stews from all three. The most unusual is the peafowl—be prepared to relax after eating as it seems to have more melatonin than turkey. I made a flavorful heart and liver sauté with peafowl and chicken organs, mixing it with chard and onions. The key is to caramelize the garlic before adding the organs and not cook them all the way through.
4. Butter: An intern told me this recipe. It's delicious and satisfying peanut butter fudge. You melt butter, add peanut butter in a 1 to 1 ratio, a bit of sea90 and a dash of maple syrup. This wonderful rich treat solidifies nicely and can be sliced cleanly to serve a bit for a snack. It is great with a generous heaping of plain whipped cream.
5. Garlic honey: To make a fermented antiviral I smashed up garlic, let it rest 10 min. and add it to our honey, 1 to 1. I stir it daily, keeping it on the counter to ferment and add garlic as needed. We take a tsp. a few times a day. After several days it has a chewy crunch and is not too garlicy.
6. Mushroom coffee: For a coffee substitute I combine the mushrooms that we wildcrafted last year and dried for the winter. This includes: chaga, reishi, lion's mane, shiitake, oyster, cauliflower and coral mushroom. In addition to this I add some dandelion root and burdock root, cooking it slowly throughout the day. It's very thick and chocolatey. I have a few small cups daily, sometimes with cream.
7. Herbal tinctures: There are so many powerful antivirals that we grow on the farm to help us stay healthy: the succulents, oregano, thyme, rosemary and sage, root herbs, burdock and dandelion, ashwagandha and astragulus, leaves like holy basil and boneset, and flowers like dandelion and feverfew. There are invasives that I wildcraft or purchase, I do not grow, like knotweed and kudzu. There is lots of information to help you find the best herbs for your own tinctures. I also make powdered leeks, onions and herbal leaves to put into my food in the winter.
8. Liver Pate: My all-time favorite! It is a combination of butter, beef tallow, onions, garlic, salt and all the organs I can find. I first caramelize the onions and garlic in lots of tallow and butter and then drop in big slabs of liver and heart, keeping the insides tender and pink. Then I blend and put it in two-ounce jars which seems enough for a few servings. We like it on celery, a hamburger or a seeded cracker. Hope it's inspiring!

Leigh Merinoff
Chapter Leader
West River/Townshend, Vermont

Caustic Commentary

Sally Fallon Morell takes on the Diet Dictocrats

CORONOVIRUS AND THE FLU SHOT

As world leaders react over the coronavirus outbreak, centered in the city of Wuhan, China and now spreading to other countries worldwide, a paper published in *Clinical Infectious Diseases* (2012 Jun 15; 54(12): 1778–1783) reveals a disturbing fact: the inactivated flu vaccine increases the risk of noninfluenza respiratory virus infections. The study randomized one hundred fifteen children to receive the trivalent inactivated influenza vaccine or a placebo. Over the following nine months, children receiving the vaccine had an increased risk of rhinovirus and coxsackie virus infection, as well as of "other viruses," including the coronavirus. Officials are blaming outdoor live animal markets as the source of the outbreak; no information about the vaccination status of the victims is forthcoming.

BURGER BIAS?

Writing for the pro-beef industry trade journal *Tri-State Livestock News*, South Dakota veterinarian James Stangle noted that the meatless Impossible Burger, made from soy protein, contains forty-four milligrams of estrogen while a burger made from hormone-implanted beef contains 2.5 nanograms of estrogen. Stangle points out (not that we are in favor of hormone-implanted beef) that there are one million nanograms in one milligram, meaning that the "Impossible Whopper has eighteen million times as much estrogen as a regular Whopper." Eating four Impossible Whoppers per day is enough to make men grow breasts, he says. Actually, even one Impossible Whopper will have the same estrogenic effects as one glass of soymilk, and that is enough to cause estrogenic effects in both men and women. An article in the *Washington Post* was highly critical of Stangle's analysis, accusing him of bias. Of course, the *Post* has its own biases and has shamelessly promoted the soy-based fake meat for months. Quoting New York University professor Marion Nestle, the *Post* trots out the same old tired arguments for soy: "Asians have been eating soy products for millennia and don't seem to be any worse for it. They have among the longest lifespans and the best health, at least in classic diets." And that's just the point. Classic Asian diets contain very little soy, typically with about one-half the amount of estrogen in a glass of soymilk or an Impossible Whopper daily. However, we doubt that men—or women—will be eating a lot of Impossible Whoppers, as soy is very hard to digest and is bound to cause problems like stomach ache, heartburn, gas, constipation and diarrhea.

ROAD RAGE

Many medications can cause changes in behavior, including road rage, pathological gambling and complicated acts of fraud. In 2011, a French family man sued GlaxoSmithKline, claiming that a drug for Parkinson's disease he was taking turned him into a gambler and gay sex addict, responsible for risky behaviors that led to him being raped. In 2015, a man taking Durominemade, a drug for obesity, claimed that it reduced his ability to control his impulses. A sinister side effect of the pain medication paracetamol—Americans purchase almost fifty thousand tons of the drug every year—is a reduction in the ability to feel positive empathy. The ability to feel positive empathy translates into more stable romantic relationships, better adjusted children and more successful careers. Worst of all in behavior-changing side effects are the cholesterol-lowering statins. One patient, a previously reasonable man, became explosively angry and developed a tendency for road rage after beginning statins; others report coming unnervingly close to murdering their wives. Suicide among normally well-adjusted people after starting statins is common. The truth is that drugs do more than lower blood markers or suppress

symptoms of disease; they can exert profound effects on the brain and personality (bbc.com, January 8, 2020).

VACCINE HESITANCY

Mainstream media have mounted scathing attacks on what they call "vaccine hesitancy," but several scientists expressed just that at the Global Vaccine Summit, held in Geneva, Switzerland, December 2-3, 2019. Hosted by the World Health Organization, which in early 2019 named vaccine hesitancy as one of the top ten threats to global health, the conference included several sober discussions about the "loose" science behind assurances that vaccines are "safe and effective." One participant, Dr. Soumya Swaminathan, the WHO's chief scientist, admitted that vaccines kill and cause death. Said Swaminathan, "I think I cannot over emphasize the fact that we really don't have very good safety monitoring systems in many countries, and this adds to the miscommunication and the misapprehensions because we are not able to give clear-cut answers when people ask questions about the deaths that have occurred due to a particular vaccine. . . ." Dr. Martin Howell Friede, coordinator of the Initiative for Vaccine Research at the WHO, noted that "The first accusation is the adjuvant when it comes to vaccine injuries and vaccine side effects." He admitted that "without adjuvants we are not going to have the next generation of vaccines. . . Many of the vaccines we do have require adjuvants for the vaccines to work. So, the challenge we have in front of us is how do we build confidence in this?" Dr. Stephen Evans, professor of pharmacoepidemiology, admitted that the adjuvants "multiply the reactogenicity in many instances, and therefore it seems to me that it is not unexpected if they multiply the incidence of adverse reactions. . . ." Dr. Bassey Okposen, program manager of Nigeria's National Emergency Routine Immunization Coordination Centre, asked whether safety studies have ever been done on adjuvants from multiple vaccines given at one time and what their "cross reactions" would be. Pushback came from Dr. Robert Chen, former CDC scientist, who, in so many words, asserted that we don't need any more studies and that hesitant scientists could find what they are looking for in existing databases. Dr. Chen was instrumental in killing evidence linking vaccines and autism (https://vaxxter.com/vaccines-2020-big-pharmas-admissions-of-fraud/).

HEART DISEASE STRIKING BACK

In spite of the fact that almost half of Americans under age sixty-five take cholesterol-lowering drugs (almost sixty-five percent over the age of sixty-five), and most people dutifully avoid saturated fats, heart disease rates are climbing—an increase of 4.3 percent for the U.S. as a whole, and higher rates in some rural areas and small and midsize cities. Three cities in Colorado (Fort Collins, Greeley and Colorado Springs) have seen increases of more than 25 percent, even though these cities boast bike trails, access to health care and nearby skiing and hiking. Most concerning is an increase among men and women in their thirties and forties. David Rosenbaum, a Colorado cardiologist, notes that a visit from a young patient was rare when he started practice seventeen years ago. Health officials cite a number of risk factors to explain the climb. Diabetes and obesity rates are up, rates of high blood pressure are climbing, urban and suburban lifestyles increase stress, computer time has replaced physical activity, and people are using more alcohol. . . and drugs (*Wall Street Journal*, January 1, 2020). Marijuana is legal in Colorado and one side effect of marijuana use is sudden heart attack. Marijuana can raise resting heart rate, dilate blood vessels and make the heart pump harder. Research suggests that the risk of heart attack is several times higher in the hour after smoking marijuana than it would be normally (https://www.health.harvard.edu/, June 24, 2019). This would explain the rising rate of heart attacks in the young.

TRAGIC CONSEQUENCES

A Florida couple who fed their children only raw fruits and vegetables has been charged with murder, aggravated child abuse, aggravated manslaughter and child abuse, and two counts of child neglect after their eighteen-month-old son starved to death. The child weighed only seventeen pounds—in line with what a seven-month-old should weigh. The couple's three other children, ages three, five and eleven, were also victims of child abuse and extreme neglect, authorities said. This is only one of a number of tragic cases that we have reported in these pages, where parents end up losing their children and their freedom because they believed the promises made by those promoting veganism. Advocates for a diet without any animal products have a lot to answer for (nbcnews.com, December 19, 2019).

Caustic Commentary

LDL IS YOUR FRIEND

For years we have heard that the main cause of heart disease is high LDL-cholesterol—the so-called "bad" cholesterol—and that we should get it down as low as possible using cholesterol-lowering drugs. However, it turns out that LDL may be our best friend. A study published in the *British Medical Journal Open* looked at over twenty-three thousand people to examine the relationship between LDL and dying. The subjects had all been hospitalized for a heart attack or acute heart failure. In the follow-up, those with high LDL were less likely to die and more likely to live longer. The paper cited six other studies that also found lower mortality in those with high LDL following heart failure. The authors concluded, "Findings of this study dispute the general assumption that HPL [hyperlipidemia, having LDL over 100 mg/dL] is associated with increased mortality" (http://dx.doi.org/10.1136/bmjopen-2015-010401).

DAIRY DECLINE

Borden Dairy Company filed for bankruptcy protection in the new year, the second major U.S. dairy company to fold in recent months. Borden produces nearly five hundred million gallons of milk yearly for grocery stores, schools and institutions. It employs thirty-three hundred people and runs twelve plants across the U.S. The trend is for big competitors like Walmart to produce and process milk for their stores and sell it at a loss. Meanwhile, more and more traditional dairy farms are failing—over twenty-seven hundred have gone out of business in the last eighteen months alone. Commentators blame the pressure on the U.S. dairy industry on a shift in American eating habits; people are drinking more juice, soda and milk substitutes, and eating less breakfast cereal, resulting in a decline of 40 percent in milk consumption since 1975—but the real reason is growing intolerance to processed milk. The industry just does not want to admit that their ultra-pasteurized milk makes people sick (Associated Press, January 6, 2020) and that demand for real milk—pasture-fed, full fat and unprocessed—is growing.

ANEMIA FROM ALUMINUM

Aluminum injected into the bloodstream leads to lots of serious side effects, one of which is anemia. As explained by Dr. James Lyons-Weiler, 80 percent of injected aluminum is bound to transferrin, which blocks dietary iron from moving from the blood into the bone marrow, where red blood cells are made. An expected effect of aluminum, therefore, is anemia, with all its attendant consequences including fatigue, lack of social referencing and mental retardation (jameslyonsweiler.com, January 7, 2020). A two-month-old infant may receive over one thousand micrograms of aluminum from the vaccines administered during his visit to the pediatrician, far in excess of the twenty-five micrograms of aluminum allowed in intravenous feeding, and almost five thousand micrograms by eighteen months of age.

NO INSURANCE

According to the Verizon 2019 Annual Report, the telecommunications company no longer carries insurance for EMF litigation, including litigation against 5G. "We are subject to a substantial amount of litigation. . . In addition our wireless business also faces personal injury and wrongful death lawsuits relating to alleged health effects of wireless phones or radio frequency transmitters. We may incur significant expenses in defending these lawsuits. In addition, we may be required to pay significant awards or settlements." Actually, this statement appears every year in this industry's annual reports. Insurers dropped Verizon and other telecommunications companies for EMF litigation many years ago (www.verizon.com/about/investors/sec-filings).

INCREDIBLE HEADLINE

Under Health News in the *Washington Post* (February 25, 2020): "Despite a rough flu season, 'estimates are reassuring' that vaccine helps kids, CDC says." Hardly a reassuring argument to inject aluminum and other poisons into your child's bloodstream.

FOR SCIENTISTS AND LAY READERS

Please note that the mission of the Weston A. Price Foundation is to provide important information about diet and health to both scientists and the lay public. For this reason, some of the articles in *Wise Traditions* are necessarily technical. It is very important for us to describe the science that supports the legitimacy of our dietary principles. In articles aimed at scientists and practitioners, we provide a summary of the main points and also put the most technical information in sidebars. These articles are balanced by others that provide practical advice to our lay readers.

Vitamin A-Mazing

By Pam Schoenfeld, MS, RD

When I first learned about the Foundation's information and diet twenty years ago, I was very skeptical. I had conventional university training as a nutritionist. I couldn't imagine the Weston A. Price Foundation's dietary philosophy as being right. However, I just kept reading and eventually realized—it *is* right. One thing I learned was that I needed a lot more vitamin A in my diet. I needed other things as well, but I think vitamin A was one of the big pieces I was missing. Why do we—myself and the Foundation—care so much about a single vitamin?

Vitamin A is necessary for almost every single function in the body. According to J. Timoneda, a researcher in the field of vitamin A, it is the most multifunctional vitamin in the human being.[1] Commentators claim that deficiencies are rare in developed nations, but this is not true. Moreover, vitamin A is one of the most difficult nutrients to absorb and utilize. And Americans, or so-called "modern" people, don't eat the best food sources anymore. Unfortunately, in my observations, most health care experts don't think vitamin A deficiency is a problem and would prefer their patients not take any vitamin A nor consume any foods that are rich in it.

Every time we use a vitamin D molecule in the body, we use a vitamin A molecule also. That is why we must always think of these two nutrients together.

In his book *Nutrition and Physical Degeneration*, Dr. Weston A. Price emphasized the importance of vitamin A, noting that the diets of traditional healthy people he observed contained ten times more vitamin A than those of people he saw in the United States.[2]

VITAMIN A FOR EVERYTHING

Why do we say that vitamin A is needed for almost every function in the human body? We first think of it for vision and eye health. The true form of vitamin A is called retinol as its name corresponds to its importance for the retina of the eye. However, apart from vision, we need vitamin A for every surface of our body including our skin, eyes and gut.

Vitamin A keeps us from getting sick; it keeps our immune system from overreacting; it is necessary for growth and reproduction. We need vitamin A for building bones and teeth, and for the actions of our hormones. These are major roles, ones we've known about for a very long time, but there are others.

How does vitamin A do so much? It regulates the action of over five hundred genes in the body, which makes it a major regulator of all of our cells and how they function. Starting at conception vitamin A orchestrates the proper division and differentiation of every cell in the body. When cells differentiate properly, they are doing what they are supposed to do. You might say that vitamin A keeps our cells "behaving."

How does vitamin A influence our genes? It works through something called nuclear hormone receptors—more precisely, retinoic acid receptors and retinoid X receptors. These receptors travel in the nucleus of the cell, binding and forming combinations with each other and with other compounds, like vitamin D and thyroid hormones. These receptors act to influence the action of our genes, which then influence which proteins are made, and ultimately, our whole metabolism.

By the way, every time we use a vitamin D molecule in the body, we use a vitamin A molecule also. That is why we must always think of these two nutrients together.

Without understanding anything about vitamins, traditional people always knew that special foods, ones that we now know are rich in vitamin A, were important to their health. Before the 5th century BC, vitamin A-containing foods such as liver were consumed and applied to the eyes and skin for healing purposes. Even Hippocrates documented this practice.

Scientists McCallum, David and Mendel discovered and named vitamin A in 1913. Dr. Price began his work less than two decades after this discovery, so he was acutely aware of the importance of vitamin A. However, not long after Dr. Price's day, interest in vitamin A waned. Fortunately, there has been a resurgence of interest in vitamin A, with exciting discoveries in the fields of auto-immune disease, neurology, energy metabolism, cancer, stem cells and epigenetics.

According to Norwegian researchers Blomhoff and Drevon, authors of an important textbook on vitamin A, "After a period of rather low interest in the fat-soluble vitamins (we know as vitamin A, D, E, and K) we are now in the midst of a new wave of research on these vitamins with a large number of reports in influential national journals.. . . Suboptimal status has been linked to several diseases."[3]

DEFICIENT OR SUBOPTIMAL?

Note that these vitamin A experts do not say that "deficiencies" are linked to several diseases. These authors say "suboptimal status." So what does suboptimal mean?

We live in an industrialized nation where health authorities commonly believe that we don't have a problem with vitamin A deficiency—that deficiencies are limited to the developing world. A few years ago, I testified to the FDA to protest the fact that they were taking vitamin A off the mandatory food labeling requirement and replacing it with vitamin D. The "experts" don't think vitamin A is that important anymore. Even when vitamin A labeling was required, most of the vitamin A in the foods labeled probably wasn't true vitamin A but precursors such as beta-carotene, from fruits and vegetables.

The current thinking is that vitamin D is more important than vitamin A. However, we definitely see vitamin A deficiency, even in the United States, and this has been an ongoing problem for a very long time. In developing countries where there is often not enough

nutritious, high-quality food, true vitamin A deficiency is very common, leading to much blindness. Almost a half million children in the world go blind every year and half of them die within a year of becoming blind. The United Nations and the World Health Organization are actively working on this along with organizations, like the Bill & Melinda Gates Foundation.

In the U.S. we define vitamin A intake in terms of micrograms of "retinol activity equivalents." (See Table 1.) Note that requirements for men are higher than those for women, although for lactation, it increases to 1,200 or 1,300 micrograms. The Recommended Dietary Allowances (RDA) is actually higher for small infants than children one to three years of age. Babies need more vitamin A as their cells are dividing and growing extremely rapidly. According to the National Academies of Sciences, Engineering, and Medicine, the organization that sets the RDA for all the vitamins, 95.7 percent of the population will meet its needs by taking this much per day.

It is critical to understand that the RDA was set to take care of the nutrient requirements we have for vision. But there are so many other things that vitamin A plays a part in, and experts in the field are right to ask, does the RDA cover everything that vitamin A is required for?

How are we doing in the United States? According to data from the National Health and Nutrition Survey for the years 2009-2012, between 35 and 65 percent of Americans have intakes "below the EAR." The Estimated Average Requirement (EAR) is different than the RDA, as the EAR is set to meet the needs of half of the population. The EAR is much lower than the RDA—500 micrograms (1,665 IU) for a woman and 625 micrograms for a man (2080 IU). The assumption is that if everyone in the population consumed that much on a daily basis, half of the people would be okay and half would not be getting enough. But the EAR is a very low bar to meet. In fact, 65 percent of the population doesn't meet the EAR from food alone. That is 65 percent of people who don't consume enough vitamin A without non-fortified foods. If you add the fortified foods, we are down to 35 percent not getting the amount specified in the EAR.

So, a third of the U.S. population, eating the standard American diet (or whatever they eat) do not get the EAR of vitamin A—and remember that the EAR is a very low bar to meet. For some reason this isn't considered a national problem. Has anybody heard of this as a problem? We've all heard about vitamin D as a problem, but have we heard anything about vitamin A? Now this doesn't include intake from supplements, and that does make a difference. But if you're looking just from all foods eaten, 35 percent of people don't meet that very low EAR number. This is not limited to the U.S. Twenty percent of people in the developed world don't meet two-thirds of the recommended intake of vitamin A. They also have lower-than-normal blood levels.

You may wonder how you would know whether you are getting enough vitamin A. The first question to ask is whether your diet contains any vitamin A-containing foods (See sidebar, page 16). If you eat liver once a week, you are probably fine. Historically, people would eat liver about once a week, as there is only so much liver in an animal. You wouldn't be able to eat liver every day unless it was specifically set aside for you. You'd have to eat it less often than the other parts of the animal, although there are other animal parts that are good sources of vitamin A—such as the eyes. We tend not to eat the eyes in this country but you could put them into soup. The flesh behind the eyes of fish is rich in vitamin A, so fish head soup would be a good source.

TABLE 1: Recommended Dietary Allowances (RDAs) for Vitamin A

AGE	MALE mcg RAE (IU)	FEMALE mcg RAE (IU)	PREGNANCY mcg RAE (IU)	LACTATION mcg RAE (IU)
0-6 months*	400 (1332)	400 (1332)		
7-12 months*	500 (1665)	500 (1665)		
1-3 years	300 (999)	300 (999)		
4-8 years	400 (1332)	400 (1332)		
9-13 years	600 (1998)	600 (1998)		
14-18 years	900 (2997)	700 (2331)	750 (2498)	1,200 (3996)
19-50 years	900 (2997)	700 (2331)	770 (2564)	1,300 (4329)
51+ years	900 (2997)	700 (2331)		

*Adequate Intake (AI), equivalent of the mean intake of vitamin A in healthy, breastfed infants.

NOTE: In the past, vitamin A was defined in terms of International Units (IUs). To make the conversion of IUs to micrograms, multiply by 0.3; to make the conversion of micrograms to IUs, multiply by 3.33.

Daily consumption of cod liver oil is very important. Its regular consumption started in the 1800s. You can meet your needs of vitamin A with a good-quality cod liver oil daily. A vitamin supplement that contains the retinol form of vitamin A with at least 3000 IU per day would also work for most people, depending on the diet, but if you consume liver or cod liver oil, you don't need to supplement. Another strategy is to consume two to three servings of pastured dairy, two to four egg yolks, and several servings of red and orange vegetables (orange and red work better than green). That may meet your vitamin A needs but not as consistently as liver or cod liver oil.

We also need to remember that vitamin A is one of the most difficult nutrients to absorb and utilize. Both endogenous (inside the body) and exogenous (outside the body) factors affect how we absorb and utilize dietary sources of vitamin A.

An important question to ask is whether you are eating a lot of lean protein. Are you drinking a lot of protein shakes? Are you exceeding one gram per kilogram of lean protein without the fat-soluble vitamins in it? Too much protein will increase your need for vitamin A. Also, are you taking a supplemented amount of vitamin D on a consistent basis, more than 2000 IU per day? And do you consume a high amount of polyunsaturated vegetable oils? All these will increase your need for vitamin A.

Do you eat lots of high-fiber foods or take fiber supplements? These will bind vitamin A and take it out of your body. And what about vitamin A from fruits and vegetables? These contain beta-carotene, not vitamin A. Our bodies can convert some of the beta-carotene in our diet into vitamin A, but ironically large amounts of beta-carotene can create compounds that oppose the action of vitamin A at the cellular level. This is unlikely to happen with dietary beta-carotenes, but it is possible with supplements. In addition, some medications, like steroids, will increase your vitamin A needs.

BETA-CAROTENE VERSUS VITAMIN A

It is important to understand the difference between carotenoids and retinol. Retinol is the physiologically essential, or true vitamin A. It occurs only in animal foods, in the form of retinyl esters, which means the retinol molecule is joined to a fatty acid.

Colorful plant foods are full of a variety of carotenoids, many of which can be precursors to vitamin A. Beta-carotene is the most important of these; it must be enzymatically split down the middle to yield true vitamin A. It may seem like you would get two molecules of retinol from one molecule of beta-carotene, but you actually need twelve molecules of beta-carotene to get one molecule of retinol, due to limited absorption from diet and the inefficiency of this conversion. Carotenes split first to yield retinal and then are converted into either retinol or retinoic acid, depending on the needs of the body. (See Figure 1). Retinoic acid is the one that has the most effect at the cellular level through its action on our genes. Retinal is the form of vitamin A that functions in our vision.

It's hard to believe that university classes in nutrition still teach us that we can get vitamin A by eating lots of carrots and colorful fruits and vegetables. I've had clients tell me they eat plenty of raw carrots so they are getting all the vitamin A they need. The truth is, you'd be really lucky to get a meaningful amount of vitamin A out of raw carrots; it is very hard for the intestines to extract it from the plant matrix, and on top of that you'd need to be a really good carotenoid converter. It's even harder to get vitamin A from green vegetables. Dr. Alfred Sommer, one of the internationally renowned scholars on vitamin A, says in studies where people eat green leafy vegetables for a few

HOW TO SATISFY YOUR REQUIREMENTS FOR VITAMIN A

Does your diet contain at least one?

- Weekly serving of liver (4 oz beef or 8 oz chicken)
- Daily consumption of cod liver oil
- Vitamin supplement containing the retinol form of vitamin A (at least 3,000 IU)
- 2-3 daily servings of dairy, 2-4 egg yolks, and several daily servings of orange/red vegetables or fruits

FACTORS THAT INCREASE VITAMIN A REQUIREMENTS

- Lots of lean protein (more than 1 gram/kg body weight)
- Vitamin D supplements (more than 2,000 IU per day)
- Polyunsaturated vegetable oils
- Lots of high-fiber foods or fiber supplements
- High amounts of beta-carotene, especially from supplements
- Glucocorticoids (e.g., cortisone) on a long-term basis

months, vitamin A levels don't even budge.[4] So don't depend on leafy greens, even if you think you are a good carotenoid converter.

Not only is converting carotenoids to vitamin A difficult, it is also difficult to extract the carotenoids from vegetables that are raw. It is easier to extract them from cooked vegetables, and easier to make the conversion if you put butter or cream or other traditional fats on your cooked vegetables. A good source of provitamin A is unrefined palm oil—the orange palm oil—where the carotenoids are in the fat. Low-protein diets, lowfat diets, high-fiber diets and diets high in raw plant foods all make this conversion difficult.

Iron and zinc deficiency also inhibit the conversion of carotenoids to vitamin A. Iron is needed to convert beta-carotene into retinol, and zinc is needed for all aspects of vitamin A metabolism, including its transport around your body. If you have a lot of toxins in your body, especially toxic metals, conversion will be difficult.

Gut dysbiosis inhibits conversion. If you have had your gallbladder removed, conversion will be difficult because you don't have much bile, and you need bile to convert carotenes to vitamin A. If you have hypothyroidism, if you are very old or very young, or you're supplementing with another source of carotenoids such as lycopene, these can also block the conversion.

In my practice, I find that only a minority of my patients do well without including vitamin A as retinol in their diet. However, about one in every three or four of my patients has physical signs of vitamin A deficiency despite consuming colorful vegetables routinely. Because the conversion rate of carotenoids to vitamin A can be as low as 10 percent or less, this does not surprise me.

On the other hand, there are people who make this conversion very effectively, up to 90 percent in some cases; I suspect this is not common in my own patient population because the majority do better when their diet or supplement regimen includes a source of retinol.

Genetics definitely play a governing role in our ability to convert carotenoids. The list of all the genes that affect your vitamin A metabolism and how you carry it through your body is a long one. The inability to convert carotenoids seems to be more common among those of European descent.

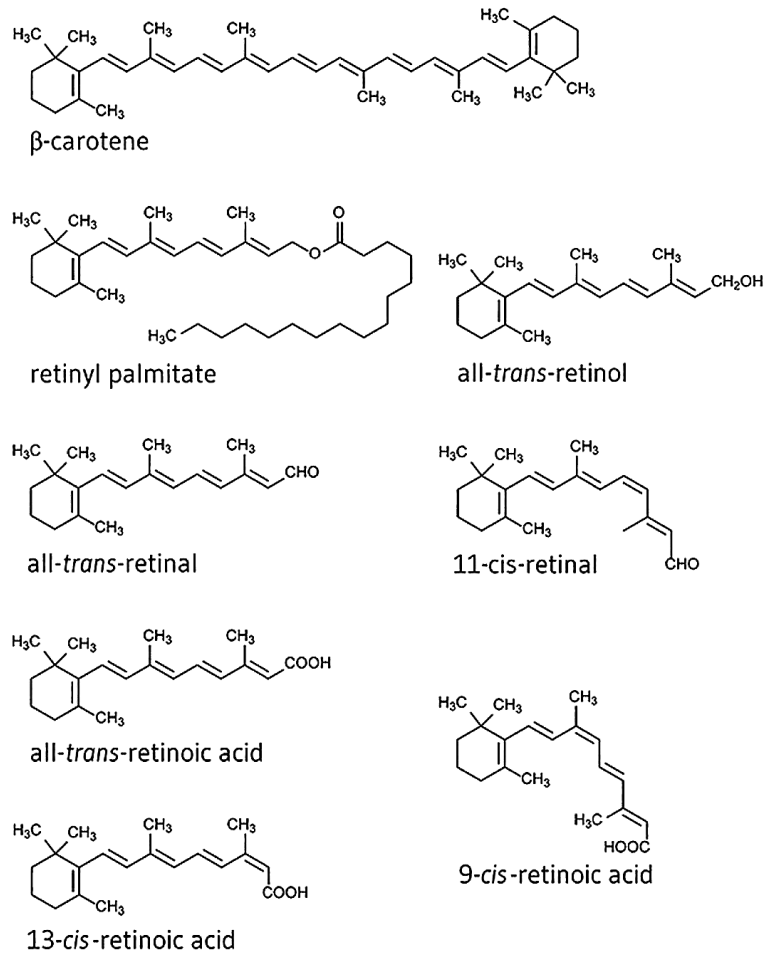
DETERMINING VITAMIN A DEFICIENCY

Blood tests for serum or plasma retinol are not very helpful because the liver stores 70-90 percent of the body's vitamin A and keeps blood levels tightly regulated between 45-65 µg/dL. This number does not indicate your overall vitamin A status—or how much vitamin A you have in reserve. Your blood level of retinol will not drop below 20 µg/dL unless you are severely depleted. Blood testing can indicate only whether liver stores are either depleted or filled to capacity.

To determine either deficiency or excess states, you should measure both serum retinol (or serum vitamin A) and serum retinyl esters (serum A palmitate); serum retinol should ideally be in the middle or upper half of the reference range and not less than 30 µg/L, and the serum retinyl esters should not be above 10 percent of the sum of the retinol and retinyl esters. Measuring fasting retinyl esters is done to check whether the capacity of the liver to store vitamin A has been exceeded, an uncommon but possible occurrence.

Obesity causes blood levels to rise even during a physiological tissue deficiency, while infection and inflammation can depress blood levels. Vitamin A levels in blood vary with "fed" status, that is, how recently you ate. If you are going to get tested, please get tested while fasting.

FIGURE 1: Forms of Vitamin A



However, I don't recommend testing as I think it is unnecessary unless you suspect someone is deficient and you want to confirm that. Keep in mind you might be disappointed as blood levels can often be in the normal range despite someone having what appears to be a vitamin A deficiency.

There are better ways to determine deficiency than a blood test. Ask yourself (or your loved one) these questions: are you having a hard time seeing in the dark? Do you dislike or even avoid driving at night because you can't see well? This is probably a sign of vitamin A deficiency.

More good questions: do you have little bumps on the back of your arms, on your legs or other places on your skin? Are your eyes dry or do you often use eye drops? Do you have frequent colds or infections? Do you have any sort of seasonal, environmental or food allergies? Do you have problems sleeping? Are you forgetful? Do you always need sunglasses when you're outside in bright light? Do you have chronically dry skin?

Just because you have these symptoms doesn't necessarily mean you have vitamin A deficiency, but you should suspect it. You can then confirm the deficiency by adding vitamin A-rich foods to your diet. It is always safe to consume a few servings of vitamin A-rich foods each week, including one or two servings of liver and see what happens.

All these signs of deficiency are linked with medical diagnoses. How many ads are there on TV for dry eyes? For allergies? For insomnia? There are now multiple creams targeted just for "bumpy" skin, or hyperkeratosis. These are medically treatable problems that may largely be the result of vitamin A deficiency.

Night blindness is considered the first clinical sign that somebody is potentially vitamin A-deficient. This is the way scientists measure the frequency of vitamin A deficiency in a population, by determining how many people are night blind. Night blindness is pretty common in developing nations. It is also something to watch out for in women of childbearing age. If it is severe enough, you could go completely blind. They say that doesn't happen in this country, but who knows?

The reason people become night blind is because they don't have enough vitamin A to recycle the visual pigment, called visual purple or rhodopsin, which allows you to see in the dark. When a very bright light shines in your eye, adjusting to low levels of light takes even longer. People have told me that it is hard to see for a few seconds when they are driving and a bright headlight gets in their eyes—it is scary! This is a classic sign of vitamin A deficiency and responds rapidly to vitamin A replacement. In fact, whether or not someone responds well to supplementation is a very good way to know whether someone is vitamin A deficient.

I saw a client recently whom I had not seen for several months. I asked how his night vision was. He said, "What do you mean?" At his initial visit, I had noted a few classic signs of vitamin A deficiency and I had given him a product containing vitamin A at a dose of 25,000 IU daily for a few weeks. "Oh yeah," he said. He had forgotten about his night blindness. Improvement doesn't happen overnight in every case, but it does happen, and then people often forget they had a problem.

Researchers in developing countries use a machine to test what they call dark adaptation: a bright light is flashed and then the subjects are timed to measure how long until they can see a second, dimmer light. A long wait indicates a vitamin A deficiency.

EYES, SKIN AND BONES

Why do we lose our night vision before our day vision? One theory holds that since losing your day vision would be much worse than losing your night vision, the cones for day vision get first dibs on vitamin A and the rods that function for night vision get it only if there is enough.

Unfortunately, there is an aspect of our day vision that gets affected with suboptimal vitamin A status without our noticing. If we don't have enough vitamin A, then we can't fully sense bright blue light, the natural daylight affecting our circadian rhythms. If we aren't fully sensing that blue spectrum, our brain may not be fully aware it is daytime. This may affect our ability to sleep as our circadian rhythms are now disrupted. Interestingly, a few small studies have shown that in some individuals "color blindness" improved by taking larger amounts of vitamin A to correct what appeared to be a vitamin A deficiency.

Another thing that happens when you have vitamin A deficiency is that your eyes may become very dry. This happens when keratin-producing cells replace the mucus-producing cells in the eye. Bitot spots are the next progression and eventually irreversible blindness. Bitot spots are white, keratinized spots like little saucers on top of the eye.

Hippocrates mentions rescuing vision with liver applications. There are medical drops containing vitamin A that you can use for night vision problems and dry eyes—probably more acceptable than using liver! But you need to be careful with topical application of vitamin A, as there can be side effects.

In the United Kingdom, a teenager went blind recently, possibly from what could have been a serious vitamin A deficiency. All he ate was processed foods. Processed foods are poor sources of vitamin A unless they are enriched, and most are not. Fried foods are full of damaged polyunsaturated oils that cause you to need more vitamin A. It is a tragedy, but a very predictable tragedy. In the U.S., conventional milk is fortified with vitamin A so that often supplies enough to prevent frank deficiencies in children—and I worry about children who are not given milk.

Children who consume raw, pastured dairy products rich in butterfat along with a serving of liver weekly or cod liver oil daily will get their vitamin A naturally. In fact, during World War II, the government of the United Kingdom had a program to make sure all of the children got their daily cod liver oil, and this continued for two or three years after the war.

I read an old report by a medical doctor who treated Civil War soldiers on the Confederate side. Due to a lack of food, they had very nutrient-deficient diets. Many of them were night blind. They also had an intolerance to daylight as their night blindness got worse. The doctor noted that they had persistently dilated pupils, which explains the photophobia. If your pupils can't contract, then daylight will be very painful. This could be another possible sign of vitamin A deficiency to look for.

What happens to your skin if you are vitamin A deficient? A key sign is follicular hyperkeratosis, namely bumps where the hairs come out of the follicle. Hyperkeratosis is just a buildup of keratin, a hard substance similar to what is in our nails. We need a little keratin in our skin, but "hyper" means we have too much.

Dry skin, eczema, flaky scalp and acne are all signs of vitamin A deficiency. Anyone who has acne should consider vitamin A deficiency and get some vitamin A-rich foods in the diet. If you are vitamin A deficient, your hair and nails might not grow very well. Poor wound healing is another sign. In hospitals, they know that patients with wounds need vitamin A.

In my practice, one in every three or four clients has a certain degree of follicular hyperkeratosis. In his book *Functional Medicine*, Dr. Alan Gaby reports his own frequent finding of mild follicular hyperkeratosis on the extremities of both children and adults. Most of the patients I've seen have never even looked at their arms or considered what those bumps signify, and their doctors dismiss them as well.

Why does our skin need vitamin A? Vitamin A has anti-keratinizing properties as it helps differentiate our skin cells into what they are supposed to look like. All of the surfaces of our body come in contact with the environment every day and need vitamin A to deal with that contact. Many skin diseases are marked by the occurrence of hyperkeratosis, including psoriasis and acne. When we look at patients with acne, they have lower serum or plasma vitamin A and often zinc will be low. Zinc allows us to use our vitamin A so we also have to consider zinc deficiency with skin diseases, especially if someone is on a more plant-based diet or avoiding red meat or other foods that are good sources of zinc.

A colleague reported to me that the bumps on the back of her arms did not clear up until she began taking desiccated oyster, which is full of zinc. Her diet was rich in vitamin A and she ate red meat, but she still had the bumps until she got more zinc in her diet.

In moderate amounts, UV exposure from sunlight is great for skin cells, but excessive UV exposure will lower the vitamin A content of your skin. Sensible sun exposure is fine and good for your skin, but you don't want to overdo it.

Vitamin A upregulates the collagen-specific genes that govern healing. You cannot form collagen without the right amount of vitamin A.

A possible indicator of vitamin A status is salivary pH. I see a fair number of patients with low pH (less than 6.8) in the saliva, which could indicate vitamin A deficiency. Vitamin A deficiency will lower the ability of the saliva to contain the minerals needed to buffer the acidity. This will result in acidic saliva and a tendency to form cavities. In children the tooth enamel will not form well without vitamin A. Vitamin A-deficient children will have softer teeth and greater susceptibility to cavities.

Vitamin A has a reputation for causing bone loss. A handful of observational studies have found that a higher intake (greater than 5,000 IU per day) or higher blood levels of vitamin A are associated with lower bone mineral density (BMD) or increased fracture risk.

In one study involving thirty-six thousand women, the treatment group received 400 IU of vitamin D and 1000 mg of calcium carbonate for five years. After seven years they showed a slight improvement in BMD but no statistical difference in hip fractures. Surprisingly, the treatment group had 17 percent more kidney stones.[5]

Other studies indicate that vitamin A is associated with a *reduction* in fractures. The discrepancy can be explained by the fact that vitamin A contributes to osteoporosis only in cases of vitamin D deficiency or when the ratio of vitamin A to D is massively out of balance. In animal studies, both high and low vitamin A intakes reduce BMD.

Vitamin A is important for bone synthesis; vitamin A deficiency can cause impaired bone remodeling due to unchecked function of osteoblasts as osteoblast production is decreased. In a case study of a teenager lacking vitamin A due to a very poor diet starting in early childhood, it was determined that his vision loss was due to the compression of the optic nerve from excessive bone growth in his skull. Interestingly, he did not have night blindness or eye dryness, which seems to be absent in about 5 percent of children with severe vitamin A deficiency.[6]

THE IMMUNE SYSTEM

One of the most important roles of vitamin A is support of the immune system. When vitamin A supplements or cod liver oil are given to populations with low vitamin A status, there is a reduction of

Vitamin A has anti-keratinizing properties as it helps differentiate our skin cells into what they are supposed to look like.

mortality and morbidity from measles, tuberculosis, diarrheal diseases and malaria.[7-11] A lot of the benefit applies to children, but researchers also observed immune support in adults as well. Most of these illnesses actually use up one's vitamin A in the process of combatting the disease. One vitamin A researcher has recommended that the RDA of vitamin A should be set according to the amount needed for the immune system, not for vision.[12] And regarding this idea of "Recommended Dietary Allowance," I think it is better to have a little more than we need, to err on the side of having enough, than having barely what we need, but always balanced with vitamin D such as in cod liver oil.

Your immune system has three basic lines of defense. First comes the outer barrier, mainly the skin and mucosal lining of the respiratory and intestinal tracts. This is the "castle and moat," keeping viruses and other microbes from getting into the body—our skin, the cilia in our lungs and the tight junctions in our gut keep things from entering the bloodstream.

Secondly come the cells that act quickly on a foreign invader or an antigen. I call these the "patrol officers" because they are always out there ready to grab and arrest the bad guys. These include natural killer cells, macrophages, neutrophils and dendritic cells. These first two lines of defense, called the nonspecific or innate part of the immune system, act quickly, responding in a day or two.

The third line of defense is called the adaptive immune system—I think of this third line as the "special ops". The lymphocytes, our adaptive response, know what they are looking for and how to get rid of it. The T-cell lymphocytes perform a direct kill and B-cell lymphocytes mark the invader with an antibody. Both of these create memory cells so the next time they encounter the same pathogen they can act much more quickly. The adaptive response takes at least a week to happen if the memory cells don't exist from a previous encounter.

Here is what happens to your immune system when you lack vitamin A. The first line of defense becomes compromised. Your skin and all the mucosal tissues become dry so they don't create a barrier anymore—the barrier isn't as moist and smooth as it should be. In addition, the cilia (hairs) lining our respiratory tract aren't created normally so they don't work well. The number of goblet cells, which produce mucus, is reduced. Our mucus becomes thicker, and that can breed germs. There is a compound in the mucus called lysozome, which is antibacterial. When we lack vitamin A, the synthesis of lysozome is reduced.

In the second line of defense, the number of natural killer cells, macrophages and neutrophils, are all reduced when you lack vitamin A—you don't have to be deficient but just insufficient for the production of these to be reduced. Also, the ability of the macrophages to capture offenders declines and the microbicidal activity of neutrophils is reduced.

Natural killer cells are very cool. They sound tough, and they are. They are often the first cells on the job, going after invaders. Their sole purpose is to kill abnormal cells. The more vitamin A you have, the more natural killer cells you have, and the better they work. Natural killer cells are a type of lymphocyte that provides protection against viral infections and cancer. With adequate vitamin A, they can work within three days to destroy targeted cells, including cancer cells. Does this mean that all we need is natural killer cells? Certainly not! The immune system is much more complicated, but we really do want our natural killer cells to be on the job.

As for the third part of the immune system, the adaptive immune system, vitamin A increases the number of B-cells by supporting their maturation and their survival. This is essential for production of all the antibodies. It helps you convert T-cells into T-regulatory cells. These T-regs activate B-cells. Vitamin A induces gut homing, which helps your T-cells know it is time to go to the gut and take care of business there.

There is a special type of antibody called secretory IgA found in our saliva and all of our mucus. It traps pathogens and toxins by grabbing them quickly. Newborns get secretory IgA from breast milk where it is attached to the good bacteria. You can see why it is so important to breastfeed a newborn.

On top of that, vitamin A itself maintains healthy gut bacteria. In studies where they've made the mice vitamin A- and zinc-deficient,

researchers observed that they produced lower secretory IgA. We don't want babies born to mothers who are deficient in vitamin A and certainly, we want to encourage breastfeeding. We want the mothers to have plenty of vitamin A so their breast milk can support good immunity and gut health for their babies.

Speaking of gestational vitamin A deficiency, when mice were made vitamin A-deficient, their offspring were born with smaller lymph nodes. That is where all the T- and B-cells are made. As adults, the mice had impaired immune response, indicating that vitamin A deficiency effects are persistent into adulthood. It is hard to measure this type of thing in humans as there are so many different factors at play, but we certainly know this is happening in animals because of animal studies.

Besides keeping our immune system prepared to deal with pathogens, vitamin A allows our immune system to be tolerant. We want a tolerant immune system that doesn't overreact to things. We want it to know when it should do its job and when it should lie low. We want it to recognize ourselves as ourselves, so we don't develop autoimmune diseases. We want it to know when something is a non-threatening outsider because if we don't, we get allergies. Vitamin A helps us do that by keeping our immune system from overreacting. It does the majority of this work in the gut because the gut is one of the first places where our bodies make these decisions.

Without adequate vitamin A, the body makes fewer T-reg cells and more Th17 cells, which has a proinflammatory effect. One nutritionally-oriented doctor I follow says he uses 12,500 IU of vitamin A daily to treat allergies and autoimmune disease. I think that is a good amount. Of course, the vitamin A should never be given alone but with sources of vitamin D and zinc.

You also need to think about having a healthy gut microbiome, as this works in conjunction with secretory IgA. If you've got vitamin A deficiency, you'll have a higher propensity for autoimmune disease, partly because you don't have as many T-regulatory cells.

What else happens in your gut when you don't have enough vitamin A? Physical changes occur. The villi become shorter and thicker. You have reduced enzyme activity, such as the disaccharidases. Do you have problems digesting carbohydrates? We need disaccharidases to digest carbohydrates so they don't ferment, and we need vitamin A to produce disaccharidases. And with inadequate vitamin A, we make fewer goblet cells that secrete "mucins" essential in forming the mucus layer that protects our gut.

In studies of vitamin A-deficient animals, scientists have observed inflammation in the large intestine that looks like colitis, accompanied by an altered gut microbiome. Ulcerative colitis is limited to the colon but Crohn's disease can be anywhere throughout the digestive tract, even up into the mouth. Eventually you get the transportation of toxins through the gut—the so-called leaky gut. If you have inflammatory bowel disease—either ulcerative colitis or Crohn's disease—you don't want to be vitamin A-deficient.

In one study patients with ulcerative colitis received 25,000 IU of vitamin A per day. They had started with a Mayo Clinic score of six to twelve, indicating moderate to severe disease progression based on the number and degree of their symptoms. There were significant decreases in symptoms in one out of three patients, and one in five had complete mucosal healing. I would not suggest that vitamin A supplementation is all a patient with ulcerative colitis should do, but it would be an important part of the protocol.

Unfortunately, these conditions are becoming more and more common these days. Have you noticed how many immuno-suppressive medications, often injectables, are advertised for these conditions? It is outrageous and scary. These are serious diseases; people's lives are

THE MAJOR COMPONENTS OF THE IMMUNE SYSTEM: THREE LINES OF DEFENSE

INNATE (non-specific)		ADAPTIVE
FIRST LINE: BARRIER "Castle and Moat"	SECOND LINE: SURVEILLANCE "Patrol Officers"	THIRD LINE: TRAINED "Special Ops"

• Skin
• Tight Cell-to-Cell Junctions
• Cilia
• Mucus
• Secretions
	• Natural Killer Cells
	• Macrophages, Neutrophils, Etc.
	  • Phagocytosis
	  • Antimicrobials
	• Dendritic Cells
	  • Antigen Presenting
	  • Inflammatory Response, Cytokines
		• Lymphocytes
		  • T Cells, "Direct Kill"
		  • B Cells, "Mark with Antibodies"
		• Memory Cells

Besides keeping our immune system prepared to deal with pathogens, vitamin A allows our immune system to be tolerant. We want a tolerant immune system that doesn't overreact to things.

affected. They get on these medications right away, allowing almost no chance to test whether or not something as simple as vitamin A therapy plus sauerkraut or other probiotic support might have worked. Their immune systems are now suppressed instead of overreacting, but that is not the same as healing.

The other thing that we think of with an overactive immune system is allergies. We know that people with allergies often show lower levels of vitamin A in their blood. Getting adequate vitamin A during pregnancy can prevent allergies in offspring, a big problem with children today. Vitamin A along with other antioxidants such as vitamins C and E may help control asthma symptoms as well.[13] One of the reasons vitamin A is effective in treating allergies is that it suppresses the activities of mast cells. Those are the ones that release the histamine that triggers an allergic response. Functional medical doctors will want to consider vitamin A as part of their protocol. A good daily protocol would be a moderately high amount of vitamin A (10,000-20,000 IU); an appropriate amount of vitamin D (1,000-5,000 IU), depending on the patient's sun exposure; a therapeutic probiotic (spore-based or *Sacharomyces boulardii* and/or fermented foods); raw milk, colostrum and/or lactoferrin; plus zinc and other needed nutrients.

An example of how vitamin A supports the immune system comes from a study on Ebola. The researchers studied patients after they were admitted to the hospital. They immediately treated some of them with 200,000 IU of vitamin A. The treated group had a mortality rate of 55 percent and the untreated 72 percent. These are significant results for such a virulent virus.

VITAMIN A AND CANCER

I don't work with patients with active cancer diagnoses, but I think it is a good idea to make sure cancer patients are getting enough vitamin A. At the least, vitamin A will help reduce your risk for cancer—after all, vitamin A is the main nutrient for keeping cell differentiation in line. Some recent studies indicate an important role for vitamin A in preventing and treating cancer.

Colon cancer often recurs when a group of persisting cancer cells in the colon begin to multiply again. Scientists recently identified a biological mechanism that can be used to counteract these relapses. The approach activates a protein that is lost in the persisting cancer cells. The scientists were able to reactivate this protein with vitamin A, thus eliminating the cancer cells and preventing their spread. In mice with colon cancer, treatment with a form of vitamin A called retinoids blocked tumor progression and returned the colon to its normal healthy state.[14]

A recent study using human breast cancer cells found that vitamin A turned pre-cancerous cells back to normal healthy breast cells.[15]

People whose diets included high levels of vitamin A had a 17 percent reduction in risk for getting the second-most-common type of skin cancer, as compared to those who ate modest amounts of foods and supplements rich in vitamin A.[16]

Vitamin A also shows promise in the treatment of pancreatic cancer. In a healthy pancreas, cells called stellate cells exist in a dormant state, storing abundant supplies of vitamin A. As colon cancer progresses, these stellate cells become activated in response to signals from the tumor and lose their vitamin A content. These activated stellate cells form dense connective tissue around the tumor, which is then used by cancer cells to spread to other parts of the body. The tissue also limits the ability of cancer-fighting drugs to penetrate the tumor. In the new study, researchers found that it was possible to switch off these stellate cells, potentially preventing the formation of the tissue around the tumor, through a process involving vitamin A.[17]

In another pancreatic cancer study, the addition of high doses of a form of vitamin A made chemotherapy more successful. The results were so promising that a clinical trial is now underway. According to the lead author, "Pancreatic cancer is extremely hard to treat by chemotherapy, so this finding is important because vitamin A targets the non-cancerous tissue and makes the existing chemotherapy more effective, killing the cancer cells and shrinking tumors."[18]

These studies used only vitamin A, and not vitamin A combined with vitamin D, as in cod liver oil or liver, which one might expect would be even more effective.

VITAMIN A AND METABOLISM

An explosion of research during the past few years has revealed some new roles for vitamin A. For example, we have learned that as an electron-carrying compound, vitamin A plays a key role in glycolysis, the creation of energy from glucose. A lot of us are trying to be fat burners, and that's great, but we should still be able to do glycolysis well. In animal studies, when animals are deficient in vitamin A, they have reduced levels of ATP, the currency of energy. In addition, vitamin A deficiency reduces the storage of glycogen in the liver, which is going to make you more prone to hypoglycemia and/or more frequent hunger, as your body isn't able to draw glucose from your glycogen when you need it.

Gestational vitamin A deficiency in animals reduces the beta cell mass of the offspring. The beta cells are where we make insulin. You don't want to be behind the eight ball, born with fewer insulin-producing cells. That's just a recipe for diabetes in the future and could partly explain the recent increase in lean individuals who are developing type 2 diabetes.[19]

You need vitamin A for making thyroid hormones and without vitamin A you can't use those hormones as effectively.

Your sex hormones need vitamin A. Males need vitamin A to make testosterone and females need vitamin A to make progesterone. Your growth hormones need vitamin A. That is because hormones work in the nucleus of the cell, interacting with and being regulated by vitamin A. Vitamin A is basically like a hormone. Boys who are not growing well need to be on vitamin A and iron, and sometimes zinc so they can make testosterone and growth hormones; this nutrient combination has been show to be as effective as the administration of testosterone.

Finally, vitamin A might actually have something to do with preventing Alzheimer's and maintaining cognition. This discovery comes from preliminary research on animals, but the relevance to people is clear. In fact, problems can start as early as in the gestational period; vitamin-A deficient offspring may lack good memory skills and the ability to learn, which persists into adulthood.

VITAMIN A FOR PREGNANCY

You definitely want to have plenty of vitamin A during pregnancy! Unfortunately, most health practitioners are afraid of vitamin A during pregnancy. This fear is based on a 1995 study by Rothman and others, which suggested that over 10,000 IU of vitamin A daily in the first eight weeks of pregnancy increases risk of neural crest defects. All seven cases involved intakes of over 10,000 IU from supplements, not from food, with an average intake of 21,000 IU.[20] Chris Masterjohn[21] and Mary G. Enig[22]have written about the flaws in the Rothman study and noted other studies that indicate that adequate levels of vitamin A during pregnancy result in fewer birth defects. But the Rothman study set the stage for the current fear of vitamin A for pregnant women, and it has resulted in practitioners saying that pregnant women should get no preformed vitamin A at all—and this in the teeth of all we are learning about the need for vitamin A for normal fetal development. For this unfounded reason, almost all prenatal vitamins contain only beta-carotene, not retinol.

Are pregnant women in danger of getting too much vitamin A or too little? A recent study showed that one-tenth of women at delivery in Nebraska were frankly deficient in vitamin A. That to me is significant. In Brazil, the number was one-fifth, so the U.S. is not that different from a Third World country.[23] If you look at the numbers, vitamin A status of our mothers is not much better than in Nigeria. We have 73 percent of infants, born deficient. It isn't abnormal to have low vitamin A in infants but if you look at the mothers, 10 percent of them were deficient in vitamin A at birth, and 41 percent were insufficient, so 50 percent had less than sufficient amounts in their bodies at birth.

Dr. Price knew that vitamin A was necessary for reproduction in animals and, without it, bad things happen in people, such as miscarriage or even complete infertility. Low vitamin A also leads to all sorts of birth defects. This is from the *Nutrition and Physical Degeneration*.

One of the big concerns with vitamin A deficiency during pregnancy is lung problems in the babies, which can persist for life. Both early and late gestational vitamin A deficiency have negative effects, such as defective alveoli

Vitamin A also shows promise in the treatment of pancreatic cancer.

Gestational vitamin A deficiency in animals reduces the beta cell mass of the offspring. The beta cells are where we make insulin.

and a predisposition to respiratory diseases. Human lung development starts in the fifth week of gestation and continues during the first few years.

In the gut, vitamin A deficiency during gestation results in the production of fewer villi, which can presage digestive problems throughout life.

Embryonic vitamin A deficiency causes "grossly thinned ventricular wall with concurrent defects in ventricular septation [in hearts of newborn mice]."[24] The prevalence of this type of defect is increasing—today afflicting about 1 percent of all babies. It often requires surgery to correct the ventricular septal defect—basically a hole in the heart. The other thing that you see is premature babies having bronchopulmonary dysplasia, where the lungs don't work well and the baby needs oxygen. This also is associated with vitamin A deficiency.

After birth, babies must get vitamin A from breastmilk as they are generally born with low liver stores. Colostrum will be rich in vitamin A only if the mother has good intake. The mom's colostrum is supposed to be a rich shot of nutrients, and it is supposed to be full of vitamin A. If that mom doesn't have it then neither does the colostrum.

After weaning, the infant is at greater risk of vitamin A deficiency. If the baby is born to a mother with low vitamin A, then it is only going to get worse. Unfortunately, we don't know how this will affect the baby. We do know that the secretory IgA in the gut needs vitamin A.

They used to give mothers in developing countries 200,000 IU of vitamin A right after birth, but they no longer do that. Supplementation of lactating women with β-carotene has relatively little effect on breastmilk vitamin A content. In infants of mothers supplemented with 200,000 IU true vitamin A after birth, there was a significantly lower incidence of respiratory tract infections and fever.[25]

Vitamin A deficiency can lead to complete lactation failure in animals. Could this be a reason why some mothers are not able to produce enough or any milk?

In spite of the Rothman study, a number of researchers have expressed concern about vitamin A deficiency in pregnant women. "Vitamin A is essential for reproduction, and deficiencies and excesses may result in embryonic loss and/or congenital defects. Retinoids [vitamin A] are recognized as important regulators of vertebrate development, cell differentiation and tissue function. Previous studies, performed both *in vivo* and *in vitro*, indicate that retinoids influence several reproductive events, including follicular development, oocyte maturation and early embryonic development."[25]

"The question about the safety of vitamin A use in pregnancy remains a complex and unresolved issue, even though it is recognized that vitamin A plays an important role in normal embryonic growth and development."[26]

"Of particular concern are [pregnant women] in the latter half of pregnancy when nutritional demands are high…and the risk of developing night blindness and other adverse health outcomes is greatest. . ."[26]

Liver is an ideal food for pregnant women. No birth defects have been reported with higher intakes of vitamin A from food sources. It is really important to know that there has never been a report of fetal malformation or birth defect from a woman eating liver. Now with that said, I wouldn't encourage women to eat liver daily but only once a week. Four to six ounces is plenty. Vitamin A from liver produces a smaller and delayed rise in serum retinol levels versus vitamin A from retinyl esters.[27]

For women who refuse to eat liver or other vitamin A-rich foods, the evidence suggests that a low-dose vitamin A supplement may be protective against birth defects.[28] An intake of 2,500-5,000 IU per day will support a healthy pregnancy in a woman who has been following an overall nourishing diet prior to conception.[29] Women need vitamin A early in pregnancy, not just toward the end, when they are getting ready to lactate.

Vitamin A and D together are best; the combination is more effective at supporting robust immunity and reduces any potential toxicity of either one at higher intakes. In addition, vitamin K_2 (from food) enhances the protective actions of A and D.[30]

WIDESPREAD DEFICIENCY

In my practice I work with regular people,

mostly women, for whom sources of vitamin A are seldom included in the diet. It's rare to find a client who knows about the Wise Traditions diet. Not many people eat liver or take cod liver oil. People are afraid to eat eggs because they contain a lot of cholesterol, and they avoid butter because it contains saturated fat. Of course, I encourage my clients to eat these foods, even more so if they are trying to conceive, are pregnant or are lactating.

Can we get too much vitamin A? Yes, that is possible. I don't think you need to eat liver more than once a week, unless you know that you are actually deficient in vitamin A. If you have fatty liver, you are probably not going to be able to store any more vitamin A in your liver, so limit your preformed vitamin A intake to at most 3,000 IU per day. If you have elevated triglycerides or have taken a lot of supplements containing around 50,000 IU of vitamin A for a few years, you could be getting too much. Be careful if you are doing water-miscible or emulsified forms as they can be toxic at one-tenth the recommended dose.

What are the signs of vitamin A excess? They include nausea, fatigue, headaches, dry skin, joint pain, muscle pain, anorexia, hair loss, brittle nails, elevated liver enzymes, high blood calcium and bone abnormalities. The risk of vitamin A toxicity is higher in situations of liver disease or protein and zinc malnutrition. Fortunately, these symptoms are reversible with discontinuation of vitamin A sources.

Deficiency is worse. All sorts of bad things can happen if a woman is deficient in vitamin A. I've seen this so many times in my own practice. Lots of things improve when women get adequate vitamin A. They get their periods back. Their cervical mucus returns. They are getting pregnant when they couldn't before. Of course, we work on improving their intake of other important nutrients besides vitamin A, but we know these things are affected by whether or not a woman gets enough vitamin A. We need vitamin A to make progesterone, and I have seen that vitamin A can help treat endometriosis.

And if someone is considering in vitro fertilization (IVF) as a means to conceive, one study shows that women are more likely to have a better quality embryo if they have adequate levels of vitamin A in their bodies.[31]

During pregnancy, for those who won't eat liver, I recommend somewhere between 2,500-5,000 IU daily from a supplemental source (vitamin A from fish liver oil, cod liver oil or desiccated liver supplements, for example). The Foundation recommends 20,000 IU daily from food sources (including cod liver oil) starting before pregnancy. As a licensed dietitian, I can't recommend more than 10,000 IU in my practice because of the Rothman study and clinical guidelines. Therefore I tend to be fairly conservative, while teaching women how to top off their vitamin A stores prior to conception.

Vitamin A is truly A-Mazing! Unfortunately, due to a lot of misplaced fear and misinformation, people—especially pregnant women—are not getting enough. From my experience on the front lines of nutritional guidance, I believe that vitamin A is the single most important yet unrecognized nutrient. Its intake will determine whether we enjoy robust good health or suffer from the ongoing repercussions of borderline malnutrition.

Pamela Schoenfeld, MS, RD, a registered dietitian-nutritionist whose practice in Raleigh, North Carolina, focuses on the nutritional needs of women and their families. She credits the Weston A. Price Foundation for restoring her own health and giving her the energy to become a dietitian at the age of fifty. She firmly believes this was in part due to her resuming the consumption of liver and other high-vitamin-A foods she enjoyed while growing up. A member of the board of directors, she has represented the Weston A. Price Foundation via written and oral commentary to the U.S. government regarding the critical deficits in the Dietary Guidelines for Americans and the FDA food labeling requirements, both of which have contributed to the simultaneous epidemics of malnutrition and obesity in the U.S. and across the globe. She has been a frequent presenter at Wise Traditions Conferences with topics including polycystic ovary syndrome and senior malnutrition. She has written several articles for Wise Traditions *including "The Scarlet Nutrient: The Unfair Stigmatization of Vitamin A During Pregnancy." She embraces a common-sense approach to food and nutrition and is not afraid to question the dietary dogma that unfortunately all too often governs her profession. She is the author of the book,* The Collagen Diet*, where she weaves the traditional wisdom of nose-to-tail eating into the scientific basis of consuming collagen protein.*

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Sunlight and Vitamin D:
They're Not the Same Thing!

By Stephanie Seneff, PhD

We have been brainwashed into believing that the sun is toxic, whereas in fact it is life-giving. I am a great fan of sunlight exposure to both the skin and the eyes. The sun has been a resource for Planet Earth since the beginning of time, and biological organisms evolved with a constant supply of energy they could count on every day with the rising sun. Plants use the energy of sunlight to convert inorganic carbon into organic matter, with the help of chlorophyll. Why would animals ignore such an obvious energy source? Just as plants need sunlight to grow, sunlight plays an essential role in energizing animals, including humans.

I believe that the mechanism with which we safely exploit the sun's energy is through the oxidation of sulfur to sulfate, with the help of cholesterol. This reaction takes place in the skin—catalyzed by sunlight—and it is vital to our long-term health.

PROTECTIVE SUNLIGHT

People who live in places with little sun have statistically higher risk for many chronic conditions, including multiple sclerosis, diabetes, cardiovascular disease, autism, Alzheimer's disease and age-related macular degeneration.[1] On the other hand, a great deal of epidemiological evidence suggests that sunlight exposure protects from many different types of cancer. Ultraviolet (UV) radiation is recommended in treating different skin conditions, including psoriasis, eczema, jaundice and acne. Sunlight may also be beneficial in healing various autoimmune diseases, including rheumatoid arthritis, systemic lupus erythematosus, inflammatory bowel disease and thyroiditis.

Yet chances are that your dermatologist has told you to "stay out of the sun and take a vitamin D supplement every day." For some, this has seemed like good advice because we have been taught to believe that the sun causes skin cancer and that the only reason to get out in the sunlight at all is to boost vitamin D levels through its UV-stimulated synthesis in the skin. Driven by the belief that the benefits of sunlight exposure are mainly due to vitamin D synthesis, the natural conclusion is that vitamin D supplements would achieve the same goal.

The story is not that simple, however. When placebo-controlled studies are conducted on vitamin D supplementation, they usually produce disappointing results. I believe the reason is that sunlight exposure is about a whole lot more than vitamin D synthesis in the skin. In a paper published in 2016, Richard Weller wrote: "A substantial body of evidence shows that sunlight has health benefits and that these are independent of vitamin D and thus cannot be reproduced by oral supplementation."[2]

THE ROLE OF SULFATE

Those who are familiar with my research know that I believe that keratinocyte cells in the skin, endothelial cells lining the walls of surface veins and red blood cells are able to exploit the energy in sunlight by oxidizing hydrogen sulfide to make sulfate.[3] In the skin, the sulfate is conjugated with both vitamin D and cholesterol, and this makes these otherwise water-insoluble sulfate molecules water-*soluble*. This greatly facilitates their transport in the blood, because they no longer have to be enclosed inside lipid particles like high-density lipoprotein (HDL) and low-density lipoprotein (LDL). Sunlight exposure thus produces cholesterol sulfate as well as vitamin D sulfate, and it is the cholesterol sulfate that offers many of the benefits that are seen epidemiologically in sunny places. In fact, I believe that systemic sulfate deficiency is a key driver behind many chronic diseases that are on the rise in industrialized nations.

The sulfate that is produced in response to sunlight also supplies sulfate to the glycocalyx, the mesh of extracellular matrix glycoproteins that line the walls of all blood vessels. Red blood cells hand off cholesterol sulfate to the endothelial cells as they traverse the capillaries, and both the cholesterol and the sulfate are of vital importance to the endothelial cell's health. The endothelial cells also can incorporate the sulfate they synthesize themselves directly into the glycocalyx.

Sulfate in the glycocalyx helps to maintain the structured water in the exclusion zone, a layer of gelled water that coats the surface of all the blood vessels. Not only does the gel protect the blood vessel wall from oxidative and glycation damage, but it also provides a slick surface for

ARTICLE SUMMARY

- Sulfate synthesis in the skin captures the sun's energy. Adequate sunlight exposure to both the skin and the eyes is vital to our long-term health.
- Among other functions, sulfate supports blood vessel health, the body's electrical supply and the delivery system for important molecules such as cholesterol, vitamin D, dopamine and melatonin.
- Evidence indicates that sunlight protects against cancer, heart disease, hypertension and bone fractures.
- The benefits of sunlight exposure are about much more than vitamin D.
- Many studies show that vitamin D supplementation cannot reproduce sunlight's health benefits. Moreover, excessive vitamin D supplementation can aggravate systemic sulfate deficiency, which will drive calcium buildup in the arteries.
- Both sunscreen and glyphosate interfere with synthesis and production of melanin—the body's natural mechanism of sun protection. Aluminum in sunscreen disrupts sulfate synthesis. These disruptions may explain why melanoma prevalence has steadily risen in tandem with the increased use of higher sun-protection-factor sunscreens over the past two decades.

frictionless traversal of the capillary by the red blood cells. And perhaps most importantly, it carries a negative charge, creating a battery that is likely the main source of electricity for the body. Light—and most especially infrared light—causes the exclusion zone water layer to expand dramatically, by as much as a factor of four.[4] The electricity held in the battery grows in direct correspondence. Professor Gerald Pollack from the University of Washington in Seattle has popularized much of this story in his book, *Cells, Gels and the Engines of Life*.[5]

SUNSCREEN USE AND MELANOMA—BOTH RISING

Most Americans rely heavily on sunscreen if they are outside for an extended period. Mothers well-trained by conventional messaging slather sunscreen on their children every few hours during a day at the beach, believing that this will keep their children safe from skin cancer, with no down side. Americans strongly believe that they are protecting themselves from skin cancer through this practice, but, in fact they may be increasing their risk of skin cancer. Sunscreen interferes with the body's natural mechanisms of sun protection, which have been perfected over hundreds of millions of years of life's evolution on earth.

Given the quantity of advertising urging us to use sunscreen, people probably assume that there is plenty of evidence that sunscreen protects from skin cancer. If this is true, then it is hard to explain why melanoma prevalence has been steadily rising in tandem with the increased use of higher and higher sun-protection-factor (SPF) sunscreens over the past two decades. A study published in 2009, which analyzed almost three hundred million person-years of data over more than a ten-year period, concluded that the rate of skin melanoma increased by 3.1 percent per year from 1992 to 2004 in the United States.[6] A population-based study published in 2019—involving twelve thousand four hundred sixty-two cases of head and neck melanoma in the U.S. and Canada from 1995 to 2014—found that this type of cancer had increased by 51 percent over the two decades, with males aged fifteen to thirty-nine years being the population group most strongly affected.[7] Meanwhile, the market value of sun protection products increased from $940 million in 2006 to $1.6 billion in 2016.

As far back as 1996, researchers published a paper that investigated whether sunscreen protects from skin cancer. The authors wrote: "Our results support the hypothesis that sunscreens do not protect against melanoma, probably because of their ability to delay or avoid sunburn episodes, which may allow prolonged exposure to unfiltered ultraviolet radiation."[8] In other words, sunscreen gives you the illusion that you are safe because you don't feel the pain or experience the skin redness that naturally happens when your body is letting you know it's time to get out of the sun. Your skin is getting damaged by too much UV radiation, but the signal that would stop the exposure is missing.

MORE PROBLEMS WITH SUNSCREEN

Worse than this, in my opinion, is that sunscreen disrupts the body's natural mechanism of sun protection: melanin synthesis. Melanin is produced in response to sunlight exposure. Sunscreen protection lasts only while the sunscreen is topically present; melanin, on the other hand, builds up over time and eventually produces a healthy tan with protection that can last for weeks or even months. The smart way to protect yourself from the potential damage of UV rays is to develop a tan slowly during the spring while the sun is not so intense—this arms you with a defense against the intense summer sun that would otherwise be dangerous. As melanin's powerful antioxidant effects protect you from the UV rays, you can still enjoy the many health benefits of visible light and infrared light, far beyond what you would get from a vitamin D supplement.

Sunscreens contain toxic ingredients that cause damage to the skin in ways that might result in sustained disruption of sulfate synthesis.[9] Particularly disturbing is the aluminum that is added to emulsify the zinc oxide and titanium dioxide additives (the active ingredients). Aluminum is known to suppress cytochrome P450 enzymes (CYP enzymes). The enzyme that I propose as crucial for sulfate synthesis—endothelial nitric oxide synthase (eNOS)—is an orphan CYP enzyme.

I believe that glyphosate, the active ingredient in the pervasive herbicide Roundup, also disrupts eNOS. It is known to suppress CYP enzymes in the liver in rat studies. Worse than this, glyphosate interferes with the shikimate pathway in the gut microbes, which is essential for producing the aromatic amino acids.[10] One of these, tyrosine, is a precursor to melanin. Thus, glyphosate likely induces melanin deficiency, which prevents you from developing a healthy tan and, therefore, interferes with natural protective mechanisms against UV damage.

MELANOMA, SUN EXPOSURE AND VITAMIN D

Instinctively, most people who are diagnosed with skin melanoma make special efforts to avoid the sun following their diagnosis—which is probably a very bad idea. Remarkably, increased sun exposure, more frequent sunburns and solar elastosis (evidence of photo-aging in the skin) were all associated with improved survival statistics in a study of five hundred

twenty-eight patients diagnosed with cutaneous melanoma.[11]

It has seemed logical to many that the benefit of increased sun exposure must be due to the rise in vitamin D levels induced by sun exposure. Indeed, vitamin D deficiency at the time of diagnosis is associated with a worse prognosis in melanoma.[12] Patients with stage IV melanoma had a twofold worse prognosis if they suffered from vitamin D deficiency at diagnosis. Furthermore, those who began with vitamin D deficiency and whose vitamin D levels either fell or increased by no more than twenty ng/mL had a hazard ratio of 4.68 (meaning a higher risk) compared to patients who were not deficient initially and whose vitamin D increased by more than twenty ng/mL over time.

However, a large placebo-controlled study involving over thirty-six thousand postmenopausal women compared women who were supplemented with four hundred IU of vitamin D3 and one thousand mg of elemental calcium—every day for seven years—with controls given a placebo.[13] Rates of skin melanoma and non-melanoma skin cancer were monitored over the seven-year period. There was no difference in rates of either benign or malignant cancers between the two groups. This strongly suggests that vitamin D is not the reason for the improved melanoma survival with sun exposure.

MELANIN, INFRARED LIGHT AND SKIN CANCER

Melanin is able to transform 99.9 percent of absorbed sunlight into heat, and this greatly reduces the skin cancer risk. It also enhances the amount of infrared you can receive from the sun.

A fascinating 2017 study experimented with a novel idea to protect mice from skin cancer.[14] It involved a new technique to treat melanoma skin cancer using a transdermal skin patch, infrared light and melanin. Melanoma tumor cells produce high amounts of melanin. The researchers created a skin patch from ruptured melanoma cells, which they applied to the skin of mice (as a source of melanin). They compared three groups of mice: the controls, mice with only the patch and mice with the patch plus infrared light exposure. When the researchers subsequently injected viable melanoma cells into all three groups to induce skin cancer, 100 percent of the control group succumbed to melanoma cancer within a two-month period. Among the mice with the skin patch, only 13 percent survived. Remarkably, mice who received both the infrared light and the patch were all still living after two months, and 87 percent had no tumors. One wonders what would have happened with only infrared and no patch!

SUNLIGHT, VITAMIN D SUPPLEMENTS AND CANCER

In the following sections, I will address evidence that sunlight is protective against four distinct diseases and conditions: cancer, heart disease, hypertension and bone fractures. In each case, studies have shown that vitamin D supplements cannot replace these benefits of sunlight.

As far back as 1980, epidemiological studies showed an inverse geographical relationship between the amount of solar radiation and mortality rates for colon cancer.[15] In the forty years since then, numerous studies have shown that a high serum level of vitamin D is associated with reduced cancer risk for diverse types of cancer. A review paper published in 2018 with one hundred forty references revealed that those with higher serum vitamin D have an improved odds ratio protecting against developing brain, cervical, endometrial, esophageal, ovarian, thyroid and head and neck cancers as well as gastric adenocarcinoma, hepatocellular carcinoma and lymphoma.[16] Moreover, for many types of cancer, those with higher serum vitamin D at the time of cancer diagnosis have statistically improved survival times.

Given all of this evidence for an association between serum vitamin D levels and cancer protection, it seems obvious that vitamin D supplementation should be protective against cancer. However, a large placebo-controlled study published in 2019 by more than fifteen authors obtained disappointing results.[17] The study monitored over twenty-five thousand participants over a five-year period, restricting the study population to men over fifty years old and women over fifty-five years old but including participants from various places across the United States. In the group that received vitamin D (two thousand IU per day), supplementation did not lower the incidence of invasive cancer or of cardiovascular events, compared to the placebo group.

SUNLIGHT AND CARDIOVASCULAR DISEASE

Researchers have long been aware that there is a direct relationship, epidemiologically, between cardiovascular disease and latitude. People who live at high latitudes have significantly higher rates of heart disease than those nearer the equator.[18] Furthermore, more people suffer from heart attacks in the winter than in the summer, in both northern and southern latitudes.[19]

We have already seen that a large placebo-controlled study did not find any benefit in vitamin D supplementation for heart disease risk. A study based in India is one of very few controlled studies where the researchers compared vitamin D supplementation to sunlight exposure. The study involved one hundred men who had been diagnosed with severe vitamin D deficiency.[20] Half of them were prescribed supplemental vita-

min D (one thousand IU/day), and the other half were advised to spend at least twenty minutes out in the sunlight every day at midday. Both groups saw an increase in their serum vitamin D levels, but, remarkably, the two approaches had opposite effects on serum cholesterol. Those exposed to sunlight saw a statistically significant drop in their total cholesterol, and those taking the supplement saw a statistically significant increase.

This makes sense to me because vitamin D supplements are fat-soluble, which means they require the liver to synthesize cholesterol and release LDL particles in order to transport the vitamin D. Sunlight exposure stimulates cholesterol sulfate synthesis in the skin, and the sulfate moiety makes the molecule water-soluble.[3] This means that it can be transported in the blood without being packaged up inside an LDL particle. Because it is both water-soluble *and* fat-soluble, cholesterol sulfate can easily traverse water-based media to be transferred from the membrane of a cell in the skin to the membrane of an HDL particle or a red blood cell, and it can also easily be transferred to a tissue cell in need of additional cholesterol. Hence, sulfation induced by sunlight promotes efficient delivery of cholesterol to the tissues without the need for LDL carrier particles. These ideas are schematized in Figure 1.

Calcitriol is the 1,25(OH)-D3 that is usually produced by CYP enzymes in the kidney, and it is the "active form" of vitamin D. Kidney failure can derail this process, and so patients with kidney failure are often given calcitriol as a supplement. However, a study published in 2006 found it counterproductive for young adults with childhood-onset end-stage renal disease to be given calcitriol supplementation, because calcitriol is taken up by cells in the artery wall and leads to increased artery calcification.[21]

Basically, vitamin D mobilizes calcium but doesn't control where calcium goes. I believe that sulfate deficiency in the vasculature drives a conversion of the smooth muscle cells into bone-like cells, and this causes them to actively take up calcium and phosphate. Vitamin D supplements will encourage them to do this faster. Artery calcification is one of the strongest risk factors for cardiovascular disease.

HIGH BLOOD PRESSURE

A 2016 paper aptly titled "Sunlight has cardiovascular benefits independently of vitamin D" argued that sunlight is a therapy option for high blood pressure, an important risk factor for cardiovascular disease.[2] In the paper, a scatter plot showing mean male population blood pressure versus central latitude for a large number of countries (reproduced here as Figure 2) demonstrated a clear linear relationship. The author argued that the reduction in blood pressure is due to sunlight's stimulation of the release of nitric oxide from the skin.

Nitric oxide (NO) is a well-known "gasotransmitter," a gaseous signaling molecule that has a remarkable ability to induce a relaxation of the artery wall and a resulting drop in blood pressure. Endothelial dysfunction linked to cardiovascular disease is associated with impaired production of NO from arginine by eNOS, and it causes high blood pressure.[22] Researchers have recently become aware that the skin is somehow able to release nitric oxide in response to sunlight exposure. Exactly where the NO comes from is somewhat of a mystery because it has become clear that it is *not* a result of direct synthesis by eNOS.[23]

A clue comes from the fact that glutathione

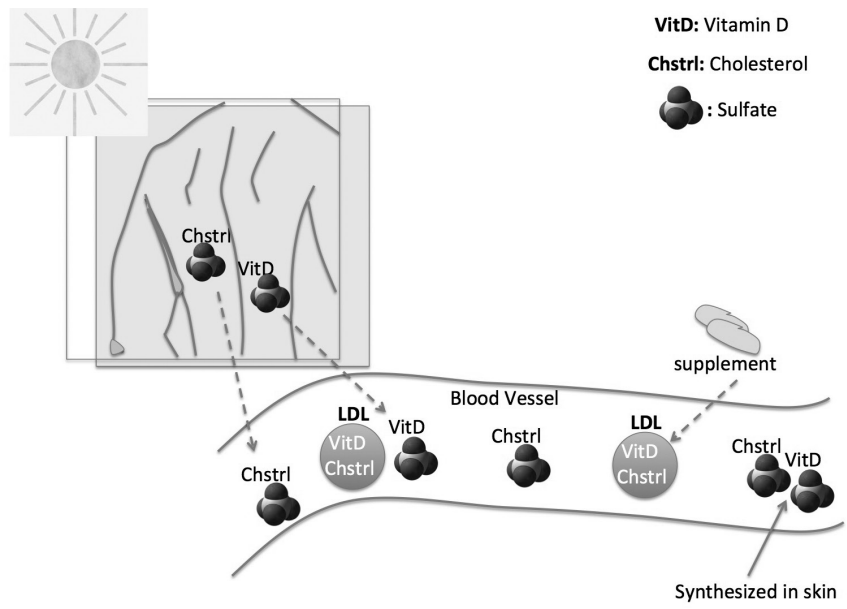

FIGURE 1. Schematic of the differences between sunlight exposure and vitamin D supplements. Cholesterol sulfate and vitamin D sulfate, synthesized in the skin following sunlight exposure, can be transported freely in the blood, rather than requiring carrier lipid particles like LDL.

reacts with nitric oxide to produce S-nitrosoglutathione (GSNO), which I believe serves as a temporary storage form of NO. Almost miraculously, visible light (green, blue and purple) can catalyze the release of NO from glutathione.[24] Not only does this cause a relaxation of the blood vessels, but it also frees up glutathione to react with hydrogen sulfide gas to produce sulfate.

As illustrated in Figure 3, glutathione reacts with reduced sulfur to form glutathione persulfide (GSSH), and this can catalyze the oxidation of the extra sulfur atom to sulfur dioxide in the presence of superoxide. eNOS binds to flavins that respond to visible light by releasing electrons that convert oxygen to superoxide. The sulfur dioxide produced by eNOS is then oxidized to sulfate by sulfite oxidase. What this means is that the visible light in sunlight is crucial both for the release of NO from the skin and the synthesis of sulfate in the skin—and both of these results are crucial aspects of the beneficial effects of sunlight exposure.

Note that eNOS is a "moonlighting" enzyme. As described at length in a paper I published with colleagues in 2015,[25] eNOS is able to switch between two synthesized products: nitric oxide and sulfur dioxide, depending on electromagnetic signaling that it receives from the circulating red blood cells.

These results might prompt medical professionals to advise people in higher latitudes to take a vitamin D supplement. However, as we by now can guess, a large study on vitamin D supplements and hip fractures gave disappointing results.[26] The study involved women over seventy years old who had at least one self-reported risk factor for hip fracture (low body weight, previous fracture, maternal history of hip fracture, smoker or poor health in general).[27] The intervention involved daily oral supplementation with one thousand mg of calcium and eight hundred IU of vitamin D3. However, to reduce the risk of vitaminosis D, the study excluded women who took calcium supplements, as well as women with a history of bladder or kidney stones, renal failure or hypercalcemia. Despite the near-ideal experimental setup, after a median follow-up period of twenty-five months, there was no significant difference between fractures in the treatment group compared to the control group.

Another three-year study compared three different doses of vitamin D—four hundred IU/day, four thousand IU/day and ten thousand IU/day—specifically looking at bone density. Surprisingly, those on the highest dosage had a statistically significantly worse outcome in terms of bone mineral density.[28] I would argue that systemic sulfate deficiency drives calcium into the arteries, leaching it from the bones—and excessive vitamin D increases the rate at which this happens.

SUNLIGHT AND THE EYES

Sunglass marketing ads have trained us to

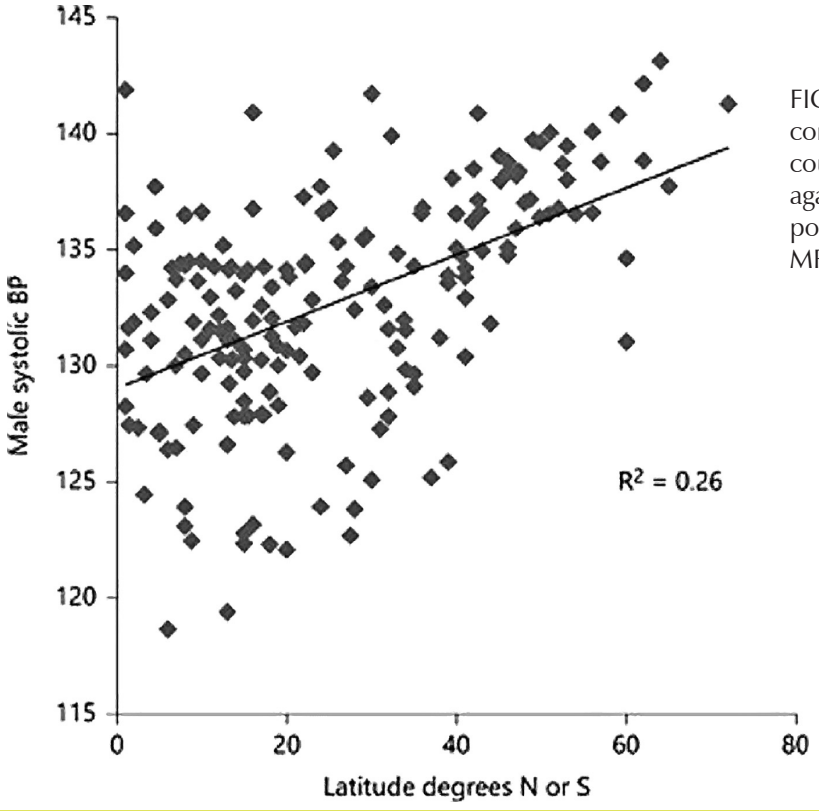

FIGURE 2. Population blood pressure (BP) correlates with latitude. Each point represents a country. Male systolic population BP is plotted against the latitude of the geographical mid-point of each country. BP values are from 1980 MRC-HPA data. See Weller, 2016 for details.[2]

wear sunglasses whenever we go outside, ostensibly to protect our eyes from damaging UV rays. However, melanin—which gives your eyes their blue, hazel, green or brown color—already protects them from UV rays. In fact, the human eye has evolved to deal naturally with sun exposure through antioxidant protection by melanin, as well as other antioxidant-defense systems based on glutathione and the enzyme superoxide dismutase (SOD). I believe it is crucial to get adequate sunlight exposure to the eyes, not just for the sake of eye health but also because critical nuclei in the brain stem make good use of light that enters through the eyes.

THE PINEAL GLAND AND SLEEP DISORDERS

The pineal gland sits behind the eyes, and it can easily receive light that enters through the eyes. It plays an important role in circadian rhythms and promotes restful sleep by synthesizing large amounts of melatonin as the light fades in the evening. The melatonin is conjugated with sulfate and shipped out into the cerebrospinal fluid at night. In a paper published together with Wendy Morley, I have argued that melatonin supplies sulfate to the neurons in the brain at night and that this supports activities during sleep to break down and recycle cellular debris.[29]

During the daytime, a sulfotransferase enzyme is sharply upregulated in the pineal gland, and it increases the amount of sulfate in the glycosaminoglycans (GAGs) in the intercellular spaces of the pineal gland.[30] From this, we can infer that sunlight catalyzes sulfate synthesis in the pineal gland, and, indeed the cells there express eNOS. The sulfate built up by day can be extracted from the matrix and conjugated to melatonin in the evening to maintain the brain's supply of this critical nutrient.

THE SUBSTANTIA NIGRA AND PARKINSON'S DISEASE

Parkinson's disease (PD) is a relatively common progressive neurological disease manifested as a movement disorder, associated with tremors, stiffness and slowed movement. It is caused by a loss of neurons in the substantia nigra ("black substance"), a dark structure in the midbrain where dopamine is synthesized. The dark color is due to substantial production of neuromelanin, a close relative to the skin-tanning agent, melanin. Depigmentation of the substantia nigra due to loss of neuromelanin is a hallmark feature of PD.[31]

Studies that have measured serum vitamin D levels have found significant differences in PD patients versus controls. One study that compared one hundred eighty-six PD patients with non-PD controls revealed that the PD patients had significantly lower bone density as well as significantly lower serum vitamin D levels compared to controls.[32] Another study, based in China, compared two hundred one newly-diagnosed PD patients with one hundred ninety-nine controls and likewise found that low serum vitamin D was linked to Parkinson's.[33] The Chinese study also used a questionnaire to determine whether the study participants took vitamin D supplements and how much sun exposure they obtained. The frequency of Parkinson's disease in the group in the highest quartile of sun exposure was only half of the rate for those in the lowest quartile. Interestingly, serum vitamin D levels were highly correlated with degree of sun exposure but not with vitamin D supplementation.

One way in which sun exposure may be beneficial in Parkinson's is through exposure to

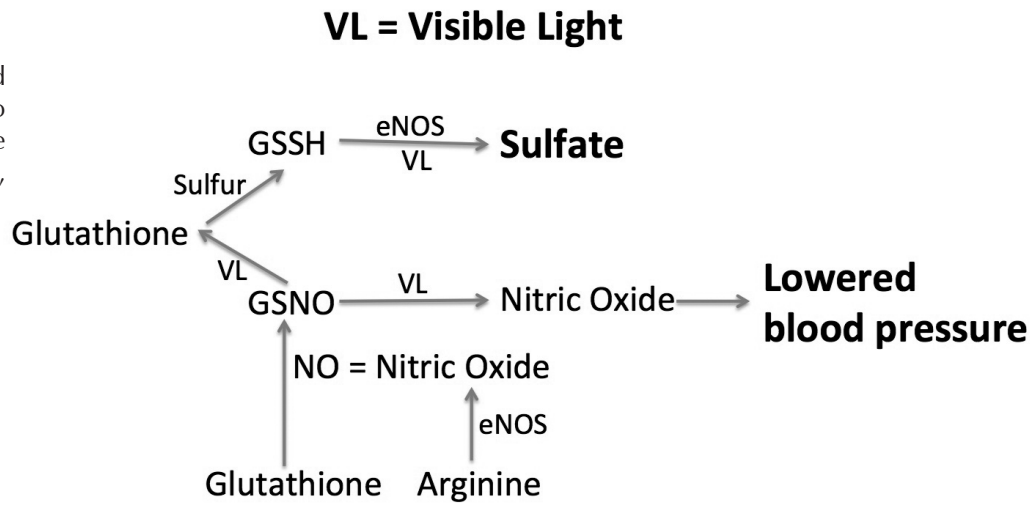

FIGURE 3. Pathways catalyzed by visible light that lead to synthesis of sulfate and release of nitric oxide from the skin, lowering blood pressure.

the eyes! Bright-light therapy has been shown to benefit PD patients, improving sleep, mood and also motor function.[34] A remarkable study on rats was able to measure the amount of light reaching the mesencephalon (the midbrain, which houses the substantia nigra) when light was shone on the eyes.[35] They observed a sharp peak at around seven hundred ten nanometers, which is in the range of infrared light. It is likely that sunlight stimulates the synthesis of neuromelanin, just as it stimulates the synthesis of melanin in the skin. The neuromelanin then likely protects the dopaminergic neurons from oxidative damage by mopping up free radicals.

Gerald Pollack's research on structured "exclusion zone" water has shown that infrared light is very effective in growing the exclusion zone size by as much as a factor of four. This will increase the mobilization of electrons (electricity) needed to oxidize oxygen and ultimately form sulfate, assisted by eNOS and sulfite oxidase. The sulfate is of direct benefit to form dopamine sulfate—the water-soluble form of dopamine that is easily transported and delivered to dopamine receptors. This story has parallels to the story regarding cholesterol sulfate in the skin.

SUMMARY

Sunlight has been an important source of energy for Planet Earth since its inception. Plants have learned how to use the energy in sunlight to create organic matter, and I believe that animals have exploited sunlight as a source of energy for movement and for cognition.

Sulfate synthesis in the skin is a powerful way to capture the sun's energy (see Figure 4). Sulfate's diverse roles in the body are essential for good health, and particularly for maintaining a healthy vasculature, an electrical supply to the body and an efficient delivery system for sulfate-conjugated biologically active molecules—such as cholesterol, vitamin D, dopamine and melatonin. Sunlight also offers natural protection from the harsh summer sun through the production of melatonin in the skin. Vitamin D supplements, on the other hand, send the tissues a false signal that cholesterol sulfate is plentiful. Sun exposure is important not just to the skin but also to the eyes, and, perhaps more crucially, to the structures in the brain stem behind the eyes that control circadian rhythms (pineal gland) and movement (substantia nigra).

When I tell people that I worship the sun, they often respond with something like, "Yes, I am aware of all the myriad health benefits of vitamin D." Then I have to explain that, no, it is not about vitamin D. It is about something vastly more important. Researchers are frustrated because they see that high serum vitamin D is associated with many health benefits, yet when they conduct placebo-controlled studies on vitamin D supplements, they consistently yield discouraging results. And when those diagnosed with skin cancer becomes intent on avoiding the sun, they worsen their prognosis.

Besides sunlight exposure, some foods naturally provide vitamin D and cholesterol sulfate, and these can be very important for people living in northern latitudes. I suspect that eating lots of seal blubber (an excellent source of both vitamin D and cholesterol sulfate) helped the Eskimos get by. Other sources are raw milk and butter from grass-fed cows, organic lard, wild-caught fatty fish like salmon and cod liver oil. However, foods artificially supplemented with vitamin D won't do the trick because they don't normally contain cholesterol sulfate. It's also important to eat only certified organic foods to minimize exposure to

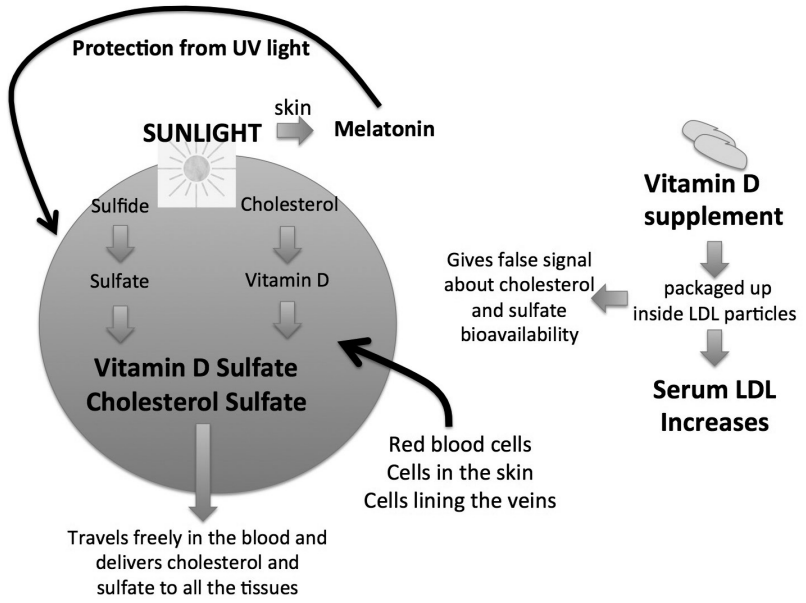

FIGURE 4. Schematic of differences between vitamin D supply through supplements or through sunlight exposure.

glyphosate and toxic chemicals that disrupt the body's ability to utilize sunlight appropriately.

There are other simple measures you can take. One that I recommend is simply taking a bath with half a cup of Epsom salts and the water temperature set as high as you can comfortably stand. The sulfate in the Epsom salts will penetrate your skin, with the heat working synergistically to increase exclusion zone water. An infrared sauna is another possibility, although there may be some issues with electromagnetic field (EMF) exposure.

One of the very best things that you can do to maintain good health is to walk barefoot in the water along the ocean shore on a sandy beach on a sunny day. The sand and water assure good grounding, providing the negative charge that is so important to mobilize electrons to fuel the structured water in the exclusion zone lining all the blood vessels. In addition, the ocean air is enriched in hydrogen sulfide gas that can easily penetrate the skin.

If you don't live near the ocean, walking barefoot in the grass is also beneficial. Even in winter when the sun's rays are not so intense, the infrared light is still nearly as strong as in the summer. And even in cold weather, winter sunlight shining on your face and hands is health-promoting. Sunlight energizes the electrons in the exclusion zone to induce the synthesis of sulfate from sulfide, which in turn, maintains the exclusion zone in a natural feedback loop. This is the electrical supply to the body, and sunlight is its primary source.

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In Defense of Vitamin K2 MK-4:

Dr. Price's Activator X

By Elizabeth Schlinsog and Will Schlinsog, DC

The discovery of vitamin K was worthy of the prestigious Nobel Prize in medicine. In 1943 Carl Peter Henrik Dam, for his discovery of vitamin K, shared this honor with Edward A. Doisy, for his discovery of its chemical structure.

In 1929 Dam had found that chicks fed a cholesterol-free diet developed a bleeding disorder, not remedied by cholesterol. (He cured them by giving them either green leaves or hog liver.) Dam called it vitamin K because of the German spelling for Koagulation.

He believed that vitamin K was only involved in coagulation. In fact, at the end of his Nobel lecture, Dam stated, "It therefore seems unlikely that vitamin K as such should play any role in the prevention of caries."[1]

Ironically, Dr. Weston A. Price, around the same time, had found a fat-soluble vitamin that he referred to as activator X, which not only helped prevent and heal caries, but also helped shape the very faces of the isolated peoples he studied. He felt it was such an important nutrient that in 1945 he added a new chapter to his book, *Nutrition and Physical Degeneration.*[2]

THE K FAMILY

Vitamin K comes in several forms:

1. Vitamin K_1 (phylloquinone) is found in plants and some animal sources; it is involved in coagulation.
2. Vitamin K_2 has side chains that contain from four to thirteen "isoprenoids," represented as MK-4 to MK-13. MK means menaquinone; the side chains are referred to as short- and long-chain menaquinones (MKs). Vitamin K_2 MK-5 through MK-13 are forms produced by bacterial synthesis.
3. Vitamin K_2 MK-4 is Dr. Price's activator X and is unique, in that it is the only form that is not the product of bacterial synthesis, but comes from animal sources. (A synthetic MK-4 is made from tobacco or geranium leaves.)
4. Vitamin K_3 (menadione) is synthetic and water-soluble, and it has no side chain. The FDA banned its use for human consumption because of its high toxicity—although it still is allowed in animal feed, usually as menadione sodium bisulfate[3] (a good reason to eat grass-fed animal products).

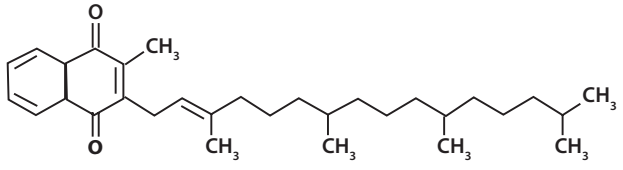
ACTIVATOR X

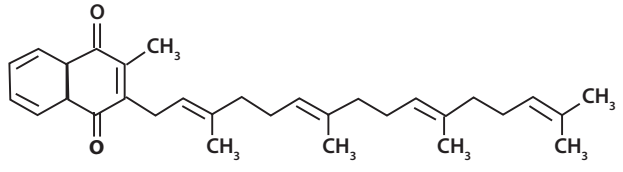
Dr. Price's Activator X is vitamin K_2 MK-4. Dr. Price's work in nutrition may be more valuable to us today, as it is a source to refer to when the noise of synthetic supplementation drowns out the wisdom of our ancestors—the knowledge that all health starts with nutrient-dense, whole foods. As Price stated, "People of the past obtained a substance that modern generations do not have." Yet increasingly we are seeing statements in published papers that "it is unlikely that MK-4 is an important dietary source of vitamin K in food supplies." Such assertions, often by those with ties to the supplement industry, have led us to the defense of this key nutrient in food.

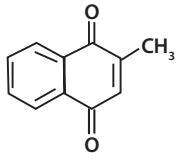
In his studies, Price found a fat-soluble vitamin he called Activator X. He believed it was a missing nutrient in our modern diet and that its absence could explain many of our modern diseases. He was able to heal caries, reduce oral bacteria and cure other degenerative maladies in his patients by giving butter oil, rich in activator X, along with cod liver oil. (Cod liver alone did not work as well.)

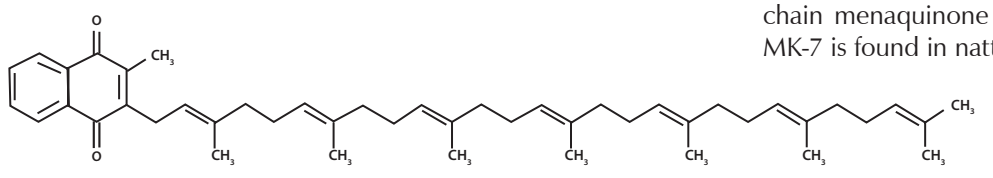
Price wrote: "(a) [Activator X] plays an

Dr. Price's Activator X is vitamin K_2 MK-4.









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4. Menaquinone-7 (MK-7), is an example of a longer-chain menaquinone made by bacterial synthesis; MK-7 is found in natto and supplements.

Price found higher levels of vitamin K_2 MK-4 in the milk of cows eating rapidly growing green grass.

essential role in the maximum utilization of body-building minerals and tissue components; (b) its presence can be demonstrated readily in the butterfat of milk of mammals, the eggs of fishes and the organs and fats of animals; (c) it has been found in highest concentration in the milk of several species, varying with the nutrition of the animal; and (d) it is synthesized by the mammary glands and plays an important role in infant growth and also in reproduction."[2]

Price found higher levels of vitamin K_2 MK-4 in the milk of cows eating rapidly growing green grass. Vitamin K_2 MK-4 is concentrated in butter and Price found he could concentrate the amounts further by using centrifugal force in the process, which he called high-vitamin butter oil. He found that the content of vitamin K_2 MK-4 varied with the species of the cow, the time of year and the quality of what the cows ate. (See Table 1.)

Note that butter and concentrated butter products contain 100 percent MK-4. (See Table 2.) There are no bacterial MKs in these products. This is the fat in nature designed for the growth and nourishment of all mammals.

For thousands of years our ancestors had their vitamin K needs met by eating certain animal foods, foods deemed particularly important for having healthy children.

DEFICIENCY IS PREVALENT

There are many reasons for the modern, widespread deficiency of vitamin K_2 MK-4: our aversion to eating offal, animals raised eating anything other than grass, factory farms, high antibiotic use in animal feeds and in humans, animals fed GMO corn and soy, soil depletion, glyphosate, processed foods and dysfunction of the gut. If you are taking a statin or blood thinner, you should know that these drugs create a deficiency in vitamin K_2. Our elderly ancestors ate more of this nutrient as they aged.

How can you tell whether you are deficient in vitamin K_2? Vitamin K_2 MK-4 is important for calcium homeostasis, so if you have osteoporosis, cardiovascular or coronary disease, kidney disorders, diabetes or cancer, it may be due to a deficiency of this nutrient. Tooth decay is another sign of vitamin K_2 deficiency. Children brought up on diets lacking in K_2 MK-4, starting in the womb, tend to have narrow faces and crowded and crooked teeth.

Cheese contains vitamin K_2 MK-4 as well as longer-chain MKs. Cheese is made by adding different bacterial cultures to milk, each one producing a different effect. Typically the MKs found in cheese from the greatest amounts to the lowest amounts are MK-9, MK-4, MK-8, MK-10 and MK-7. Some cheeses, such as mozzarella or comte, have no short or long MKs. Some cheese aged for ninety to one hundred eighty days may only have vitamin K_2 MK-4. Not all fermentation processes or bacteria make long-chain MKs.

A study testing eighty-four different foods found that most contain small amounts of vi-

TABLE 1:
Varying Amounts of Vitamin K_2 MK-4 (ng/g) in Dairy

Whole Milk	10[4]
Butter (Conventional)	135-240[5]
Butter (Raw)	90-146[5]
Butter Oil	196-240[5]
Ghee	270-360[5]

TABLE 2: Good Food Sources of Vitamin K_2 MK-4

	ng/g	% MK-4
Emu Oil (Walkabout)	4200[6]	99.95 %
Goose Liver Páté	3700[5]	100 %
Duck Fat	1177[5]	100 %
Ghee	316[5]	100 %
Butter Oil	221[7]	100 %
Butter (Land O'Lakes)	216[7]	100 %
Chicken Liver (Farm)	103[6]	91 %
Chicken Liver (Store)	35[6]	56 %
Cheddar Cheese	99[7]	16 %
Egg Yolk (Conventional)	317[7]	100 %
Egg Yolk (Pastured)	352[7]	100 %
Chicken Meat	9[4]	100 %
Tallow	70[5]	100 %
Lard	172[5]	100 %

tamin K_2 MK-4. Rarely do longer-chain MKs exist in the meat of chicken, beef or pork. In offal small to moderate amounts of MK-6 to MK-10 have been detected. Fish typically have small amounts of vitamin K_2 MK-4.[8]

Vitamin K_2 MK-4 from animal foods is quickly absorbed in the body and is stored in the brain, salivary glands, testes, sternum, face, pancreas, eyes, kidneys, bones, arteries, veins and other tissues, where it is utilized for activating vitamin K-dependent proteins (VKDP) and possibly for other, as yet unidentified, functions.[9]

Unlike MK-4, MK-7 is not stored in any organs.

VITAMIN K_1 VERSUS VITAMIN K_2

There are many forms of vitamin K, and the inclination of articles and studies to refer to all Ks using the term vitamin K or K_2 has led, incorrectly, to the assumption that all Ks are similar in origin and function. They are not.

Many studies state that the main source of vitamin K_2 MK-4 is from K_1, which we get from eating green leafy vegetables or vegetable oils, but our bodies absorb only miniscule amounts—less than 10 percent—of K_1 from plant foods, and our MK-4 needs are greater than anything we could convert from vitamin K_1.[10]

In 1964, Carl Martius, using pigeons, chickens and rats, was the first to state that MK-4 was made from K_1 and he was right—when you are using pigeons, chickens and rats. These animals have gizzards and extra-large, large intestines that can convert K_1 to vitamin K_2 MK-4.[11,12]

Cows, sheep, pigs, chickens and other animals can also make the conversion from K_1 to MK-4, but humans, higher up on the food chain, have a digestive system adapted to having our vitamin K_2 MK-4 needs met predominantly from eating grass-fed or pastured animals and products made from them. Humans are not fermentative beings. (And of course, many ancestral cultures would not have access to greens throughout the entire year and would have obtained their fat-soluble vitamins from animal foods.)

Another theory is that we can meet all our vitamin K_2 MK-4 needs from bacterial synthesis in the gut, but this premise is not sustained by the evidence. Our gut bacteria can make short- and long- chain MKs (for their own use), but they do not produce vitamin K_2 MK-4.[13,14,15]

The bioavailability of bacterial MKs is poor because they are tightly bound to the bacterial cytoplasmic membrane, and the largest pool is present in the colon, which lacks bile salts for their solubilization.

Natto, a fermented soy product, is the only food with high amounts of vitamin K_2 MK-7—it is an anomaly. It originates from the eastern part of Japan but has not been in most of the world's diet except in trace amounts. And the Japanese traditionally eat egg yolks, a source of MK-4, with natto.

Interestingly, practitioners in Japan give 45 mg of MK-4 (the synthetic form), not MK-7, to treat osteoporosis.

EVOLUTION AT WORK

In 1988, a Japanese study done by Dr. Hidekazu Hiraike divided pregnant women into two groups. Group A was asked to eat a normal diet and Group B was asked to eat a diet high in natto. Vitamins K_1, K_2 MK-4, MK-6 and MK-7 were found in the placentas and mothers' blood plasma.[16] (See Table 3.) Samples were taken of the placentas and umbilical cord plasma right after delivery.

Only K_1 and MK-4 were found in the umbilical cord plasma, even though there were high concentrations of MK-7 available. It appeared that the placental tissues effectively blocked the passage of MK-7 while allowing MK-4 into the unborn child. High concentrations of vitamin K_2 MK-4 were found in the placenta.[16]

MK-7 scientists say that MK-7 is more bioavailable or has a longer half-life because it remains in the blood plasma longer than MK-4. However, the Japanese natto study provides a living account of nature's selection for the type of vitamin K_2 needed for the development of the child—that is, the animal form MK-4. It's worth hypothesizing that MK-7 may remain in the blood longer because the body has no use for it.

Some studies indicate that MK-7 from food and synthetics induces more complete carboxylation of osteocalcin, a vitamin K-dependent protein involved in bone homeostasis. One study involving menopausal women taking MK-7 as natto over one year showed reduced serum levels of uncarboxylated osteocalcin (ucOC), but the treatment had no effect on bone loss rates.[17] Could MK-7 increase the carboxylation of calcium

HOW MUCH VITAMIN K_2 DID DR. PRICE PRESCRIBE?

How much vitamin K_2 MK-4 was Dr. Price giving to his patients to heal caries and degenerative disease? In his book, *Nutrition and Physical Degeneration,* he reports using one-half to one and one-half teaspoons per day, which translates to a range of 520 ng to 1560 ng, or 0.520 mcg to 1.560 mcg. If we assume that Price's butter oil had ten times those amounts in his day compared to now, assuming better soils and fewer toxins in the environment, that brings us to 5.2 mcg to 15.6 mcg per day.

and yet lack the ability to move it into the tissues? Could this increase in carboxylation increase the calcification of the placenta or form excess osteocalcin, which does cross into the placenta, causing a decrease in the blood supply (thus less oxygen) and explain the findings of small for gestational age and other defects in the natto study?

In 1992, Dr. Hideaki Iioka found that vitamin K_2 MK-4 is transported into the placenta by a carrier protein via an existing transport carrier system in the brush border membrane of the human placenta.[18,19,20] Vitamins A, D and E are also carried in the blood by a carrier protein. Could this be the reason that vitamin K_2 MK-4 is often not detected in the blood, because it is attached to a carrier protein? Little to no research has been done to answer these questions.

What we do know is that the traditional sacred foods for preconception and pregnancy were foods rich in MK-4, and that traditional weaning foods for babies were poultry liver and egg yolk, also great sources of vitamin K_2 MK-4.

It's important to understand that vitamin K_2 MK-4 and long-chain MKs are structurally different and are derived from different sources.

Some researchers have suggested a theory of conversion from vitamin K_1 MK-7 or other MKs to vitamin K_2 MK-4 via the enzyme UBIAD1, which removes the longer side chains of the K vitamins to produce menadione (K_3). K_3 then travels to the liver for detoxification and is somehow transported in the blood or lymph by an unexplained carrier to tissues where an unknown enzyme(s) adds side chains back to K_3 producing vitamin K_2 MK-4.[21]

The question is, what happens if K_3 exceeds the rate at which the enzyme can add back the side chains, as when someone is taking K_3 as a supplement? Does the excess K_3 cause toxicity and oxidative stress? The research is unclear.

What we do know is that K_3 causes disruption or rupture of red blood cells, toxic reactions in liver cells and depletion of glutathione; it weakens the immune system and can cause allergic reactions.[22] The potential for these negative effects is the reason the FDA banned K_3 for human use.

The research points strongly to the conclusion that humans need to get their vitamin K_2 as MK-4 from food sources. After all, we evolved eating vitamin K_2 MK-4. It is already in the form that the body needs, and we don't need to expend enzymes and energy to convert it. The organs and cells that need vitamin K_2 readily absorb and utilize the MK-4 form. And finally, MK-4 is more efficient than other forms, appearing in food with other synergists and activators that work together to maintain therapeutic aspects.

It can't be stressed enough that the type of vitamin K_2 that we get in supplements is MK-7, not the type we get in food. The best way to get active and efficiently assimilated vitamin K_2 is from food. This is true of all vitamins. An NIH-funded study involving twenty-seven thousand people over a six-year period found that "individuals who reported taking dietary supplements had about the same risk of dying as those who got their nutrients through food. What's more, the mortality benefits associated with adequate intake of vitamin A, vitamin K, magnesium, zinc, and copper were limited to food consumption."[23]

TABLE 3: Natto Study Levels of MK-7 in the Blood Plasma and Placenta[16]

	PLASMA	PLACENTA
Group A (normal diet)	0.70 ng/ml	01.08 ng/g
Group B (diet high in natto)	3.55 ng/ml	10.82 ng/g

TAIL SIZE MATTERS

Vitamin K-dependent proteins (VKDP) are a group of proteins providing life-giving functions for the brain and body. To become bioactive they require vitamins K_1 and K_2 MK-4 as cofactors for the enzyme y-carboxyglutamyl carboxylase (GGCX), which transforms the glutamic acid residues (GLA) in the protein, promoting calcium-binding and inducing conformational changes so that vitamin K can be utilized by the tissues. In other words, vitamin K_2 MK-4 is multifunctional.

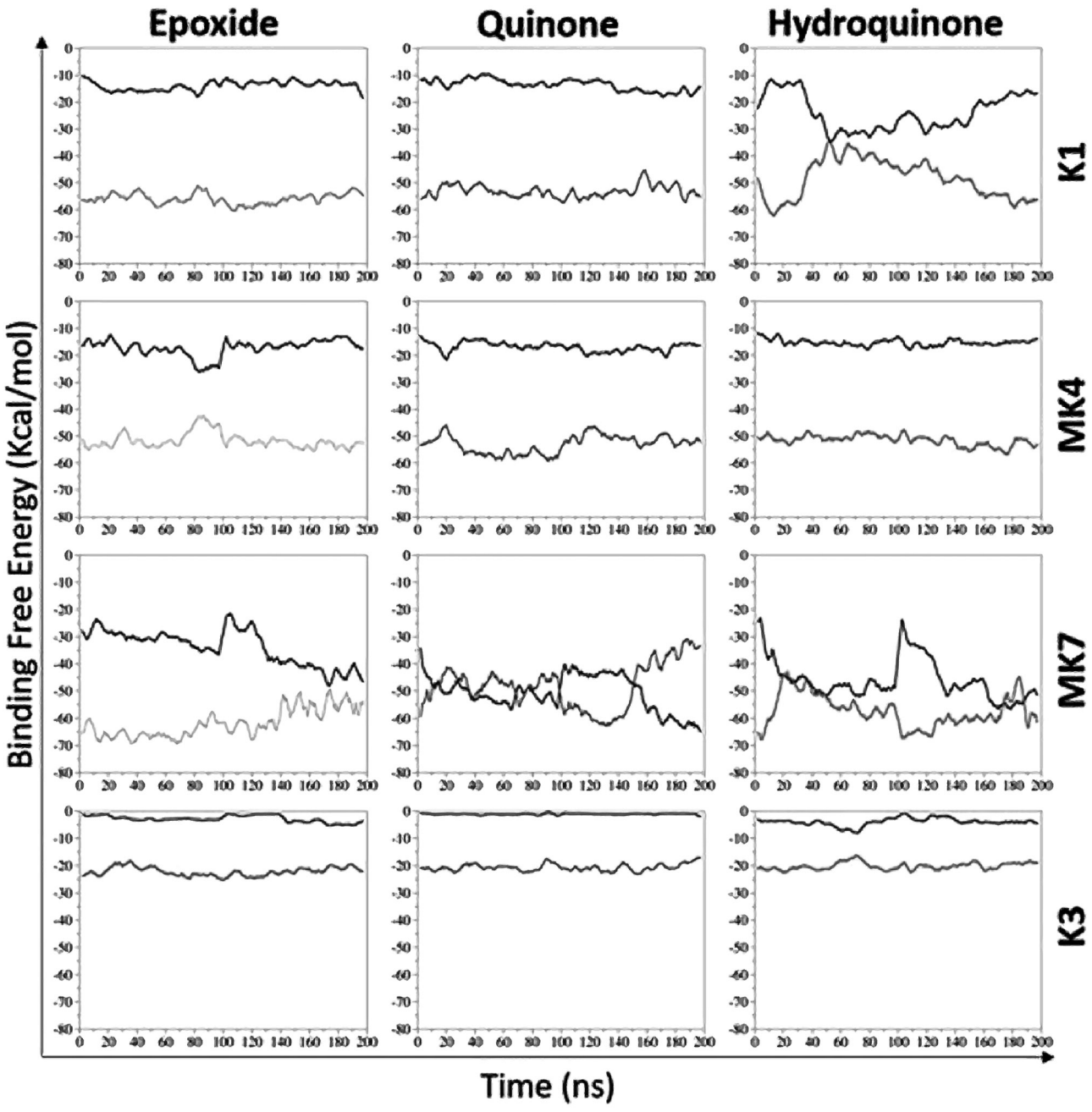
Once GGCX is activated, vitamin K transforms into the epoxide state; then it is recycled to the quinone and hydroquinone states by vitamin K epoxide reductase (VKORC1).

In 2018, Nolan Chatron and his group used *in silico* (biological modeling performed on a computer) and *in vitro* assays for confirmation, using vitamin K_1, vitamin K_2 MK-4, MK-7 and K_3 to give us some insight into tissue distribution and interactions toward VKORC1.[24]

VKORC1 was shown to bind tightly with vitamins K_1 and K_2 MK-4. However, MK-7 showed "shaky binding, induced by hydrophobic tail interactions with the membrane." K_3, without a tail, had no structural stabilization by the enzyme. The *in vitro* assays validated the *in silico* predictions.

All states of MK-4 exhibited stable values. K_1 epoxide and quinone remained inside the VKORC1 enzyme and did not interact with the membrane, although K_1 was not as stable in the hydroquinone state. MK-7 showed the highest fluctuations leading to MK-7 binding failure. *In vitro* MK-7 showed weak activity and was ten times lower than vitamin K_1 epoxide; these

FIGURE 1:
Binding free energy of vitamins K (K_1, MK-4, MK-7 and K_3 in their epoxide, quinone and hydroquinone states) toward vitamin K epoxide reductase (VKORC1) and membrane in molecular dynamics (MD) simulations. The binding free energy (BFE) between vitamin K and membrane is shown as the upper line. The BFEs between the epoxide state of vitamin K and VKORC1 are shown as the lower lines for vitamin K_1, MK-4, MK-7 and K_3, respectively. The BFEs of quinone and hydroquinone states of vitamins K toward VKORC1 are presented as lower lines. Two 100-ns MD simulations were performed on each vitamin K–VKORC1 complex, then concatenated to be considered as one 200-ns MD simulation.



Weston Price has left us a tremendous legacy: the collective knowledge of thousands of years of ancestral wisdom and instinct as a guide to maintaining bountiful, joyful health, generation after generation.

results were in line with the *in silico* prediction. K_3 *in vitro* had no activity. (See Figure 1.)

In conclusion, the researchers showed the ability of VKORC1 to reduce vitamins K_1 and MK-4 for use in the body, but not MK-7 and K_3. These findings explained the ability of VKORC1 to support VKPD activation in the liver (mainly containing phylloquinone, vitamin K_1), and in extrahepatic tissues (mainly containing vitamin K_2 MK-4).

These results led the researchers to ask the question: "Are long-sized hydrophobic tail menaquinones able to act as GGCX cofactors?"

The shorter MKs, K_1 and MK-4, were stable, while the longer-chain MKs, such MK-7 were not able to bind well, and K_3 with no tail could not bind at all. Tail length does matter!

Could it be that MK-7 remains in the blood longer because it does not bind well?

NATURE IS WISER THAN ANY HUMAN DESIGN

In 2011, we contacted the Weston A. Price Foundation. We had already been working with emu oil in Will's practice for a few years with excellent results. The Foundation asked whether we had ever tested emu oil for vitamin K_2. We had never heard of vitamin K_2! The results put us on the path of a serendipitous journey.

Emu oil is a whole food with a unique synergy of nutrients; it is the highest naturally occurring source of vitamin K_2 MK-4. Emu oil is an ancestral food and bush medicine of the indigenous Australians.

The beneficial properties have long been known to the Aboriginals to reduce pain and inflammation, with documentation recorded more than one hundred years ago.[25,26]

Just as Price found the amount of Activator X (vitamin K_2 MK-4) varies with the species of cow and what it eats, these same facts apply to emus. Not all emu oils have the same benefits or characteristics. Genetics, feed, husbandry and refining are all huge components to having the most biologically active emu oil. Testing on two American emu oils detected no vitamin K_2 MK-4.

Weston Price has left us a tremendous legacy: the collective knowledge of thousands of years of ancestral wisdom and instinct as a guide to maintaining bountiful, joyful health, generation after generation.

Elizabeth and Dr. Will Schlinsog are the owners of Walkabout Health Products, the exclusive distributors of a unique emu oil, found only on select farms in Australia. Dr. Schlinsog is a chiropractor who has been in practice for over thirty years. He maintains a private practice in Marshfield, Wisconsin. He is trained in disability evaluations, functional nutrition, applied kinesiology and functional neurology. He also conducts educational lectures and podcasts regarding the clinical studies and trials using Walkabout Emu Oil as a vitamin K_2 MK-4 whole food source. The Schlinsogs feel blessed to work with the farmers in Australia and to bring this resource to our clients. They are

TESTIMONIALS ABOUT VITAMIN K2 MK-4 FROM EMU OIL

A child age six was struggling in first grade; she was having discipline problems and was having a hard time learning to read. After taking emu oil for a month she could read, and during the last teachers conference, her teacher gave her great compliments on her behavior.

A medical doctor in her late forties noticed a small cavity about a year ago. It was discolored and craterous. Recently she had a dental examination. The dentist could find no cavity and no receding gums. She attributes vitamin K_2 MK-4 in emu oil for activating the vitamin K-dependent protein osteocalcin and healing the cavity.

A woman in her early seventies had undiagnosed Lyme disease for sixteen years. Her joints had all been seriously affected, and her body had so much inflammation that she was in constant pain. After taking emu oil for about five months, her inflammation was down, joint pain gone and bone density increased for the first time in years. Her doctor said, "Wow, keep doing whatever you are doing."

A woman in her forties after surgery developed open sores on her arms and legs that itched and would not heal after nine years. After internal and topical use for two weeks of emu oil, her skin was clear.

grateful to the researchers, fat-soluble experts, nutritionists, holistic doctors, farmers and the people taking their emu oil who have shared their experiences with it. If you would like to share your experience or learn more about this vitamin K_2 MK-4 resource, call (715) 305-2526 or visit walkabouthealthproducts.com.

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SIDE EFFECTS OF SYNTHETIC VITAMIN K

When taking K_2 MK-7 supplements, patients report allergic reactions, anxiety, insomnia and heart palpitations, which were resolve when they stop taking it.

"I had to quit taking the K_2 MK-7. It was causing extreme arrhythmia."

"We tried three different brands of synthetic K_2: two different MK-7s supplements and one synthetic MK-4. My wife had the same reaction to all of them, a bad skin rash, severe anxiety and heart pounding. We know it was the supplement because she didn't change anything else."

These experiences make it very clear: we need to get our vitamin K_2 from food!

How Impersonal Vaccine Laws Play Out in Real Life: New York's Repeal of the Religious Exemption

By Joyce Campbell

As a chapter leader for the Weston A. Price Foundation in central New York State, I field a lot of phone calls. Most of them fall into one of three categories: "Where can I find raw milk?"; "Where can I buy Wise Traditions foods?"; and "Do you have a group that meets?" But one phone call in late August 2019 was different, and my first reaction was a slight sinking sensation. When a Mennonite-inflected voice asked, "What can we do to protect our school children from the new vaccination law?", I didn't have a ready-made answer.

I was well aware of the egregious new law, which ended the vaccine religious exemption for children in all public, private and parochial schools at all levels—from day care through secondary school. The law required all New York school children not already vaccinated to begin receiving all required vaccinations by the beginning of the 2019 school year and to complete them by the end of the school year.[1] Medical exemptions, while still legal, were already notoriously difficult to obtain even before the law's passage.

Personally, I found the law outrageous on many levels—raising concerns about health, personal and parental autonomy, and religious freedom—but it was now the law. What was I going to say to my caller, a man I'll call "Amos Weaver"? I said the only thing I could, which was that I had no answers for him but would do whatever I could to help him find a way forward. And thus began a most interesting journey.

Although it might seem like a straightforward decision—vaccinate or don't vaccinate—my conversations with Mr. Weaver soon began to reveal layers of complexity in the situation, and I became fascinated by the interlocking issues involved. Whereas state government is large and the across-the-board vaccine law it is imposing is impersonal, Mr. Weaver's Mennonite community is small and makes decisions following thoughtful discussion within the group. Let's look at three issues raised by this law through the lens of this small Mennonite community.

MENNONITE SCHOOLS AND EDUCATION

Amish and Mennonite schools are vastly different from the schools most Americans are familiar with. Rural Mennonite schools are typically one-room structures. The school for which Mr. Weaver serves as a school board member has twenty-five students of various grade levels. There are no laptops or screens in these schools, but there is solid education in the basics, such as reading, writing and arithmetic. The education is primarily focused on the practical skills and knowledge that most of the students will need when they engage in future activities such as farming and small business.

Because Mennonite families are frequently large, the students in one school may be drawn from just four or five families. Schools are often located on back roads or farm paths and can be hard to recognize and difficult for an outsider to find. Because of that, estimates of the number of Amish and Mennonite schools in New York State vary. Some Internet sources suggest that there are between twenty-five and twenty-nine Mennonite schools and forty-five Amish schools in the entire state,[2] but Mr. Weaver's (likely more realistic) estimate is a combined total of fifty Amish and Mennonite schools in central New York alone, with many more in other areas of the state.[3]

Crucially, Mennonite schools do not accept government funds. This means that they are currently not subject to the government's education regulations and oversight, such as those pertaining to curriculum requirements. As we will see, however, the vaccine law poses a potential threat to that independence.

What options are open to Mr. Weaver's school? One possibility would be simply to comply with the law and require vaccinations for all children who attend the school. However, the vaccine law has an interesting twist, putting school administrators in the position of ensuring compliance with the law in their schools. That would mean that Mr. Weaver and his colleagues would be in charge of making sure their neighbors and fellow church members vaccinate their children—even those who have moral or health-related objections to vaccines. As Mr. Weaver said, "We're not going to force anyone to do something they don't want to do."

A second option would be to homeschool the children, and at first glance, this seems to be the most logical choice. Because many Mennonite families farm or have small businesses close to home, teaching children at home could be quite feasible. But when I spoke with Mr. Weaver, he was very clear that having students attend the Mennonite schools is the preferred choice. When I asked why, the answer took me by surprise. "Because," he said, "being in school gives the children an opportunity to relate to a different authority."

I admitted to being mystified by that response and asked him to elaborate. He explained that in life, we all need to learn how to navigate various levels of authority. At home, children learn to relate to their parents' authority, but at school they have the opportunity to relate to a different authority. This learning process continues throughout life. Homeschooling would deprive students from engaging in this process at school. (I doubt that our public-school teachers and administrators have ever entertained such an idea, but perhaps they should!) Homeschooling would also limit social interaction and lead to greater government scrutiny of teachers and grades.

The vaccine law puts school administrators in the position of ensuring compliance with the law in their schools.

"Vaccines don't supply herd immunity," Mr. Weaver replied, "it's good real food and raw milk that build immunity."

The third option for dealing with the novel situation would be simply to continue as usual: hold classes at their school, accept children both vaccinated and unvaccinated and continue peacefully with the job at hand. This could be termed passive resistance, with which Mennonites have a long familiarity.

On the other hand, the options open to the state government are stark, particularly when confronted by schools that choose passive resistance. Possible scenarios include:

1. The state does nothing, which sets a precedent for other schools (not Mennonite or Amish).
2. The state imposes fines, which the school just does not pay.
3. The state tries to use force—such as forced school closure—which results in very embarrassing media coverage and could even lead to a court case that nullifies the law.

Compounding these problems for the state is some apparent quiet support by local communities for Mennonites in their area. In Yates County in the Finger Lakes region of New York, local government agencies such as the public health department and others have declined requests from local media outlets to contact Mennonite school administrators about this issue, citing concerns that the trust they have built slowly and carefully over the years with Mennonite communities could be jeopardized.[4] Local officials support the law and are working hard to vaccinate as many school children as they can, but some are uncertain about the outcome. Yates County public health deputy director Sara Christensen commented: "We're going to have more vaccinated kids." She continued, "But we also know there's going to be Mennonite children who aren't vaccinated but their families want them to go to school. At that point, it's up to the school director. Will they enforce compliance? I have to say I'm not sure."[4]

REAL HEALTH AND REAL IMMUNITY

What constitutes real health? Is it merely the absence of disease? Is it only the presence of a vaccine in the bloodstream? Or is it the presence of things of much greater value? Many individuals have found that key components of health include not just physical well-being but also faith and spiritual well-being, connection to a supportive community and mental stability.

Mr. Weaver's viewpoint regarding vaccines and health underwent a change about fifteen years ago when he and his wife did what most Mennonite families routinely did at the time: take their new baby to the doctor for the "baby shot" (vaccines). In this instance, the local doctor hesitated for a moment before asking the Weavers if they really wanted the shot, explaining that tissue from an aborted fetus was used in the preparation of some of the vaccines. The answer was a firm "no."

With very few exceptions, Mennonite children of Mr. Weaver's acquaintance, vaccinated or not, generally enjoy robust good health. They eat almost entirely foods from their own farms and gardens, and a majority of that food is organically grown. They drink raw milk. (Mr. Weaver is a dairy farmer of long experience, who had the privilege of working and learning alongside renowned dairy consultant Jerry Brunetti for several years.) Most Mennonite children experience plenty of time outdoors and have less exposure to artificial light. There are occasional cases of chickenpox, which cause no alarm; in fact, some parents try to expose their children so they will get the disease over with when young. Measles and whooping cough are very rare.

I asked, "What about herd immunity?"—the idea that to protect everyone, including the most vulnerable, one must vaccinate everyone who *can* be vaccinated. "Vaccines don't supply herd immunity," Mr. Weaver replied, "it's good real food and raw milk that build immunity. You're vaccinating yourself with raw milk!" He added that it's the same with plants. If a plant isn't thriving, you need to build the soil and supply the minerals the plant needs, rather than reach for soil-toxic fertilizers or insecticides.

Although seemingly separate, raw milk and vaccinations are in essence paired issues. Each provokes intense passions on both sides, and both reflect two very different world views. One viewpoint sees raw milk as dangerous and vaccines as the safe, scientific way to ensure immunity to disease. Concerns about ethical issues

or toxic ingredients in vaccines are viewed as secondary to the goal of minimizing the risk of certain diseases. Individuals who espouse the other point of view—the one articulated by Mr. Weaver—believe that drinking raw milk from healthy cows and eating nutrient-dense foods (including plenty of good animal fats) promotes health and strengthens natural immunity. As a result, there is less need for vaccines, which are not only accompanied by moral dilemmas and toxic ingredients but also may even alter the integrity of the human immune system.

THE VACCINE RELIGIOUS EXEMPTION

On May 15, 1972, in *Wisconsin v. Yoder*, the U.S. Supreme Court ruled seven to zero that Wisconsin's compulsory school attendance law was unconstitutional when applied to the Amish because it violated their rights under the First Amendment, which guarantees the free exercise of religion.[5] This ruling is extremely important to Plain (Amish and Mennonite) communities.

Thus, these communities regard New York's repeal of the religious exemption to vaccinations with real alarm, and it is an issue that raises strong concerns in Mr. Weaver's Mennonite community. These communities realize that the revocation of the religious exemption is just the beginning of a process that could lead to the state imposing other regulations on Amish and Mennonite schools.

Let us imagine for a moment a situation where the religious exemption has not been eliminated. Why would some Mennonite communities want to have a religious exemption to vaccinations for their children? What is the connection between vaccines and Mennonite religious belief? Although all Mennonites are Christian, their lifestyles and choices can be quite diverse.

At one end of the spectrum are very conservative groups who may appear similar to Old Order Amish, using horse and buggy for transportation, wearing distinctive clothing and rejecting most modern technology. At the other end are Mennonites whose clothing, transportation and use of technology are virtually indistinguishable from mainstream Protestant churchgoers. Even so, it is probably safe to say that most Mennonites harbor some questions, concerns or doubts about the ethics of vaccine use.

The Brotherhood Medical Advocate of the Mennonite Church Conference of Washington County, Maryland, and Franklin County, Pennsylvania, issued a helpful booklet in 2012 entitled "Vaccine Issues" to provide guidance and to provoke further discussion around the topic of ethical and non-ethical vaccines and their use. This sensitively-written document covered a wide range of issues—including vaccine production methods, the use of fetal tissue in the preparation of some vaccines, abortion and its connection to vaccine production, the ethics of vaccines for venereal disease, moral issues and Bible scripture, ethical vaccine products available for some diseases (but not for others), pros and cons of health considerations and more. It would be hard to read this document and *not* come away with the conclusion that Mennonite objections to compulsory vaccination of school children are real and deeply connected with their religious understanding and moral conviction. The last paragraph of "Vaccine Issues" also contained a prescient warning. Encouraging church members not to accept free vaccinations from the state or state-funded clinics, it concluded: "We want to accept personal responsibility for our own. We also want to avoid being entangled with the state should morally questionable vaccines be required."[6]

That situation has now come to pass.

WHAT'S AT STAKE

For each of these three issues—education, health and the religious exemption—we can see how imposing compulsory vaccination could precipitate changes in the traditional culture of Mennonite communities. Some of the changes would undoubtedly be subtle, but others perhaps would not be so subtle. Modification of the educational process, for example, might affect how children learn to relate to authority or could impose state regulations that infringe on school autonomy. Would there also be an impact on how community members view health, shifting from a perspective of compassion and common sense to blind adherence to corporate medical science? Legal challenges could bring their own set of impacts, including the imposi-

Imposing compulsory vaccination could precipitate changes in the traditional culture of Mennonite communities.

tion of fines, forced school closures or other effects that slowly but surely would begin to undermine a culture with traditions that span centuries. In short, there's a whole lot more to understand—and a lot more at stake—than just "vaccinate your kids."

Which of the three options did Amos Weaver's community choose? Perhaps Mr. Weaver put it best when he said they would "take it calm and steady, not get too excited." As of mid-January 2020, Mr. Weaver's school is in session and functioning normally. Mr. Weaver received some forms from state officials to fill out regarding each student's vaccination status. He filled those out to the best of his ability. For students who were not fully vaccinated, he reported them as "in progress." So far, he has heard nothing else from the state. He mentioned that a school further north is in a similar situation. In their case, local authorities have mentioned fines, but the school has remained firm about its decision not to require vaccinations. It seems that the local authorities have backed off—for now.

Joyce Campbell became a Weston A. Price Foundation member in the year 2000. At the time, she was a professor at a small rural university in Pennsylvania, where she and her husband enjoyed the presence of neighboring Mennonite farms providing raw milk and nutrient-dense foods from rich Pennsylvania soils. After moving to central New York State, they were happy to find a strong Amish and Mennonite farming presence again. Joyce is now a WAPF chapter leader and delights in helping others find the foods and principles that have benefited her in so many ways. Joyce would like to thank "Amos Weaver" (whose name she changed to protect his community) for sharing his perspective and experiences regarding education, vaccines, ethical concerns, natural healing and other relevant topics. His input was crucial to the creation of this article.

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Reading Between the Lines

By Merinda Teller

Alpha-Gal Syndrome and Ticks: A False Trail?

Individuals who tend to follow the advice of mainstream nutritionists likely find the on-again, off-again demonization of red meat rather confusing.[1] Weston A. Price Foundation members know better, recognizing that red meat—when sourced from healthy animals raised on healthy farms—is not only innocent of the many crimes of which it is often accused but is a nutrient-rich powerhouse.[2]

But what if you are a nutritionally informed red meat lover—enjoying animal fats, organs and bone broth as well as varied cuts of meat—and you suddenly cannot eat anything red-meat-related without developing hives, rashes, excruciating stomach pain or life-threatening anaphylaxis? In the past, allergy experts considered red meat allergy to be unusual,[3] but by 2012, a red meat allergy dubbed "alpha-gal syndrome" or simply "alpha-gal"—named after a carbohydrate molecule (galactose-alpha-1,3-galactose) present in non-primate mammalian meat and high-fat dairy products[4]—had made it into the pages of *Science* magazine, which colorfully described it as "a carnivore or BBQ lover's worst nightmare."[5]

Since then, the number of individuals allergic to red meat—both adults and children—has continued to climb.[6] In the U.S., one specialist sees five new patients a week and reports having treated nine hundred individuals over the past decade.[7] The same trend is apparent in numerous other countries—including various European nations, Japan, South Korea, Panama, Brazil, the Ivory Coast and South Africa[7]—with the result that a lot more carnivores are coming face to face with their "worst nightmare."

A MODERN MALADY

As medical historians remind us, allergies are a "modern malady."[8] Hay fever became a recognized condition only in 1870,[9] and the term "allergy" did not come along until 1906, following on the heels of French physiologist (and eugenicist) Charles Richet's 1902 invention of the term "anaphylaxis."[10]

Around that time, injected antitoxins and vaccines—new on the scene—were causing "new diseases and strange reactions that physicians could not explain."[10] Observing these "hypersensitivity reactions" that seemed to involve the "collision of antigen and antibody," particularly with repeated injections, Austrian pediatrician Clemens von Pirquet coined the term "serum sickness" and later elaborated the concept of allergy.[10]

Over subsequent decades, professionals continued to debate the meaning of various allergy terms and concepts, and even today, these are not necessarily agreed upon or used in a consistent and precise manner.[10] There *is* a firm consensus, however, that allergic conditions—and especially food allergies—exploded beginning around 1990.[9] The alarming increase in allergies over a relatively short period of time is, in most experts' view, a strong clue that environmental factors are a leading allergy trigger[11]—and researchers believe that this holds true for the rise in red meat allergy as well.[7]

Allergic conditions, and especially food allergies, exploded beginning around 1990.

A MEDICAL MYSTERY

In 2009, several simultaneous case reports appeared in the scientific literature describing the mysterious red meat allergy, with research teams from the U.S.,[12] Australia[13] and France[14] all converging on similar assertions about the presence of alpha-gal immunoglobulin E (IgE) antibodies in their patients. Researchers were somewhat puzzled by the new syndrome, however, because it "defie[d] some of the bedrock tenets of immunology"[7] and "challenge[d] the current paradigm for food allergy."[15] For example, while IgE antibodies typically are

The tick hypothesis rapidly became unquestioned orthodoxy, although researchers even now admit that they do not understand what mechanism links tick bites to an IgE response.

associated with *immediate* allergic reactions,[16] these investigators' patients were exhibiting *delayed* symptoms—usually several or more hours after ingestion of the offending food. Moreover, although the National Institute of Allergy and Infectious Diseases (NIAID) defines food allergies as "a specific immune response that occurs *reproducibly* on exposure to a given food" [*emphasis added*],[16] individuals with the new form of anaphylaxis were showing hit-or-miss reactions not just to meat but also to dairy and other mammalian-origin products.[6] Some individuals were able to get by with an "alpha-gal-reduced" diet that included small quantities of red meat.[17]

Ordinarily, food allergies "are overwhelmingly caused by proteins."[7] The allergy literature has not supported the notion that carbohydrate antigens "contribute significantly to the induction of allergic reactions,"[18] and yet alpha-gal is a carbohydrate. Conceding that "the IgE response to alpha-gal is different from typical IgE responses directed towards protein allergens,"[6] alpha-gal researchers have, therefore, hypothesized that alpha-gal somehow "changes the immune response. . . so that it is possible to have these allergic reactions."[19]

One reason that investigators chose to zero in on alpha-gal antibodies was that other research had previously described a severe and sometimes fatal hypersensitivity reaction in up to 20 percent of patients receiving a recombinant (genetically engineered) cancer drug called cetuximab, a drug produced in a mammalian (murine) cell culture in which alpha-gal is present.[20] The cetuximab research found that IgE antibodies specific for alpha-gal were present in most of the people who went on to react to the drug.[20]

The French authors writing in 2009 were not entirely convinced of the "clinical relevance" of the IgE antibodies against alpha-gal, describing their relevance as "unclear."[14] A new report in the *International Archives of Allergy and Immunology* suggests that for some, this is still the case; the article states that the diagnostic value of alpha-gal IgE antibodies "has yet to be clarified" and that a finding of positive antibodies generally "has limited predictive value for the characteristics or severity of this allergy."[21] Nonetheless, most researchers have embraced the notion that the presence of alpha-gal IgE is at the root of the cetuximab and red meat hypersensitivity reactions.[6]

ENTER THE TICK

Suspecting an environmental trigger, what alpha-gal researchers needed next was an explanation as to "what causes or leads to the development of the IgE response to α-gal" to begin with.[22] Ticks offered a ready scapegoat. Admittedly, ticks are a nuisance, and since the advent of Lyme disease in the 1970s, they are easy to cast in the role of villainous disease vector. The U.S. paper published in 2009 tentatively launched the tick hypothesis, mentioning that about 80 percent of the study cohort had reported a tick bite prior to onset of symptoms.[12] The Australian paper (also published in 2009) then took the tick hypothesis further, postulating "a novel association between tick bite reactions and red meat allergy" and hypothesizing that components of tick saliva were "cross-reactive with proteins found in various red meats."[13]

In 2015, two of the newly-made alpha-gal experts in the U.S. shored up the tick hypothesis by citing a tenuous evidentiary trail dating back to 1989, noting that professionals in Georgia had "collected ten cases of delayed reactions to mammalian meat and made a connection with the occurrence of tick bites several weeks or months prior to the first episode of hives or anaphylaxis."[6] The Georgia professionals reportedly presented their information to the state's Allergy Society as well as to the Centers for Disease Control and Prevention (CDC), but the tick-meat allergy "connection" remained unpublished and unheeded, sitting on the shelf for over two and a half decades before alpha-gal researchers apparently decided they could make use of it.

The tick hypothesis rapidly became unquestioned orthodoxy, although researchers even now admit that they do not understand what mechanism links tick bites to an IgE response. Nor do "all tick bite[s] per se or a tick bite from one particular species result in the problem."[6] A close reading of the 2009 Australian paper[13] underscores the wobbly underlying logic:

1. First, the Australian study participants'

history of tick bites in the preceding six months was far from unusual, given that the patients all resided in an area "endemically infested with several tick species" where they presumably encountered ticks on a regular basis. Moreover, "ticks have had millions of years to figure out how to bite *without* triggering their victims' immune response" [*emphasis added*], and tick bites were never previously associated with allergic reactions.[19] No one has offered a hypothesis to explain this "first example of a response to an ectoparasite giving rise to an important form of food allergy."[23] Clinicians shrug off this point, saying "no one knows why some people who are bitten are susceptible to developing IgE antibodies and why others are not."[17]

2. Second, of the twenty-five patients in the study, one participant reported a tick bite six months *after* the onset of meat allergy; in the 2009 study in the U.S., one in five participants reported no tick bite at all. In four reported cases of alpha-gal allergy in Switzerland, the researchers observed that only one out of four cases had a history of a tick bite and speculated that "other ways of sensitisation may also take place," particularly in childhood-onset patients.[24]
3. Third, the Australian researchers "inferred" that one species of tick was the likely culprit but admitted that they could not prove it because no laboratory method existed to check. In the U.S. and Europe, meanwhile, researchers blame entirely different tick species as the guilty parties.[6] U.S. epidemiologists also note that "large numbers" of meat allergies are occurring "well outside" the areas populated by the tick species in question.[5]
4. A fourth point is that the Australian researchers—and subsequent research efforts—have never been able to confirm that something in tick saliva is responsible for the development of alpha-gal antibodies. One of the world's leading alpha-gal experts states, "Tick saliva is brilliant stuff. It has loads of substances, but if you ask me which substances are critical, I don't know. It's something we are working on."[5]

THE ELEPHANT IN THE ROOM

Those who study the phenomenon of anaphylaxis are often frustrated by the sizeable proportion of cases that lack an identifiable cause, not least because it "makes standard allergen avoidance measures ineffectual."[25] In a 2013 survey of anaphylaxis prevalence in Americans, 39 percent of reported cases fell into the "idiopathic" (cause unknown) category.[26] With the emergence of alpha-gal, allergy experts have breathed a sigh of relief, seizing on tick bites as a convenient explanation for some of the cases "that would previously have been classified as 'idiopathic.'"[27]

But have researchers properly considered other explanations? The fact that alpha-gal reactions are not limited to red meat but also include allergic/anaphylactic reactions to products with mammalian-origin ingredients such as gelatin—including cosmetics, medications and vaccines—provides a major clue that something else may be going on.[28] A website for the allergy-afflicted is up-front in describing alpha-gal as a medication allergy as much as a red meat allergy and singles out gelatin-containing vaccines as a prominent suspect.[29] (The article by Kendall Nelson on chickenpox and shingles vaccines in this issue of *Wise Traditions* points out that gelatin is used as a stabilizer in eleven U.S. vaccines.)

That vaccines might bear significant responsibility for the alpha-gal phenomenon warrants consideration for a number of reasons. First, the explosion in food allergies that started around 1990 coincides temporally

THE CHALLENGING PATH OF AVOIDANCE

Worryingly for those diagnosed with alpha-gal, clear labeling is apparently "not a requirement of the FDA [Food and Drug Administration]," and manufacturers often have "no method of accurately determining whether or not an ingredient [is] sourced from mammalian products."[46] The list of gelatin-containing drugs and supplements is particularly long and includes the clotting drug heparin, pancreatic enzymes, thyroid supplements, intravenous fluids, suppositories and magnesium stearate, among many others.[7,30] Other products that alpha-gal sufferers may have to watch out for include toothpaste, lotions, sunscreens, antibiotics and whey protein powders.[47,48]

In a blog post about farm life, a woman diagnosed with alpha-gal poignantly describes the difficulty of not only having to give up mammalian meat but also dairy products:

> Yes, I cried. It's just that I already have a laundry list of food allergies. And, it was summer. And, it was grilling season. And, I do love a good steak. . . . My favorite food in the world is milk. I drink more milk than anyone I know. I love it. I crave it. My ancestry is Scotch/Irish. A lot of blood type O. Freedom fighters. Meat eaters. Milk drinkers. In particular I love goat milk. I have two angel goats I milk twice a day. . . . So, this was particularly hard for me.[49]

Both the measles-mumps-rubella (MMR) vaccine and the MMR-plus-varicella (MMRV) vaccine contain significant amounts of gelatin.

with the dramatic expansion of the childhood vaccine schedule as well as the more gradual but steady expansion of vaccine recommendations for adults. Second, gelatin, according to a recent review, "is the vaccine component responsible for most allergic reactions to vaccine, for both IgE and non IgE mediated reactions," even in individuals without a gelatin allergy.[30] Third, Japan has produced a wealth of documentation about the connection between gelatin-containing vaccines and anaphylactic reactions, in particular.[31] One Japanese study traced "a strong causal relationship between gelatin-containing DTaP [diphtheria, tetanus and pertussis] vaccination, anti-gelatin IgE production, and risk of anaphylaxis following subsequent immunization with live viral vaccines which contain a larger amount of gelatin."[32] Finally, well before alpha-gal came along, studies had linked bovine serum albumin (BSA) to meat allergies,[33,34] and BSA is widely used in the cell cultures that produce vaccines.[35] (Recall that the cetuximab drug that prompts alpha-gal-type anaphylaxis is likewise made in a non-primate mammalian culture, although murine rather than bovine or porcine.)

Both the measles-mumps-rubella (MMR) vaccine and the MMR-plus-varicella (MMRV) vaccine contain significant amounts of gelatin. Discussing the allergy potential of the MMR, a review article points out that "the vast majority of allergic reactions to MMR is observed in patients without egg allergy" and deduces that "it is probable that the real triggers are other vaccine's [*sic*] components, such as gelatin."[30] A blog about "living with alpha-gal" confirms this scenario, describing what happened to the alpha-gal-diagnosed writer following an MMR booster shot for college:

> I was given a leaflet prior to the vaccine that said "if you've ever had an allergic reaction to any product containing gelatin, do not take this vaccine.". . . I knew about alpha gal and gelatin and began the (absurd-sounding) explanation to the nurse that wanted to administer it. I refused the vaccine and checked with my doctor and

NATURAL REMEDIES FOR ALPHA-GAL?

Clinicians who see alpha-gal patients generally tell them simply to stay away from the offending foods and cross their fingers that they will become one of the rare individuals who eventually outgrows the condition. If that seems like a dismal prognosis, one can explore natural health websites and discussion boards to find and experiment with other suggestions. For food allergies in general, three natural remedies include fermented foods and acidophilus to balance the gut bacteria; daily apple cider vinegar (diluted in water) to restore pH levels (unless you are prone to histamine reactions); and food-grade hydrogen peroxide diluted in distilled water.[50] For alpha-gal specifically, people have shared the following testimonials online:

KOMBUCHA: In a *People's Pharmacy* post, someone with alpha-gal wrote: "About two years ago, I started making and drinking my own kombucha tea. About a year into this regimen, I accidentally ate a sausage ball. . . at a reception. Nothing happened. I experimented with small amounts of other meats and was able to eat it with no reaction. On a trip out West last winter, I wasn't able to continue my kombucha regimen (3x/week), and when I ate beef, I broke out in hives four or five hours later. Back home after resuming the kombucha, I was able to eat meat again. I realize that this is anecdotal evidence, but I wonder if there's a way that kombucha could acidify my system in a way that would allow easier digestion or affect the tick bite antibodies?"[40]

AURICULAR ACUPUNCTURE: Some acupuncture clinics offer a form of ear acupunture called Soliman Auricular Allergy Treatment (SAAT), which is said to help "reset" the immune response to the alpha-gal carbohydrate. The process involves the insertion of tiny needles in the ear (one per allergen), which are left for three weeks (covered by medical adhesive tape).

OXYGEN AND OTHER APPROACHES: A health coach and wellness therapist reported tackling her alpha-gal through "herbal therapy, nutritional/mineral medicine, natural cellular therapies, massage therapy, chiropractic, and biofeedback. . . . I began to consider oxygen because of the research into nutritional anemia. . . . [The chiropractor] suggested I try a new therapy, Hyperbaric. I decided that was an answer to prayer and began the therapy the following week. I have gone every day for almost 40 sessions (5 days a week). I have had some amazing, noticeable changes in my body, sleep, energy, and hormones."[51]

allergist. Both agreed that there [was] too little gelatin in the shot to cause a reaction. Perhaps because of direct injection into tissue, I had my fastest reaction ever—1 hour after receiving the vaccine the stomach cramping began, followed by the itching, then full-blown hives. Because the reaction was so fast, I went to the ER because I was concerned about how it would progress. Perhaps the most frustrating part of this was that my Dr. insisted I wait for 30 minutes after getting the vaccine to be sure I wouldn't react. I tried to explain that if I was going to have a reaction, it wouldn't be in 30 minutes. The misunderstanding of this allergy, even in the medical community, can be very frustrating.[36]

Around 2012, alpha-gal experts belatedly started connecting some of these dots, exploring the relationship between red meat allergy, sensitization to gelatin, alpha-gal and vaccines.[37] In studies published in 2012 and 2017, researchers acknowledged the ubiquitous presence of gelatin and mammalian-derived products such as BSA in vaccines and proposed that "alpha-gal allergic patients might react to these vaccines," particularly because of their parenteral (injected or intravenous) mode of delivery.[38] Reinforcing this point, they stated, "Most reports of serious allergic reactions to gelatin implicate parenteral exposure, either to gelatin colloids used as plasma expanders [a form of intravenous therapy] or to gelatin-containing vaccines."[37]

In the 2017 study, the researchers described a patient who developed anaphylaxis after receiving a zoster (shingles) vaccine containing both porcine gelatin and BSA, and they also identified fourteen cases "of adverse reaction to zoster vaccine consistent with anaphylaxis" in the Vaccine Adverse Event Reporting System (VAERS), five of which had a "known associated beef, pork, gelatin, or alpha-gal allergy."[38] Unfortunately, as some vaccine researchers have noted, "The true rate of allergic reactions [to vaccines] is unknown because most reactions are not reported."[39]

It is interesting to find that in the comments section of a 2015 *People's Pharmacy* show about alpha-gal allergy, vaccines come up repeatedly in the online discussion:

- "My doctor says I wasn't bit by a tick. About 2 months before my first severe [alpha-gal] reaction I'd received a vaccine which I had a bad reaction from."
- "I have had the alpha gal syndrome for almost two years. I was undiagnosed for 8 months and almost died from a flu shot."
- "My husband has a reaction to the flu vaccine. His arm sweats and gets hot for about 4 days and he can hardly lift it. Also we have found out that he does have the alpha gal problem as well."
- "My biggest fear with this allergy is the lack of knowledge by care providers that any medication with mammalian meat products should not be used to treat alpha gals. For example, gelatin is used in many medicines as a heat stabilizer. I wonder what other mammalian meat products lurk in our pharmaceuticals. I have a severe reaction to the flu vaccine and have had no acknowledgement by any medical practitioner or pharmacist that my symptoms could be related to this allergy."[40]

COMING FULL CIRCLE

In the modern era, allergies are a boon for the pharmaceutical industry—the "engine of a multinational, multimillion pound [or dollar] business in pharmacotherapy."[41] On the other side of the health care aisle, however, they are a major cause of workplace absenteeism[41] and have significant quality-of-life implications, as well as sometimes fatal consequences.

With the steady increase in the number of

DOCUMENTING HOPE PROJECT SEEKS PARTICIPATION BY WAPF PARENTS

Epidemic Answers has an important initiative called the Documenting Hope Project (@documentinghope). Part of the project is a study called the Children's Health Inventory for Resilience and Prevention Study a.k.a. the "CHIRP Study."

The study is an IRB-approved private online survey that asks what children in the U.S. are eating, their chemical exposures at home and school, EMF exposures, industrial sites nearby, their medical history, consumption of medical products, preconception and prenatal health of parents, family medical history, etc.

Epidemic Answers is asking U.S. parents of children 1-15 years old to volunteer a few hours of their time (between 3 and 6 hours) to protect the health of current and future generations of children. The survey can be saved and completed at your own pace in the comfort of your home.

The organizers are especially interested in participation by WAPF parents. The survey includes questions about consumption of raw milk, cod liver oil, fermented foods, bone broth, etc.

Parent participants will receive a free comprehensive health report on their child upon completion, as well as discounts to various natural and healthy-living focused companies.

Learn more and volunteer today: DocumentingHope.com/CHIRP-Study

vaccines recommended for both children and adults—and the evidence that injection is a particularly potent mode of allergic sensitization—it is vital to pay more attention to the "possible role of these injections in the increase in allergic disease or in food allergy in particular."[9] Heather Fraser, author of *The Peanut Allergy Epidemic*, describes how Charles Richet came to view anaphylaxis as the result of injection—"a response to proteins that had evaded modification by the digestive system."[42] According to Fraser, Richet saw anaphylaxis as an inevitable outcome of vaccination. The telling origins of "serum sickness"—acknowledged to this day as "a type of delayed allergic response"[43] resulting from the injection of foreign proteins in immune-modulating agents, anti-venoms or vaccines[44,45]—and serum sickness's contributions to the concept of "allergy" likewise suggest that alpha-gal may simply be a new name for a longstanding problem.

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The Wise Traditions Pantry

LEAKY GUT, AUTOIMMUNITY AND CHRONIC DISEASE

By Ashley Turner, BCDHH, CNHP, CHS

Hippocrates long ago postulated that all disease begins in the gut. Where autoimmune disease is concerned, modern research certainly supports this hypothesis. The "gut" is an all-encompassing term used to describe the gastrointestinal (GI) tract—the long tube that includes the mouth, esophagus, stomach, small intestine, large intestine and the various organisms inhabiting the GI tract. The gut holds about 80 percent of the body's immune system.

An intact gut barrier is foundational for human health. The gut barrier between the GI tract and our internal environment protects our bodies by allowing nutrients to pass through, while blocking foreign invaders. When this barrier becomes compromised, it is called intestinal hyperpermeability or "leaky gut," meaning that undigested food particles, toxins and pathogens can freely pass through. Over time, as these continue to cross the gut barrier, the body enters into a state of chronic inflammation. Meanwhile, the immune system starts producing antibodies against the foreign invaders.

Autoimmunity arises when the body starts attacking its own tissue, no longer able to distinguish between itself and external threats. Which autoimmune condition ultimately manifests itself is determined by which tissues are being attacked. For example, when the body has an immune response against the thyroid tissue, the result could be Hashimoto's thyroiditis or Grave's disease. If the gut remains leaky, an individual may develop more autoimmunity as this process perpetuates itself over time.

LEAKY GUT

Leaky gut is caused by a variety of lifestyle factors, such as a nutrient-poor and inflammatory diet, chronic stress, lack of good quality sleep or environmental toxins. Medications such as nonsteroidal anti-inflammatory drugs (NSAIDs) and birth control pills can also contribute to a leaky gut. Additional factors—pathogens, infections, nutrition and more—can heighten the immune response.

Many of these factors are within our power to change and can enhance the body's ability to heal. One of the first steps in healing is to remove immune triggers from the diet, sometimes for a season and sometimes indefinitely. The aim is to take the burden off of the body so that it can heal.

An intact gut barrier is foundational for human health.

THE AUTOIMMUNE PROTOCOL

The autoimmune protocol is an elimination diet that removes foods known to drive inflammation and its symptoms, followed by a careful reintroduction period to rule out reactivity. Removing potentially problematic foods can decrease inflammation, rebalance the gut flora, soothe the gut lining, regulate blood sugar, modulate the immune system, resolve nutrient deficiencies and promote overall healing.

The duration of the elimination stage depends on the individual's health status. Typically, I recommend at least a month or two, but some may find it necessary to extend the period of time based on their symptoms and the degree of their health concerns. What is most important is to avoid the restricted foods *completely* during this phase of elimination. However, there is no limit on calories or frequency of meals. After the initial elimination phase, the next step is to reintroduce the foods one at a time to evaluate the body's response. Working with a functional medicine practitioner or holistic doctor during both the elimination and reintroduction stages can be very helpful.

The autoimmune protocol represents a phenomenal step toward pursuing health and healing. The elimination diet allows meats and seafood; animal fats and other healthy fats such as olive oil, coconut oil, avocado oil and palm oil; vegetables; edible fungi and mushrooms;

It is very important to commit to the elimination diet completely to avoid a recurrence in symptoms.

fermented foods and beverages (excluding dairy kefir and yogurt until the reintroduction stage); herbs and most spices (see spices on "Foods to Avoid" list); and pantry staples such as vinegar, gelatin, fish sauce, olives and capers, coconut products and various alternative flours and starches (arrowroot, cassava, coconut, green banana, tapioca, tigernut).

Although the autoimmune protocol allows fruits and sweeteners, these should be kept to a minimum to maintain stable blood sugar levels. Even wholesome sweeteners and baked goods can have an impact on blood glucose levels. Reserve these items for special occasions. Allowable sweeteners include coconut sugar and nectar, maple sugar and syrup, monk fruit sweetener, molasses and raw honey.

It is important to choose high-quality foods that are organic, responsibly produced and locally obtained, if possible. This food is medicine, after all. The effort that goes into planning food shopping and meals, procuring high-quality foods and working to prepare them properly represents an important investment that will reap significant dividends (see recipe sidebars).

FOODS TO AVOID

The "foods to avoid" are to be *strictly* avoided. Eating an immune-triggering food will likely incite an immune response and create symptoms—a response that could last anywhere from days to weeks or even months in some people. It is very important to commit to the elimination diet completely to avoid a recurrence in symptoms. Read on to understand why these food groups need to be avoided.

Gluten, grains and legumes: Gluten is found in wheat, einkorn, spelt, barley, rye, kamut, triticale and sometimes oats. It is also an additive in many processed foods, supplements and medications. Gluten triggers the release of a protein called zonulin in the small intestine. When this happens, it signals the tight junctions between the cells that line the gut to open—and stay open—perpetuating leaky gut.

Unfortunately, many non-gluten grains (including amaranth, corn, millet, oats, sorghum and rice) are "cross-reactive" with gluten, which can cause the body to mount an immune response as though gluten was consumed. This occurs because the immune system tags gluten as a foreign invader. When the body sees similar proteins in other cross-reactive foods, it initiates the same immune response.

Grains and legumes also contain other harmful compounds that protect plants but function as "antinutrients" in humans. These compounds include lectins (difficult-to-digest proteins from plant and animal sources that can damage the gut lining) and phytic acid (a compound that binds to minerals in the body and inhibits nutrient absorption). Because grains

FOODS TO AVOID

GLUTEN AND GRAINS: Amaranth, barley, buckwheat, bulgur, corn, durum, einkorn, kamut, millet, oats, quinoa, rice, rye, sorghum, semolina, spelt, teff, triticale, wheat

DAIRY PRODUCTS: Butter, cheese, cream, ghee, milk, yogurt

LEGUMES: Black beans, chickpeas, fava beans, kidney beans, lentils, lima beans, mung beans, navy beans, peas, peanuts, soybeans

NIGHTSHADES: Eggplant, goji berries, ground cherries (not regular cherries), all peppers (spicy peppers, bell peppers, etc.), potatoes, all red spices, tomatoes, tomatillo

NUTS AND SEEDS: Almonds, Brazil nuts, canola, cashews, chia seeds, coffee, cocoa, flax, hazelnuts, hemp, pecans, pine nuts, pistachios, pumpkin, safflower, sesame, sunflower, walnuts

SPICES: Allspice, anise, black pepper, caraway, celery seed, cumin, fennel seed, mustard, nutmeg, poppy seeds

OTHER: Alcoholic beverages, artificial sweeteners, food colorings, preservatives and other additives, NSAIDs

and legumes can be difficult to digest, they can also contribute to imbalances in gut microbes, which is another reason to avoid them.

Dairy products: Proteins found in dairy products can initiate a problematic immune response in some individuals, with casein sensitivity being the most common. Casein has a similar molecular structure to gluten, making it potentially cross-reactive with gluten. An estimated 50 percent of people with gluten sensitivity are also sensitive to dairy. Dairy products must be restricted for at least a time on this protocol, but wholesome dairy products can later be reintroduced.

Weston A. Price Foundation members know that conventional dairy and grass-fed dairy from heritage breeds of cattle are two entirely different products. In addition to the obvious problems of hormones, antibiotics and GMO feed, most conventional dairies use Holstein cows, which predominantly contain a protein (A1 beta-casein) that is not well tolerated by most people and is linked to GI distress, cardiovascular disease, type 1 diabetes, sudden infant death syndrome and neurological disorders such as autism. Milk from heritage breeds such as Jersey and Guernsey cows and goat's milk predominantly contain A2 beta-casein, which is usually better handled.

Poor quality dairy can be a compromising factor in chronic illness and autoimmune disease, but there are wonderful benefits to be gained from full-fat, grass-fed, raw dairy, including beneficial bacteria, enzymes, immunoglobulins, vitamins and minerals—as well as fat-soluble vitamins and health-promoting conjugated linoleic acid. Cultured or fermented dairy products such as yogurt and kefir augment the nutrition by adding beneficial probiotics. Ghee can be an important food to incorporate into the diet after symptoms have calmed down; sensitive individuals often find that they can tolerate cultured ghee.

Eggs: Eggs, and especially egg whites, are a common allergen and sensitivity. Although it is mostly the lysozyme in egg whites that causes reactions to eggs, I recommend avoiding even the yolks for a time. Once symptoms have improved, egg yolks from pastured hens are a valuable source of fat-soluble vitamins, essential fatty acids, choline and biotin.

Nuts and seeds: Like grains, nuts and seeds have high levels of lectins and contain phytic acid. Lectins should be avoided on any healing protocol. Often, however, it is possible to safely reintroduce nuts and seeds that have been soaked, sprouted or fermented; these processes neutralize the lectins, enzyme inhibitors and phytic acid.

Nightshades: Common nightshades include eggplant, tomatos, peppers and potatoes. These foods contain potentially problematic substances called glycoalkaloids, and some, including tomatoes, have lectins as well. These compounds can promote inflammation and disrupt the gut mucosal barrier.

Food additives: Gums, food dyes, sulfites and other additives do not promote wellness. Although these ingredients are most often found in processed foods, they can pop up in some packaged foods billed as healthy. Be sure to check product labels!

SUGGESTIONS FOR REINTRODUCING FOODS

The autoimmune protocol is a nutrient-dense elimination diet that gives the body a chance to heal. After a season of healing, foods can be reintroduced in four phases (see sidebar). Take notes as you reintroduce different foods, writing down symptoms and responses. This will help you make appropriate decisions about whether you should be consuming that food. Only introduce one new food at a time. With each food, allow at least five days for reintroduction. If you notice any change (body or brain), consider pulling that food back out.

The foods listed in Phase Four are the most difficult for the body to handle, so extra caution is needed. Note, too, that not everyone with a history of chronic illness or an autoimmune condition can successfully reintroduce all of the foods listed. Everyone's healing journey is different.

When reintroducing nuts, seeds and gluten-free grains as well as cultured and raw grass-fed dairy, it is important to look to how our ancestors prepared these foods to make them more nutritious and easier to digest.

FOUR PHASES OF REINTRODUCTION

PHASE ONE: Pastured egg yolks; seed and fruit spices; oils from nuts and seeds; grass-fed ghee.

PHASE TWO: Pastured egg whites; sprouted seeds, seed butters, tahini and seed flours; sprouted nuts, nut butters and nut flours; grass-fed butter.

PHASE THREE: Eggplant and sweet peppers; cultured grass-fed dairy (such as yogurt or kefir); raw, grass-fed cream.

PHASE FOUR: Raw, whole milk from grass-fed animals; grass-fed cheese; hot peppers, tomatoes, potatoes and nightshade spices; white rice; soaked, sprouted or fermented legumes; soaked, sprouted or fermented gluten-free grains.

The work of Dr. Weston A. Price and the Weston A. Price Foundation are important resources.

Although I recommend working with a holistic doctor or functional medicine practitioner to achieve the best results and to perform desired testing, no one is more attuned to your body than you. Take note of how your body responds to each new food added. If you have a known sensitivity or history of severe reactions to a certain food, exercise caution and consult with your practitioner before adding it.

In addition to dietary changes, I recommend other health-promoting lifestyle strategies, such as reducing one's toxic load, managing stress, using healing therapies, exercising, improving sleep hygiene and cultivating meaningful relationships. These two strategies—eating a nutrient-dense healing diet and cultivating healthy lifestyle habits—can promote healing and wellness not just in those with autoimmune conditions but in many other individuals.

Ashley Turner is a board-certified doctor of holistic health and a traditionally trained naturopath. She is also a homesteader and homeschooling mother of three girls. She practices alongside her husband at Restorative Chiropractic & Functional Wellness Center in SE Pennsylvania. In addition to helping clients achieve their health goals, Ashley teaches classes on natural health and traditional food. This article is excerpted from her book, Restorative Kitchen: A Cookbook and Lifestyle Guide for Reversing Chronic Disease and Autoimmunity. *She is also the author of* Cultivating the Restorative Table.

BEEF AND BEET SOUP

When my husband became a certified GAPS (Gut and Psychology Syndrome) practitioner, they served a rendition of this gut-healing soup. He came home and asked me to recreate it. It has been a staple ever since. Serves 6-8.

Ingredients:

1 bone-in beef roast (2-3 pounds)
4 tablespoons coconut oil or animal fat
2 quarts filtered water
4 beets (including greens), peeled and diced
1 onion, diced
3 carrots, diced
3 stalks celery, thinly sliced
8 ounces mushrooms, halved and sliced
2 cups cabbage, shredded
4 cloves garlic, minced
1 tablespoon red wine vinegar
Fresh herbs (such as parsley, thyme or rosemary) and 1 bay leaf
Additional bone broth, if needed
Salt

Instructions:

1. In the bottom of a large Dutch oven, heat 2 tablespoons of cooking fat over medium-high heat. Brown the roast for about 2 minutes on each side, making sure to salt each side before searing.
2. Add water until meat is covered by about 1-2 inches; use more if needed. Bring to a boil and then reduce the heat to low. Cover and simmer until meat is cooked, tender and falling off the bone. This will take an hour or two.
3. Strain the broth and reserve the broth and meat.
4. In the bottom of a large Dutch oven, heat 2 more tablespoons of cooking fat over medium-high heat. Add all vegetables, except for the beet greens, along with a few generous pinches of salt and sauté until soft and starting to caramelize, about 10 minutes.
5. Add garlic and stir until fragrant, about a minute.
6. Add red wine vinegar and scrape up brown bits from the pan.
7. Pour in reserved broth, along with additional broth or water, if needed. Bring to a boil and then reduce the heat to low. Cover and simmer for 10 minutes.
8. Add beet greens and maintain a simmer for about 10-15 minutes, covered.
9. Taste and adjust salt, if necessary.
10. Add reserved beef and cook for about a minute until it is heated through.
11. Ladle into bowls and serve with coconut milk yogurt or coconut cream and fresh herbs.

DINNER ROLLS

Traditional bread is probably the food most craved by people on an elimination diet. Baking without grains or eggs is a difficult task, so these dinner rolls were in the works for a long time. Be sure to use green plantains, as their flavor is milder and the starch content is higher. I sometimes add a few cloves of minced garlic to the dough for additional flavor. Because butter should be avoided on the elimination diet, I serve these with a small dish of quality extra-virgin olive oil, fresh herbs and salt. Our family loves lingering at the table and dipping our warm rolls in the salty olive oil. Makes 20 rolls.

Ingredients:

2 green plantains, peeled and roughly chopped (about 2 cups)
2 cups cassava flour
1/2 cup arrowroot powder
1 tablespoon coconut flour
1 teaspoon salt
1 1/2 teaspoons cream of tartar
1/2 teaspoon baking soda
2/3 cup coconut oil or animal fat, melted
1 1/2 cups coconut milk

Instructions:

1. Preheat oven to 400°F.
2. Add chopped plantains to a food processor and process for 20 seconds, scraping the sides halfway through.
3. Add cassava flour, arrowroot, coconut flour, salt, cream of tartar and baking soda and process for another 15 seconds.
4. Add the coconut oil (or animal fat) and coconut milk and process for another 45 seconds, scraping the sides as needed.
5. Divide the dough into 20 equal portions. To do this, cut the dough into 4 equal portions, then divide each of those portions of dough into 5 equal pieces.
6. Roll the dough pieces into balls. Arrange on a parchment-lined baking sheet and score the rolls with a knife.
7. Bake for 20-22 minutes.
8. Store in an airtight container in the refrigerator and reheat before serving.

RESTORATIVE KRAUT

Our family had been eating traditional sauerkraut for many years when I decided to brighten up our typical ferment with flavors our family adores and veggies that happened to be growing in our garden at the time. Beets contribute valuable nutrients helpful for methylation and gentle liver detoxification. I've also added fresh garlic, turmeric and ginger for their anti-inflammatory and medicinal properties. This kraut is truly nourishing and restorative to the body while providing a substantial probiotic boost. The recipe below makes about two quarts, but you can scale the recipe up or down according to your needs.

Ingredients:

1 medium head green cabbage
1 medium head purple cabbage
1 sweet onion, peeled
1 beet, peeled
2 cloves garlic, minced
1 inch ginger, peeled and finely grated
1 inch turmeric root, peeled and finely grated (optional)
1 tablespoon salt
1/4 cup starter liquid from previous batch (or an additional tablespoon of salt)

RESTORATIVE KRAUT (Continued)

Instructions:

1. Rinse the cabbages and set aside a couple of outer leaves.
2. Thinly slice the cabbages, beet and onion by hand or using a food processor. Combine all ingredients in a large mixing bowl.
3. Pound the kraut with a sauerkraut stomper or tamp with the back of a wooden spoon to release the juices. This can also be done by "kneading" the vegetables with your hands. If you are short on time, place a clean tea towel over the bowl and let sit at room temperature for thirty to sixty minutes to allow the salt to pull the juices out of the vegetables.
4. Transfer to quart jars, pressing firmly so that the liquid rises to the top. Leave about an inch of headspace. Press a cabbage leaf on top of the kraut, tucking it around the mixture and keeping it submerged. If extra liquid is needed, top with brine (1 tablespoon of salt per pint of water). Cover tightly with a lid or airlock.
5. Leave at room temperature for five to seven days with a plate or shallow dish underneath to catch any liquid that escapes. If the lid bulges during the fermentation process, "burp" the jar by loosening the lid slightly and retightening. Store in the refrigerator.

FRUIT TART

This recipe features a soft, cookie-like, press-in crust layered with bright, velvety coconut cream, topped with vibrant low-glycemic berries. Serves 8.

Crust:

1 1/2 cups pitted dates
5 tablespoons coconut oil, plus more for greasing the dish
3/4 cup arrowroot powder
3 tablespoons coconut flour
1/4 cup cassava flour
1/4 teaspoon salt
1/2 teaspoon baking soda
1 1/2 teaspoons vanilla extract
3 tablespoons applesauce

Filling:

2 cups coconut cream
1/4 cup coconut butter
1/4 cup raw honey
1 teaspoon lemon juice

Topping:

1 1/2 cups fresh fruit (blueberries, blackberries, raspberries or sliced strawberries) and fresh mint or basil for garnish

Instructions:

1. Preheat the oven to 350°F. Lightly grease a tart pan or pie plate with coconut oil and set aside.
2. Add the dates to a food processor and blend until they are broken down, about a minute.
3. Add the coconut oil and process for another 30 seconds.
4. Add the remaining crust ingredients, process until fully incorporated and a dough forms, about 1-2 minutes.
5. Using your fingertips and the palms of your hands, press the dough evenly into the tart pan or pie dish.
6. Bake for 15-20 minutes. Remove from oven and set aside to cool.
7. To prepare the filling, be sure you previously separate the coconut cream from the liquid. (To do this, put a can, carton or homemade full-fat coconut milk into the refrigerator for 8-12 hours. The cream will separate into a thick layer. Remove from the refrigerator, being careful not to disturb the fat separation. Scoop the coconut cream from the coconut water.)
8. In a small saucepan, melt coconut butter over medium heat.
9. Meanwhile, in a medium-sized mixing bowl, whip the coconut cream with a whisk or hand-mixer. Add sweetener and lemon juice. Gently fold in the melted coconut butter.
10. Pour coconut cream mixture into the cooled crust. Transfer to the refrigerator to allow the filling to set up.
11. Top with fruit and garnish with fresh mint or basil.

Homeopathy Journal

HOMEOPATHY AND SUGAR CRAVINGS

By Anke Zimmermann, BSc, FCAH

In his 2017 book, *Homo Deus: A History of Tomorrow*, Yuval Noah Harari writes: "In 2012 about 56 million people died throughout the world; 620,000 of them died due to human violence (war killed 120,000 people, and crime killed another 500,000). In contrast, 800,000 committed suicide, and 1.5 million died of diabetes. Sugar is now more dangerous than gunpowder."[1]

Sugar is as addictive as cocaine and no less harmful to our health. A spoonful of sugar may make the medicine go down—but it keeps us buying more of it! Is that why drug stores are invariably filled with several aisles of sugary treats?

We were born with a taste for the sweet stuff. Mother's milk is high in lactose, making it very sweet—much sweeter than most other mammalian milk. (Blame it on the mother, as always.) Sugar feels good because it trips dopamine sensors in the brain, creating a short but blissful euphoria.

SUGAR AND CHRONIC CONDITIONS

The average American now eats about one hundred sixty pounds of sugar every year, or slightly more than seven ounces a day. This compares to about ninety pounds of sugar per year around 1900 and about eighteen pounds of sugar annually around 1800.[2] If we didn't like sugar so much, it would not be everywhere—from candies, cookies and bread to ketchup, salad dressings and even hot dogs and bacon.

The result is an epidemic of obesity, cardiovascular disease and diabetes. Not only that, but sugar is also linked to many kinds of cancers. Cancer cells consume sugar at ten to twelve times the rate of normal cells, observable via PET scans. In fact, cancer cells consume so much sugar that researchers are targeting new therapies using sugar molecules for targeted delivery to cancer cells.[3]

As if diabetes and cancer were not bad enough, sugar can also contribute to depression.[4] Major depression is expected to become the leading cause of disability in high-income countries by 2030.[5] A study published in 2017 examining sugar consumption and mental health data from over twenty-three thousand participants concluded that its findings "were consistent with the hypothesis that high sugar intake plays a causal role in the risks of both incident and recurrent depression and common mental disorders."[6]

SUGAR CRAVINGS

A little sugar likely won't do much harm, but what if the cravings are out of control? Does homeopathy have anything to offer? Indeed! However, there is not just one magic remedy for candy lust because homeopathic remedies are always given for the whole person, rather than for particular symptoms or conditions. In fact, the *Complete Repertory 2016* (an enormous computer reference manual correlating symptoms to remedies) lists two hundred sixty-two remedies in the rubric "desires sweets."

Nonetheless, the combination of different symptoms can lead to the correct remedy, as in the "case of blue toes" that follows.

In this case, a pleasant man in his early sixties consulted me because two toes on his right foot were turning blue due to underlying diabetes. I felt quite concerned about this, especially because a friend of mine had just lost a toe to amputation, also as a complication of diabetes. I'm in Canada, and in Ontario alone over twenty thousand patients with diabetes and/or peripheral artery disease had a lower limb amputation between 2005-2015.[7] Nearly two-thirds of these were above-ankle amputations. In the U.S., approximately two hundred thousand

In the U.S., approximately two hundred thousand non-traumatic amputations each year are attributable to diabetes.

non-traumatic amputations each year are attributable to diabetes.[8]

My client described a number of different health issues, all on his right side. He also had a history of digestive problems and badly cracked heels on his feet, which did not respond to creams. I noticed that he lifted his eyebrows a lot when speaking and had prominent vertical wrinkles on his forehead. Recognizing the remedy based on those symptoms alone, I asked him how much he liked sweets. "I have a terrible craving for sweets, especially pastries! Always had!"

Right-sided complaints, digestive problems, cracked heels, vertical forehead wrinkles and a sweet tooth are the constellation for *Lycopodium clavatum*, a remedy made from a humble moss and one of our most sugar-loving remedies in homeopathy. After giving my client an immediate dose of the remedy (in the 200C potency) in my office, he reported two days later that his toes were already much less blue. Why this remedy fits this constellation of symptoms, nobody knows. It is one of nature's great mysteries and the reason homeopaths are so fascinated with their work!

Could this remedy have helped my client in earlier years not to crave sugar as much and perhaps have prevented his diabetes? Potentially yes.

VACCINES AND DIABETES

Another client, a former nurse in her forties, described serious sugar cravings as well as longstanding blood-sugar control problems. She was on a very strict diet and battled her cravings steadfastly but found it hard to resist the cookies at her favorite bakery. Due to her profession, she had been vaccinated repeatedly against hepatitis B. I wondered whether there was a connection between her prediabetic state and the vaccine, as I had read about several studies linking early-onset diabetes in children to hepatitis B vaccination.[9,10,11]

Because my client was very healthy otherwise, we decided on a course of hepatitis B vaccine detox. Sure enough, her blood sugar levels started to stabilize and her A1C levels (the blood test used to monitor prediabetes and diabetes control) dropped a whole point over the next three months. At a check-in, she told me, "And the other day I walked past the bakery and didn't even think about the cookies."

This was definitely interesting, particularly in light of research published in 2018 that unearthed a "newish" type of diabetes called "latent autoimmune diabetes in adults" (LADA).[12] Individuals with LADA show a mixed pattern of insulin and non-insulin dependency and a "more heterogeneous" and less intensive autoimmune process compared to classical type 1 diabetes.[12]

Being aware of the correlation between vaccination and autoimmune disorders,[13] I wondered whether the dramatic increase in sugar consumption as well as diabetes was in some way related to vaccines. Sure enough, other studies emerged that link vaccines to diabetes[14] as well as autism.[15] In fact, it appears that autism may be positively associated with diabetes, most likely via autoimmune phenomena.[15] Obesity

A FEW COMMON REMEDIES TO CONSIDER

- *Argentum nitricum*: Extroverted and cheerful; possibly impulsive personalities; emotional with fears of heights and enclosed spaces; anticipatory anxiety. Can have intense cravings for sweets, even straight sugar, as well as salt.
- *Calcarea carbonica*: Can be plump and tend to obesity with a round, soft face; often perspires on the head, especially in children. Cravings are for pastries and ice cream as well as eggs, bread, milk and cheese.
- *Lycopodium clavatum*: Intense sugar cravings with many digestive issues in someone with right-sided complaints. Often there is a tendency to low self-esteem and anticipatory anxiety, but most *Lycopodium* types are very congenial. Cracked heels and vertical forehead wrinkles in combination with gastrointestinal issues and cravings for sweets can be a very clear indicator for this remedy.
- *Phosphorous*: Open, bright, excitable, sympathetic, anxious individuals who like company. Fears of being alone and of the dark. Worse from fasting. Craves chocolate, ice cream and cold foods and drinks; loves pop, also wine, as well as spicy and salty foods.
- *Saccharum officinale*: Children and adults who feel aggressive after eating sugar. May want to put everything in the mouth—such as sucking fingers, smoking or candies—or nothing in the mouth. Touching things excessively or not touching at all. May be indicated in those who have lost or believe they have lost or are undeserving of their mother's love.
- *Sulphur*: Philosophical and independent types who tend to be warm-blooded and often love sweets such as ice cream and chocolate as well as fatty and spicy foods and often beer. May have an aversion to eggs.

may also be linked to vaccines via similar inflammatory and autoimmune mechanisms.[14]

THE MAGIC SUGAR

You might wonder whether, with all the problems caused by sugar, there is a "sugar" homeopathic remedy. After all, like cures like. Indeed, we have a remedy made from cane sugar, *Saccharum officinale*. The Dutch physician and homeopath Dr. Tinus Smits—who created a system of healing universal archetypes with homeopathy which he called "Inspiring Homeopathy"—brilliantly explored the *Saccharum officinale* remedy.[16,17]

Saccharum, according to Dr. Smits, corresponds to an archetype he called "lack of self-love," which, in his opinion, leads to the fear of not deserving the mother's love and the fear of being abandoned by her.[16] Back to the mother again, you ask? One thing is certain: Many of my clients over the years have felt undeserving of love—whether their mother's, their partner's or even their children's love—and whether real or perceived. Dr. Smits felt that we could be free to love unconditionally only if we learn to love ourselves again, overcoming greed, jealousy and the fear of losing love in the process.

It is probably no coincidence that many pet names for loved ones are associated with sweets, such as "sweetie-pie," "sweetheart," "sugar" and "honey." People often use sugary treats as symbols of love and affection, such as chocolates on Valentine's Day or a cake to celebrate birthdays.

Coincidentally, Dr. Smits also found *Saccharum* to be a very useful remedy for the common digestive disorders experienced by children on the autism spectrum—a condition that scientists originally and falsely blamed on cold "refrigerator mothers" who supposedly did not connect with and love their children, theoretically causing the children to withdraw into themselves. Autism certainly is a very isolating condition that makes social connections, including love, difficult. Dr. Smits also found the remedy to be very helpful in addressing the picky eating that so many autistic children suffer from. Often, they want only white carbs and milk—basically, sugary foods.

Overall, Dr. Smits felt that the "magic sugar" remedy could be quite helpful to many of us, leading us back to our core and to the realization that *we are already Love*—rather than letting ourselves be fooled by a trickster stand-in in the form of white death. Here, homeopathy not only can help heal physical imbalances, but perhaps more importantly, can provide powerful, energetic support for our heroic and transcendent journey of spiritual growth.

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Technology as Servant

MEALS IN A BOX: THE GOOD, THE BAD AND THE UNSUSTAINABLE

By John Moody

Meal kits involve varying degrees of preparation by the purchaser—in some cases, quite a bit of preparation.

Over the past decade, meal kits (or what I call "meals in a box") have become one of the fastest growing segments of the U.S. food economy, with annual growth estimated at 25 to 30 percent.[1] Using a subscription model, online companies offer a wide variety of home-delivered meal options. In addition, supermarkets are entering the fray, offering in-store meal kits, which accounted for ninety-three million dollars in sales in 2018.[2]

While not a new idea, the latest meal kit concept seeks to take convenience to a whole new level for the growing number of Americans who cannot or will not take the time to prepare food for themselves, or who want cooking tasks to be made as simple as possible. Offering "some variation of the following," consumers pay between sixty and one hundred eighty dollars per week and "receive at their doorstep a deconstructed meal in a cardboard box—premeasured groceries, step-by-step recipe instructions, and the almost-realized fantasy of a home-cooked meal."[3]

But how do these services stack up? Our household tested kits of various kinds from a half dozen companies, and I interviewed people who had used over a dozen more. While wading through the options, I found that there is a company for almost every conceivable diet—from vegan and vegetarian to ketogenic and paleo. Particular brands vary in terms of frequency of delivery and dietary accommodations, with some offering gluten-free, dairy-free, soy-free or other options.

Meal kits fall into two broad categories. Some are almost (or even completely) ready to eat right out of the box after reheating or cooking. Others involve varying degrees of preparation by the purchaser—in some cases, quite a bit of preparation and more than we expected. Let's dive into the details of these semi- to-fully prepared meals delivered right to your door.

PLASTIC AND PACKAGING

The first thing you will notice with most meal kit services is the tremendous amount of plastic and packaging used. All the items come encased in plastic, sometimes right down to rather small amounts of seasonings, marinades and sweeteners. Insulated boxes are also crucial for these services. It is startling to realize, but a few pounds of food may be accompanied by *a few pounds of packaging.*

Not all companies are equal with regard to packaging. Some use less—or use more sustainable, recyclable or lower-environmental-impact options. Generally, the more "ready to eat" the meal, the less total packaging is involved.

In many parts of the country, recycling isn't available for most of the packaging materials

SUMMARY OF MEAL KIT SERVICES

COST: Ranges from around eight to nine dollars per person per meal on the low end to as much as $12 to $14 on the high end. Generally, the more meals you get from a service, the lower the cost per meal.

CONVENIENCE: Meal preparation can take as little as a few minutes to over an hour. Typical for many services is an estimated prep time of twenty to forty-five minutes.

CHOICES: We found that only a few companies, mostly paleo, had high-quality ingredients. All of the meal services allow some degree of customization, but it varies greatly from company to company.

(this is true for many store-bought food products as well). Some meal kit services market groovy-sounding packaging options such as recycled denim insulation, but these, too, often have limited recyclability. Recent investigations have also shown that in many areas, materials you turn in at recycling centers are not recycled anyway. All of this makes sustainability and recyclability claims rather dubious.

Some will point out that, depending on one's shopping habits, the amount of packaging that comes with meal kits isn't that much more than the packaging for typical grocery store-purchased products or meals. But especially for the condensed quantity of food, we found the amount of packaging to be quite high.

FIVE COOKS IN THE KITCHEN—AND NOT MUCH TIME SAVED

Pretty much everyone in our family took part in preparing food from the various meal services we reviewed. Between my wife, myself and our three oldest kids, we have five "cooks in the kitchen." Our family also has a lot of cooking experience.

Despite our wealth of experience and the number of cooks, all the meals took closer to the maximum estimated time to prepare. My daughter, who prepared a number of them, said, "I would rather just cook from scratch with real food." She quickly noted the packaging waste and observed that many of the meals took just as long to prepare as others she often makes, while yielding far less food for the same amount of work.

In terms of taste, quality of ingredients and other considerations, two of the paleo companies were hands-down the best. Were we ever to need some quick, easy alternatives (almost like take-out), these would be our choice. These options also offer a great way to get some fairly healthy "relief" meals to family and friends (if you can't make them yourself), as a friend did for us many years ago when we had a new baby.

COSTS AND BENEFITS

How people perceive the cost of something is colored by what costs they are used to (and also, what quality!) and what they are comparing it to. We are a large family, and we are used to purchasing in bulk, especially directly from local farmers. This complicates cost comparisons because, while the quality of what we eat is quite high—grass-fed meats and cheeses and fresh, organic and whenever possible local fruits and vegetables—we don't pay Whole Paycheck prices for this quality.

Many people equate the cost of meal-in-a-box services to the cost of eating out, which can be quite high—from fifteen to thirty dollars

The first thing you will notice with most meal kit services is the tremendous amount of plastic and packaging used.

WHAT WE ATE

From Blue Apron, we had three meals to sample. The first one featured kale, mushrooms, pasta and prosciutto. The prosciutto was by far the best part of an otherwise forgettable meal. The second meal was chicken, rice, figs, peanuts and some veggies, with a yogurt sauce. The third meal was beef with carrots, peppers and noodles. The rice was white, pasta and noodles were both refined. All the meals came with sauces or seasoning blends that often did not divulge their full contents. None of them was particularly tastey, but we are used to really good-quality veggies. All of us thought the meals had some weird or off tastes, but we rarely eat prepackaged foods and are not used to preservatives and artificial flavors.

The paleo meals were better. We had a breakfast empanada, which was great, with a cassava flour crust, and a breakfast bowl (bacon, sweet potatoes, kale and a few other veggies). A meal of chicken pot pie was also good, but could have used some more veggies. From the other company, we had very simple meals that were basically meat and veggies—usually one good-quality meat such as chicken, beef or pork, and then a mix of two or three veggies, usually a green, a more aromatic veggie (onions, garlic, pepper, etc.) and then a starchy veggie (purple potatoes, plantain, sweet potato). All their flavors were good to very good. One paleo meal company sent us a side of Canadian-style bacon, which was excellent, and chicken stock, which was also quite good in quality. Meat dishes included stuffed pork loin (spinach, mushrooms, fresh herbs like garlic and oregano) with creamy Brussels sprouts. It was excellent. Another was beef short ribs (again, very good) with mushroom gravy and cauliflower. The paleo companies gave all ingredient information for each meal with no secrets or surprises. The paleo companies used a lot of crucifers and other greens. As for the fats used, the paleo kits provided fats of good quality, such as lard, tallow or olive oil. So, the paleo meals had the best taste and best ingredients, but the highest cost.

per person for moderate-quality food. For us, most of our day-to-day meals average around $2.50 to $4 per person, with the added bonus that our meal prep generally creates two to three meals' worth of food. In contrast, most of the meal kits run about eight to ten dollars per person per meal. The paleo meals were the most expensive meals per person, partly because their contents were the closest to being fully ready-to-eat straight out of the box.

If you are a family of four wanting meal kits to cover three meals a week, you are looking at ninety-six to one hundred twenty dollars per week to cover less than 15 percent of your meals! This represents an annual cost of around five to six thousand dollars. By way of comparison, the average U.S. family of four spends approximately seven hundred to one thousand dollars per month—or eight to twelve thousand dollars per year—on their *entire* grocery budget. Thus meal kit services definitely target people and families on the higher side of the income spectrum.

One benefit of the meal services is that they arrive with premeasured portions; a number of people I interviewed mentioned this feature favorably. These individuals pointed out that it is not possible to eat more if there isn't any more food, and in addition they appreciated the reduced food waste. However, even if this was one up side, the benefits did not seem to compensate for the meal kit services' many drawbacks.

GREENWASHING AND CLAIMS

As is the case with the entire modern food economy, meal kit companies seek to entice consumers through claims that their meals are "natural," "fresh," "healthy" and "whole." However, many meal kit companies' actual procurement practices don't come close to any of these claims. Again, this is true across the U.S. food system, where "greenwashing" is rampant. For example, companies that produce eggs from chickens housed in confined animal feeding operations (CAFOs) may festoon their egg cartons with pictures of outdoor hens. Or products containing genetically-modified or other suspect ingredients may state that they are "all-natural," and no one will be the wiser.

It is probably prudent to be skeptical of meal kit companies' ubiquitous claims that their meat and dairy are "hormone and antibiotic-free." Few companies are using pasture-raised meats either, with the exception of some of the paleo

AUTUMN BEEF STEW

Our family beef stew recipe (adapted from the *Nourishing Gourmet*) is a good example of a meal that is easy to make at a fraction of the cost of the equivalent meal kit. It easily doubles or triples for freezing. Serves 8.
Total cost:$26; cost per person per serving: $3.25

Ingredients:

Bacon grease, lard or coconut oil (2-4 tablespoons) (50¢)
2 pounds stew beef (cut into 1/2-inch pieces) ($14)
2 carrots and 2 stalks celery, diced ($1)
1 butternut squash ($2.50)
1 pound potatoes ($1.50)
1 pound sweet potatoes ($2)
1 onion (50¢)
1 cup frozen peas (50¢)
8 cups homemade stock from leftover bones stored in freezer ($3)
Salt, pepper, thyme (fresh or dried), 2 bay leaves, 4 tablespoons balsamic vinegar (50¢)

Instructions:

1. Pat beef dry and season with salt and pepper.
2. In a soup pot, heat fat (bacon grease, lard or coconut oil) over medium high heat. Brown the meat in batches (about one pound at a time). Add more fat as needed. Set aside.
3. In the remaining fat, sauté the celery and onion.
4. Return beef to pot, add 8 cups stock (or 6 cups plus 2 cups red wine), along with 2 tablespoons balsamic vinegar.
5. Add a few sprigs of fresh thyme (or 2 teaspoons dried thyme), 2 bay leaves and 2 tablespoons balsamic vinegar.
6. Put lid on pot, bring to boil, reduce heat and simmer for one hour.
7. While the meat is simmering, slice or cube the carrots, potatoes, butternut squash and sweet potatoes. (Mushrooms also make a great addition.)
8. After an hour of simmering, add the sliced or chopped vegetables and simmer for another hour.
9. Add 1 cup frozen peas. Simmer for another 10 to 15 minutes.
10. Add salt and pepper to taste and more balsamic vinegar if desired.

companies. And while it is understandable that many people focus on the quality of meat, a shortcoming of equal or greater concern is the lack of proper preparation of grains, legumes, nuts and seeds, as well as the fact that many of these items are highly refined. Again, the paleo meal services generally appeared superior in this regard, as refined carbs were entirely "off the menu."

Many meal kits include sauces and other menu items that provide *no ingredient information at all*! (A few even state that certain sauces and similar items are "a secret.") When I emailed a few of the companies for clarification, I received evasive answers to specific questions about the use of vegetable oils, MSG and other additives and preservatives. For individuals trying to avoid a specific ingredient or who are trying to limit their intake of low-quality oils and other undesirable ingredients, this lack of transparency is problematic, to say the least.

AFFORDABLE AND EASY? NOT SO FAST

Meal kit services currently survive on large infusions of venture capital. The amount of money that is making this industry possible is staggering, with venture capitalists having invested more than one billion dollars in over one hundred competing startups over a six-year period.[3] Almost none of the big players actually make money, with virtually all operating at small to significant losses—losses covered up by the constant influx of venture capital. This has translated into a roller coaster experience for some companies. The Silicon Valley company Blue Apron, for example, went from a valuation of three billion dollars to a current valuation of fifty-seven million—a 97 percent decline.[4]

Sadly, these hundreds of millions of dollars of easy money have an impact on buying clubs and other local food businesses that don't have access to the same deep pockets. I know first-hand how damaging to the development of real, local food economies these meal services have been.

Meal kit companies also rely on customer forgetfulness to make their businesses go. Like rental services that hope you won't return your movie before the deadline, many of these meal services make you sign up for a recurring delivery from the get-go. If you forget to turn it off, you are out of luck. You will get box after box after box—until you figure out how and where to cancel the account. At least a few people have found that—like trying to get out of the mob or out of farming—quitting a meal service may require nothing short of faking your own death! (In my case, I cut to the chase and directly asked customer service.)

Despite these logistical barriers, people are indeed canceling. Even as the total meal-in-a-box industry continues to grow, many of the major companies (such as Blue Apron) are hemorrhaging members.[4] When you mainly get customers by offering temporary deals and deep discounts—and there is a fairly constant flow of other companies all doing the same—what incentive does anyone have to stay? The industry is understandably tight-lipped about admitting anything negative, yet article after article points to a business model where the vast majority of customers quit after just a few boxes.

NOURISHING ALTERNATIVES

For busy Americans and the ever-increasing number of young adults who have never learned basic kitchen and cooking skills, what options are available for less time-consuming but still nourishing food preparation that isn't served out of a clown face? To Weston A. Price Foundation chapter leaders, I think the current "adulting" classes and similar trends point to an area where you can make a big difference. Start offering monthly basic or batch cooking classes!

We found that many of the services offered "full meals" that really weren't full meals.

Beyond that, if work or other factors limit your time in the kitchen, there are many other ways to pursue "convenience" without resorting to outfits propped up by gobs of fake money. One easy option is to get an Instant Pot and compile a list of quick and easy meals that you know how to make in it. Our Instant Pot has saved us on many a day that "has not gone according to plan," turning a catastrophe into an easy, tasty meal. With some frozen organic vegetables, appropriate easy cuts of meat, some frozen stock, a few minutes of prep and an hour of cooking, you are good to go!

Second, find real-food friends interested in doing meal swaps. This gives you the option of having one night a week when you don't need to cook. For example, you can make a meal for your friends on Mondays, and they will cover you on Thursdays.

Third, find a like-minded local family that could use some extra money and have them make meals for you. Over the years, I have seen many young families with small kids do this for others. Sometimes, those "hiring out" meals are single people who do not have time to cook because of work or school; other times, it might be families with children who don't want to eat out because of quality issues, and order meals from another family.

Fourth, learn to batch cook. Many recipes are easy to double or triple with little to no additional work or cleanup. When we make *Nourishing Traditions* empanadas, we normally make a triple to quadruple batch of the filling. We freeze half of the extra filling, make a double recipe of the rest, and then freeze some finished empanadas for emergencies while having the frozen filling ready to go for a faster meal on another occasion. (Pyrex containers freeze amazingly well and allow you to store many meals plastic-free except for the lids—the lids generally last about three to seven years.)

As a final note, we found that many of the services offered "full meals" that really weren't full meals. Also, many people we interviewed mentioned that they often substituted ingredients or had to supplement with additional dishes. If one weighs these and other limitations against our household's rough cost of three dollars per person per meal—using a variety of tasty recipes with local and/or organic ingredients—our vote goes to the home-cooked meal every time.

John Moody is a food grower, researcher and author, appearing at conferences across the country and helping people improve their lives, land and health. His new books The Elderberry Book *and* Winning the War Against Weeds *are available at* johnwmoody.com. *Elderberry products are available at* abbyselderberry.com.

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Wise Traditions Podcast Interviews

INTERVIEW WITH DR. STEPHEN HUSSEY
WE WERE MEANT TO EAT FAT

HILDA LABRADA GORE: Our guest is Dr. Stephen Hussey. Stephen is a chiropractor, a functional medicine practitioner and an online coach who focuses on helping people create high-performing hearts. He is also the author of *The Health Evolution: Why Understanding Evolution is the Key to Vibrant Health*. Today we spend a lot of time chewing the fat, literally. If fat is really so good for us, as the Weston A. Price Foundation teaches, why are we still warned to avoid it? Many heart experts wave us away from fat. Why is that? Stephen brings clarity to the conversation. He discusses why fat is actually good for the heart, and animal fats especially so. He also addresses the environmental stressors that negatively affect heart health and offers concrete advice for adopting a heart-healthy diet.

Stephen, in your book, you said that your health story was kind of a train wreck. When you were twelve, you had many conditions. Can you elaborate on that for us?

STEPHEN HUSSEY: Yes, what got me interested in this topic in the first place was my own story. When I was two years old, my parents noticed that I was coughing and wheezing for whatever reason. My dad had asthma, and so he diagnosed the asthma right there. He took me to the doctor, and the doctor diagnosed me with asthma. He recommended inhalers and a nebulizer. From that point on, I started getting more and more inflammatory chronic conditions, like irritable bowel syndrome. I used to break out in huge hives all over my body. I had terrible allergies. Ultimately, I ended up with autoimmune type 1 diabetes.

That is not to say that my childhood was terrible. I lived a great, normal childhood, but I had all these inflammatory conditions, which were treated with allergy medications and even steroids at one point, like prednisone. It wasn't until I grew up, went to college and got interested in health that I started to see that the way I lived my life actually affected these conditions. I started to put that together, and that's what spawned this health journey I've been on. I'm happy to say that all of those inflammatory illnesses are gone, except for the type 1 diabetes and its collateral damage.

HG: That's amazing. And now you're a chiropractor, functional medicine practitioner and have a specialty in heart health. What got you into that?

SH: I was diagnosed with type 1 diabetes at the age of nine. I'd have to go to the endocrinologist every three months. As I grew up, I started noticing the educational posters in the doctors' offices, which said that diabetics have a two to four times higher risk of heart disease, and they'll have kidney issues and eye problems. They're at higher risk of having things amputated. I asked the doctor why that was, and he said most of it was due to vascular damage because of higher blood sugar over time. So, throughout my education and my own research, I kept asking, "How can I prevent heart disease or cardiovascular disease?" Any time I heard anything about that, my ears would perk up and I would dive in and try to figure it out. That's what created my passion for heart health.

HG: There's a lot of conflicting information about how to take care of our hearts. Is lowfat still recommended for a heart-healthy life?

SH: If you're in a conventional hospital or talk to most dietitians, probably yes. It's still what's taught in most medical schools—if nutrition is taught at all. I think that's what is taught in most master's in nutrition programs. That's kind of dogma. I think it started a long time ago when some very bad epidemiology research came out that associated fat with heart disease or eating

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saturated fat or eating cholesterol and heart disease. The problem with that research is that it was epidemiology, so it showed an *association* that should have had randomized control trials designed to test that association. But instead, the government guidelines were developed and shared with the nation based on that association alone. We see the result of that, which is *increased* heart disease—and increased disease altogether—when humans started avoiding saturated fats in their diet.

HG: So, Stephen, how did you avoid buying into that dogma?

SH: I was pretty clueless in the first part of my life. I had no idea that any of these things mattered. I was never told. I think that when I was diagnosed with diabetes at age nine, I should have been told to eat a low-carbohydrate, higher-fat diet. I was intolerant of carbohydrates, yet I was never told that reducing carbohydrates, especially processed ones, would help. So, I had to figure that out on my own through a lot of trial and error, with self-experimentation and being in touch with my body. Because of the immediate response I get, since I don't make insulin, it helped me figure out what was best for me. When I dug into it, I found that it's probably what's best for most people even though they don't have type 1 diabetes. Maintaining lower insulin levels is best for most people. The way you do that is restricting carbohydrates and eating higher fats. The benefits of it are amazing.

HG: When he traveled the world, Dr. Price found that every indigenous group he encountered had varying levels of fat in the diet, but they all certainly ate more fat than we do in our standard American diet. What fats do you include personally, and what fats do you recommend that we all include?

SH: We're told that vegetable oils are "good fats," but they're unnatural fats. If we talk about how processed carbohydrates are bad—because they're very simplified—that's exactly what a "vegetable oil" is, meaning a seed oil like canola or corn oil. We should completely avoid them, but unfortunately they're in all kinds of convenience foods that people eat. The fats we do need are the ones humans have been eating for millions of years. These fats drove our evolution and made us human. Those are saturated fats from animal products. I think the most important thing about them—this is something Dr. Price talks about in his work—are the fat-soluble vitamins. Those are incredibly important to our health and physiology. When you look at many chronic diseases we're seeing today, you can trace them back to being deficient in fat-soluble vitamins, which come from saturated fats in animal foods. We're talking about grass-fed butter, bone marrow, fatty cuts of meat, fish (sardines are my favorite), lard and beef tallow. All those fats are the best for us.

HG: Whenever I talk to Sally Fallon Morell, she talks about how important those fats are for our brain and our cellular function. How do those fats help our heart in particular?

SH: I think there are two separate things we can talk about here. With cardiovascular issues in general, first if we're talking about atherosclerosis, that's damage to a blood vessel; the body tries to repair it using cholesterol and some minerals, and we end up with hardened arteries. One

PODCAST QUOTES

"The beauty of intermittent fasting is this: the brief breaks from eating mimic our ancestral patterns and make our genes happy. The body says: 'All I care about is your survival right now. I'm going to make you smarter, stronger and faster so you can find that food'."
~ Marisa Moon, Wise Traditions podcast #223

"'I can't imagine going anywhere without my mobile device.' 'Being online is not as fun as it used to be.' 'I'm at the screen for longer than I intended.' If any of these are true of you, you're likely addicted to the screen."
~ Katie Singer, Wise Traditions podcast #224

"A long-term strategy to avoid getting cancer includes getting out in the sun, connecting to the earth and developing loving relationships with family, friends and your dog. Do this for the rest of your life."
~ Dr. Tom Cowan, Wise Traditions podcast #227

"There's nothing natural about 'natural' flavoring or colorings. Natural colorings can contain propylene glycol (used in antifreeze) and polysorbate 80 (shown to cause health issues in mice). I recommend buying single-ingredient foods and getting back into the kitchen to nourish our families."
~ Cyndi O'Meara, Wise Traditions podcast #229

of the fat-soluble vitamins that comes in these fats is vitamin K, specifically K_2, which is really high in animal products and is responsible for depositing minerals in the bone where they're supposed to go and not in other tissues. If we want to prevent calcification in our arteries, then getting lots of vitamin K_2 from animal fats is really important.

The other aspect of this, the other part of heart disease that is really important, in looking at heart attacks (the Weston A. Price Foundation and Dr. Cowan speak a lot about this): the heart, interestingly enough, prefers to burn fat for fuel—fatty acids and ketones—which is different from the rest of the body, where if glucose is present, it will burn that first. I have countless studies that show that even in the presence of glucose, the heart will choose to burn fat over glucose. One study showed that when glucose is present and they put ketones in there, the glucose utilization of the heart went down by 30 to 60 percent because the heart wanted the ketones.

The heart is a special organ. If the heart is forced to burn carbohydrates more than it wants to because we're not providing it with the fats it needs, bad things can happen. One of those things is a heart attack. Special circumstances cause heart attacks. One of these special circumstances is the heart being forced to use more glucose than it wants.

HG: I think you break this topic down in a way that's easy to understand. Every time I turn around, I see people carb-loading. And these people are not runners. These are just people who have a tendency to eat a carb-heavy diet. They're young people, so they don't seem to show a lot of the negative effects that might be coming down the pike. Are they still doing damage to their heart?

SH: I think so. They're training their bodies to be dependent on carbohydrates. Even in the presence of glucose, our hearts will prefer to use fatty acids. But if we're setting up our whole system for burning carbs as we age, and our body is not able to burn fats readily, then when other things happen, like oxidative stress and imbalances in our autonomic nervous system, and we're not fat-adapted and can't easily burn fats for fuel, that sets us up for heart attacks because the heart is being forced to burn a fuel source it doesn't want to.

HG: Can you explain about free radicals and why we need more fat in relation to that?

SH: There are a lot of problems with free radicals. Every time our body burns a fuel source, whether carbohydrate, protein or fat, it makes energy, but it also makes waste products. Water is a waste product. That can be helpful for our body—we can use it in other places or we can breathe it out. We make carbon dioxide, and we breathe that out as well. But we also make free radicals. I call them the "exhaust" that we make—like when a car burns fuel, it has a waste product. Free radicals are supposed to be taken care of by the endogenous antioxidants that our body makes. And the two main antioxidants that it makes are glutathione peroxidase and superoxide dismutase. So those are made in our bodies.

What's interesting, though, is that when we look at burning a carb versus burning fat, or having a carbohydrate-burning metabolism versus a fat-burning metabolism, we actually get less energy from burning carbohydrates. That's why, when we eat carbohydrates, we're hungry two hours later—because we don't make as much energy and we burn through it quicker. The fat gives us more energy, more molecules of ATP. With carb burning, we also get more exhaust—the free radicals. This has been

THE WISE TRADITIONS PODCAST: TALK TO US! WE'RE LISTENING!

We had some unique episodes this past summer:

- RFK Jr. on vaccine safety (#193 "RFK Jr. Speaks Out").
- Dr. Geraldine McGuire on restoring a rainforest in Australia (#199 "Harmonious Living").
- Hilda Labrada Gore (our podcast host) offering her top picks of what she's learned from the show (#200 "Holistic Hilda's Health Tips").
- Leo Sharashkin on bees and the art of beekeeping (#198 "The Buzz on Bees and Honey").
- Steven Sashen on minimalist footwear (#195 "Feet First").

What else would you like to hear on the podcast? We are open to your suggestions for topics and guests. Email us at podcast@westonaprice.org to tell us.

If you have ideas for who should be a guest on the show, please fill out the application on the podcast page on our website (just under the listener survey): chapters.westonaprice.org/podcast-guest-suggestion/.

shown in muscle cells. The heart is a muscle. If we're getting more exhaust, and we're relying on endogenous antioxidants to take care of that, and we're getting more free radicals building up, and the antioxidants can't take care of it, we get what is called oxidative stress. We get too many free radicals running around. They're like the Looney Tunes' Tasmanian Devil. They're running around looking to get paired. A free radical molecule is an unpaired electron. It wants to be paired and will steal a "partner" from anywhere. If the antioxidant doesn't give it an electron, it will steal it from somewhere else, including from your tissue. It will damage the tissue to get that electron. That causes a whole host of issues.

HG: That's a good illustration. Fat is so satiating. I think people crave it but some people are afraid of animal fats. For so long, they've been told that animal fats can cause cancer or other problems so they would be better off avoiding fats. What do you think of that? Are animal fats preferable to the processed oils we were talking about earlier?

SH: Yes, definitely. There's a whole lot of research that shows that saturated fat is *not* associated with heart disease. And then there's research that shows it *is* associated with it. When that happens, we can't draw any conclusions. The fact that our governments and our academic institutions have drawn the conclusion that saturated fat causes heart disease is irresponsible because there are conflicting findings. When you look at people who eat more saturated fat—and I see this every day with clients—you see their health turn around. Those observations tell me we should not be scared of saturated fat. Humans have been eating it for millions of years, and we're still here. If it were causing heart disease, then why is this heart disease epidemic a relatively new thing? Within the last two hundred years, it has skyrocketed. But we've been eating saturated fat for millions of years.

HG: Is that why you say we have to understand evolution to get a better grasp on our health?

SH: Yes, that's the premise of my book, and I think that it's important to understand where we came from evolutionarily. This is the fundamental argument: there's a mismatch between the evolved physiology that we have as humans—although there are variations among us, at our core, we're all pretty much the same—and our modern way of life. When we look at the evolution of humans, we were eating a lot of animal fat and animal protein, and it's only in the last ten thousand years or so that we've had these drastic changes not just in our food but in our way of life—the amount of toxins and stress we experience. Those things happened very quickly. There's no way that evolution could keep up with those changes. Now, we're living this way of life that's not necessarily suited to our physiology. I tell people that our chronic disease epidemic is thought of as a problem, but it's not really a problem. It's the symptom of human beings living away from their natural way of life they evolved in for millions of years.

HG: Given where we are today, how can we help ourselves? Will eating fat help solve all these other problems?

SH: I think it's a good place to start. The benefits of burning fat for fuel and giving your body those fat-soluble nutrients are very well-documented on an anecdotal level and on a research level. Obviously we can't ask people to go back and live a hunter-gatherer lifestyle, or live in the wild. But we can do things that will allow us to get ourselves closer to that way of life. The biggest lever is food—eating something that's much more compatible with our physiology is the biggest lever you can use. Eating is something people do every day. For some people it's once a day, if they're fasting, while for others, it may be three times a day. Either way, it has a huge impact on your health.

There are all kinds of other things people can do. People can look at the toxins in their life. Avoid all the toxins you can avoid, but don't freak out about the ones you can't. Also, look at your stress and how you interpret stress and manage your stress response. We live in a world full of unnatural stressors. Our stress response is not well-suited to deal with them on a daily basis. Managing our stress response is important. We can take life within the confines of modern-day society and make it more compatible with what our physiology has evolved to. Looking at heart rate variability is really important, too.

HG: You've tossed so many terms around, but I get the idea that we need to nourish ourselves deeply using fat, but also be aware of the stressors in our lives and look for ways to simplify. I guess that's why it's good there is this minimalist movement. There's this sense we can shed some of the things that are weighing us down.

SH: I'm a huge fan of the minimalist movement. I think our lives have become very complicated. It may sound like I'm against modern society. I'm not. You see what happens when people don't make enough money in society. They don't know what to do to survive. They end up homeless or starving. That's very stressful. Humans have lost the knowledge of what to do. Even when they have money, they do not know what to do to get healthy. We've outsourced even our health to medicine. It

all becomes something that we can use our dollars to buy rather than knowing internally what we need to do to maintain health and be free of disease.

HG: A farmer comes to mind who I met in Cuba. He was one of the happiest people I've ever met. He was self-sufficient. "If the electricity blows, we've got our own manure-powered generator." He had gotten everything we ate that day for lunch from his own farm. He was nourishing himself on so many levels. It wasn't just one thing. He could do anything.

SH: Even if we're talking about hunter-gatherers in the distant past before traditional populations were around, they probably knew multiple places where they could get food and water. And they knew how to do it, and they were good at it. Even if animal food wasn't available, which I think is the best source of complete nutrition, humans evolved this ability to eat plants when we needed to. We're obvious omnivores, and there are better foods than others, but it wasn't stressful. If that waterhole was dried up, you just knew where the next one was. If you didn't catch that animal, there were others, and you'd get another chance. Whereas if you don't have money, you don't know what to do. You don't have many options unless someone helps you.

HG: If I want to start adding more fat in my diet, what should I start with?

SH: Some people don't like some of these fats, or it takes a learning curve. But I think most people like egg yolks. It's one of the most nutrient-dense fats. But it's important that eggs come from a hen that is pasture-raised. They will be much more nutrient-dense. I think we should also include bone marrow. People can make bone broth. You don't have to eat the straight marrow. As long as you get the marrow bones and you're making bone broth with them, the broth will be incredibly rich in nutrients. Finally, I like beef tallow. It took me a while to get used to that one because it has a different flavor. But I usually just cook with it.

HG: What would you cook in it, for example?

SH: I cook everything in it. I cook my eggs in it and all my meats and organ meats. But I usually just put a little water in the pan, too, so I'm not burning stuff. I think it's great for cooking because it's going to be less damaged by heat than any plant oil, whether it's processed vegetable oil or even olive oil. Tallow can hold up to heat much better. So, we won't be getting those damaged fats with it.

HG: I hope people are persuaded to add more fat to their diet after this conversation. Now I want to wrap up with a question I often pose at the end. If you were to recommend just one thing to improve our health, what would you recommend?

SH: I think it would be teaching your body to have a fat-based metabolism. I think it's really important to have a metabolism that can easily burn fats when it needs to. Generally, ketogenic is what you think of. I'm not saying that everyone needs to be on a strict ketogenic diet, but I do think the benefits of fat-based metabolism and being able to use ketones, as shown by research, are phenomenal. Train your body to do that. Once you're trained to do that, you can go back and forth between fats and healthier carbohydrates. But you have to make sure you get back into that by restricting carbohydrates. It's a kind of mental flexibility. That's key. That's where I start with my clients. You have to fix your metabolism first. After we do that, if there are still issues, we can address those. But because I don't know whether these issues you're having are based on metabolism or something else, we have to correct the metabolism first.

HG: Would people need to consult with a naturopath or a functional medicine practitioner to be able to figure that out, or could they do it on their own?

SH: I think that it can be useful to consult with someone, especially if you have different ailments or chronic diseases. But if you're just looking to start the diet because you want to improve your health, there are a lot of resources out there. There are many great books on fat-based metabolism and higher-fat diets that can get you started, and you can go from there.

HG: Do any resources come to mind right away?

SH: There are two people I'll give a shout-out to. One is Maria Emmerich. She's written guidebooks for fat-based metabolism. I think her stuff is great. And the couple, Matt and Megha of Ketoconnect. They do a good job of keto or fat-based for average people who just want to learn how to do this diet even though they are very busy. Ketoconnect is good at showing people how to do that.

All Thumbs Book Reviews

Agricultural Policy in Disarray
Vincent H. Smith, Joseph W. Glauber, and Barry K. Goodwin, Editors
American Enterprise Institute

Imagine being an investigative journalist tasked with digging into the latest political scandal. You know your subject is dirty, but the more you mine, the more disturbing and sleazier it gets, until you ultimately discover the full scope of the corruption and depravity of your subject.

This is a little bit like studying American agricultural policy. It's incredibly depressing. The more you learn, the more you realize just how nonsensical it all is, from every standpoint: economically, environmentally and societally. Well, except from the perspective of a few special interest groups—it makes a lot of sense for them. Dr. Vincent H. Smith, one of the editors of a new two-volume set of essays on farm policy, *Agricultural Policy in Disarray (APD)*, seems upbeat in his YouTube videos and sometimes cracks corny jokes. He's made the decision to laugh rather than to cry. We shouldn't blame him—one has to cope somehow.

APD is a collection of nineteen essays about different aspects of current federal agricultural policy. Although it is published by the American Enterprise Institute, a conservative think tank, this book largely addresses concerns that everyone who is committed to regenerative agriculture should share. From the libertarians to Trump voters to Green New Deal supporters among us, if we're for ecological farming, we should support the two central premises of these volumes: current federal agricultural programs "poorly serve both farmers and the American public"; and "by and large, U.S. agricultural policies now merely transfer dollars from taxpayers to owners of financially sound farm businesses." This is a near-textbook definition of crony capitalism—the funneling of government aid to the already rich and powerful.

U.S. agricultural policies are a near-textbook definition of crony capitalism—the funneling of government aid to the already rich and powerful.

APD presents four major findings. First, current policies predominantly benefit special interest groups. Second, although the policies advocated by environmental groups receive some traction in current laws, these laws mostly seek to pay farmers to *not* do things. Third, farm policy pays little attention to consumers, even though they are paying for these programs through their taxes. Finally, subsidies are primarily directed to relatively well-off farms and farm businesses—those who would generally be fine without the help of U.S. taxpayers.

The book's essays cover the gamut of agricultural concerns, beginning with crop insurance and subsidy payments. Several essays delve into the details of the specific subsidy programs for sugar, dairy, cotton and peanuts. Volume II gets into the other half of the farm bill—SNAP and other food-aid programs for the poor—as well as agricultural research programs, conservation issues and the regulation of commodity markets and international trade.

Crop insurance serves as a microcosm of the overall problems with farm policy. *APD* reveals the following:

- In 1980, crop insurance covered about 15 percent of insurable lands. Over the years, the amount of the premium that the federal government pays has risen. Today, about 90 percent of insurable lands participate.
- Private companies administer the actual insurance policies, but the government pays 70 percent of the premiums.
- The program is a money-maker for farmers, not a risk-reduction tool. On average, farmers receive two dollars for every one dollar they "invest" in insurance payments. Crop insurance actually encourages high-risk practices, particularly by incentivizing growers to utilize marginal lands. There are more effective ways to manage farm risk, including—most importantly—employing regenerative and ecological methods.
- Farm businesses receive, on average, 5.6 billion dollars of taxpayer money in subsidies

per year. About 80 percent of these subsidies go to the largest 20 percent of farm businesses and 65 percent to the largest 10 percent. Additionally, the larger the farm, the more crop insurance subsidies it receives per acre. The largest farms receive almost thirty dollars per acre, while those in the fiftieth percentile in terms of crop sales receive just over ten dollars per acre.

- The USDA spends about eighty million dollars a year administrating the crop insurance program and educating farmers on how to use the overly complex system.
- Private insurance companies are, unsurprisingly, huge advocates of continuing the program. They have made money every year except two since 1980. In bad years, the government bears most of the losses; in good years, the private companies receive most of the gains.

The bottom line is that crop insurance wastes money and benefits the relatively well-off. It's bad policy.

APD suggests getting rid of federal subsidies for crop insurance completely, but this is politically unlikely. The farm bill is popular on both sides of the aisle because it combines farm subsidies with food programs for the poor—axing something on one end would require a cut on the other. The authors therefore recommend at least reducing subsidies to pre-2000 levels, when taxpayers paid a mere 40 percent of the premiums, a move that would save several billion dollars annually. They also advise removing the "prevent plant" option, which is ripe for fraud. Under this option, farmers buy subsidized prevent-plant insurance, and if bad weather prevents them from planting before a government-established date, they can receive about 60 percent of what they're covered for. Because they didn't ever plant anything, their costs on that field are low—usually much lower than the 60 percent payout. The authors also advocate capping per-farm premium subsidies at a reasonable level, say, forty thousand dollars per farm.

Crony capitalism—not true capitalism—is what happens when special interests influence government policy for their own gain. Some refer to this as "corporatism," but this term can be unhelpful because it insinuates that corporations (particularly large ones) are somehow inherently evil. In and of themselves, corporations are not bad. They're actually incredibly important and beneficial to society as a whole and are only bad when they ask for and receive special favors from government. Such private-public partnerships are what distorts markets toward the already powerful.

In truth, the large corporations that run American agriculture hate competition as much as the most ardent socialist. Their partnership with government is what keeps them in power. They are devoted supporters of regulations, because regulation makes it harder for smaller businesses and individuals to compete with them. They love rules that pile up barriers to entry in their own industry. Both sides of

BOOK REVIEWS IN **Wise Traditions**

The Weston A. Price Foundation receives two or three books *per week*, all of course seeking a Thumbs Up review. What are the criteria we use for choosing a book to review, and for giving a Thumbs Up?

- First and foremost, we are looking for books that add to the WAPF message. Dietary advice should incorporate the WAPF guidelines while adding new insights, new discoveries and/or new therapies.
- We are especially interested in books on the fat-soluble vitamins, traditional food preparation methods and healing protocols based on the WAPF dietary principles.
- We look for consistency. If you talk about toxins in vaccines in one part of your book but say you are not against vaccines in another part of your book, or praise fat in your text but include recipes featuring lean meat, we are unlikely to review it.
- We do not like to give Thumbs Down reviews. If we do not agree with the major tenets expounded in a book sent to us, we will just not review it. However, we feel that we have an obligation to point out the problems in influential or bestselling books that peddle misinformation, and for these we will give a negative review. We also will give a negative review to any book that misrepresents the findings of Weston A. Price.
- If you want us to review your book, please do not send it as an email attachment. Have the courtesy to send us a hard copy book or a printout of your ebook or manuscript in a notebook or coil binding.

the spectrum—pro-big-business on the right and pro-socialism on the left—are inherently devoted to cronyism. A system truly designed to benefit the poor and the average consumer would be one in which government does not pick the winners and losers.

As Arthur C. Brooks says in the introduction to *APD*, "[The] deepest flaw in agricultural policy today is not merely that it creates economic inefficiencies, whether involving the country's resource base, market mechanisms, long-run productivity growth, or U.S. international trade relations; it is that the cronyism still present in our system reduces our ability to direct resources and opportunities to those who need them the most."

Some will argue that we've had the wrong people making policies; if we just elected the right lawmakers and executives, they would give us an agricultural policy that makes sense. The problem is that no person or group is ever going to be wise enough, unselfish enough or knowledgeable enough to properly guide something as complex as a national (or even state or county) economy. Everyone has interests.

Government does have a role to play. It exists to make and enforce laws that establish a framework for free trade, such as preventing fraud, outlawing child labor, prohibiting unjust discrimination and providing a court system where contract disputes can be adjudicated. It is the referee that ensures that individuals and corporations abide by these minimal laws—but the referee should not be a player in the game.

There's much more to say (and to argue!) about these issues. Again, though, we should all be able to agree on most of what *APD* discusses. There's a lot that we have in common. It's impossible to ignore our preferred solutions completely, but we can all get behind the effort to at least try to curb the crony capitalism inherent in our current agricultural policies.

The American Enterprise Institute published *APD* before the latest farm bill was signed, but all that has changed are a few particulars. It's well-written, very well-documented and heavy on statistics. I will say that some of it makes for dry reading, and the price tag is a bit steep.

One other disappointment is that the authors are regrettably conventional in terms of their opinions on GMOs, herbicides, synthetic fertilizers and so on. They adhere to the common belief that organic or regenerative methods require much more land to produce the same amount of food, that switching to regenerative farming would thus require pasture and forest to be converted into fields for broadacre crops and that the environmental costs of row cropping are higher than for pastures or forests. Unfortunately, there aren't enough hard data—yet—to parry this line of argumentation effectively.

Studies by the Rodale Institute demonstrate equal yields on a field-trial scale. There are also good results from individual farms—some of which are even demonstrating carbon-negative row cropping, particularly when incorporating livestock—but we still need collection and communication of large-scale data. Part of the problem is that we're in the middle of developing regenerative techniques; we're still in the innovator and early-adopter phases. The prudent take-away is that advocates of regenerative agriculture need to devote more energy toward doing this research and communicating its results.

The authors' failure to embrace organic farming in no way negates the overall truths they illuminate about the problems with modern American agricultural policy. So cry "Foul!" Laugh at the insanity of the current system. And patiently work with your elected representatives to try to reduce the power of special interests in agriculture.

Review by Paul Meyer

A system truly designed to benefit the poor and the average consumer would be one in which government does not pick the winners and losers.

NEW REVIEWER - PAUL MEYER

The excellent review of *Fibershed* in Winter 2019 and this one were by Paul Meyer, a homesteader, aspiring farmer and almost-retired Army officer. He is also a contributing editor to *Acres U.S.A.* magazine and a freelance copy editor (meyereditorial.com).

All Thumbs Book Reviews

The Great Prostate Hoax
By Richard J. Ablin, PhD
and Ronald Piana
St. Martin's Press LLC

The more quotes I read from Ben Franklin, the more I like the old guy. Page one of *The Great Prostate Hoax* starts off with one of his quotes: "He's the best physician that knows the worthlessness of most medicines." In more recent times, that quote could be expanded to include many tests, like the PSA test. The first author, Dr. Ablin, discovered PSA in 1970, so he knows exactly what it is—and what it isn't.

When men have their PSA checked, what the test measures is the infinitesimal amount of PSA in the bloodstream. The first key point Ablin makes is that there is no "normal" PSA level. But that is how millions of men are screened for prostate cancer, right? Right. So how does that work? That's the next key point. It doesn't.

Why do the test? For most who have lived on this planet for a while and have been paying attention, you know the answer, but for the newbies, here's how it works. Millions of men get tested every year ($). The tests generate a lot of false positives. That means additional, more expensive tests or biopsies ($$). Many of those biopsies are bound to find cancer, especially in older men ($$$). This leads to treatment and in many cases, surgery ($$$$$$$$). Add all that up, and you have billions of reasons why they do it.

I said earlier that the PSA test is worthless. I should clarify that it depends on your point of view. For the medical industry, the test is not worthless. It's a gold mine. For the unwary customer, it is worse than worthless.

If treatment was effective, then maybe there would be some justification for this test, but survival rates for treated men are the same as for men who opt out of treatment. These treatments are not exactly harmless either. The typical result of surgery is incontinence and impotence. Prostate cancer is usually very slow-moving, and most men will die *with* prostate cancer, not *because* of it. In fact, only 3 percent die because of it. Robotic surgery has been promoted as a better and safer option. Technology always makes things better, right? Strangely, the data say that robots don't do any better than mere human doctors.

The pattern is familiar. The health care system deems that there must be lots of testing. The tests often measure things that just are not that important, like cholesterol, PSA or blood pressure. Even if the results are not completely useless, they are mischaracterized and used to panic the victims into hasty and expensive decisions that can ruin their life. But, hey, at least someone is making a lot of money. The thumb is UP for this book.

Review by Tim Boyd

Prostate cancer is usually very slow-moving, and most men will die *with* prostate cancer, not *because* of it.

INVITATION TO WAPF MEMBERS

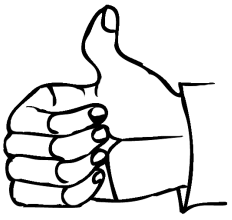
We invite all members of the Weston A. Price Foundation to join our exclusive members-only closed group on Facebook. Over two thousand members have already joined. Go to this link and click on the Join Group button and answer the questions it asks: facebook.com/groups/westonapricefoundation. (Please note: It may take a week or so to verify your membership and add you to the group once you ask to join on Facebook.)

This is an opportunity to be part of an active and supportive online community as you navigate our dietary recommendations. This group was created for current WAPF members as a supportive forum for questions, comments and discussion about food, farming and the healing arts. We welcome all members regardless of your level of familiarity with our dietary recommendations! Here's what members are saying about being part of this group:

Linda L.: "I can't express enough how much it means to me to have a safe place for discussion of these sometimes controversial topics. The members here are respectful of one another and it fosters a wonderful community of encouragement. A seemingly rare thing these days."

Renate D.: "I love love love this group! One of my favorite parts of being a member. I feel like I know some people here even though we haven't met. I'll definitely be at the conference in November so we can chat in person."

All Thumbs Book Reviews



The Invisible Rainbow: A History of Electricity and Life
By Arthur Firstenberg
Chelsea Green Publishing

At the heart of Arthur Firstenberg's *The Invisible Rainbow* is a simple question: "What is the effect of electricity on life?" One would think, given electricity's ubiquity, that the response to this pressing issue would not be buried in obscurity, but as Firstenberg says, "The effects of non-lethal electricity are something mainstream science no longer wants to know."

Firstenberg shares his extensive knowledge on the history of electricity and electromagnetic radiation in a manner that is not only instructive but enjoyable. Historical photos and first-hand accounts bring to life a time in history long past and forgotten. Who would have guessed that everyone from ministers to mechanics had early static electricity machines with which to shock people? Or that parlor games involving static electric kisses would become the rage? The inventions made possible by electricity also allowed people to "annihilate space and time." You could talk with someone two thousand miles away or travel one hundred miles in just a few hours instead of almost a week.

Some of those who discovered electricity expressed trepidation about the power and impact of this force. However, as with so many discoveries and technologies, most proponents touted electricity's benefits while ignoring or minimizing the risks. Wherever electricity went, though, illness or injury seemed to follow. Individuals who worked in the new industries unleashed by harnessing electricity (such as telegraph operators and telephone switchboard operators) often suffered dramatic injuries and illnesses. Doctors of the day noted that they were witnessing new diseases spread along telegraph and railroad lines, and some attributed these issues directly to electricity.

Wherever electricity went, illness or injury seemed to follow.

Firstenberg points out that electricity, while incredibly dangerous, also came to be viewed as medically beneficial and even miraculous. One reason that electricity became a popular therapy was because—even if people didn't and still don't know why or how—it addressed a host of conditions. People were partially or fully cured from a wide array of afflictions by often minuscule doses of electricity—the deaf would hear, and the lame would walk. Especially compared to the alternative treatments of the day, one can recognize the appeal.

There was a great deal in this book that surprised, enlightened, amused or otherwise educated me. For example, I had never encountered the idea that acupuncture is actually a refined form of electrotherapy—using the natural charge of earth and atmosphere and body to treat disease. Equally thought-provoking (and a bit terrifying) is Firstenberg's exploration of the flu and a number of other permanent fixtures of modern life as phenomena intimately tied to and driven by the age of electricity. Did you know that before modern times, flu pandemics closely tracked the sun's activity cycle, and dozens of doctors and researchers had documented the relationship? Or that influenza's spread pattern defies the common idea that it primarily passes from person to person? Let's just say I had to pause and walk away a number of times during Chapter Seven alone to ponder the implications of all the research and data with which *The Invisible Rainbow* invites the reader to engage.

I'll admit that the book left me with mixed feelings. Recent research continues to highlight substantial dangers tied to the devices and technologies that undergird modern work and life—dangers such as cell phones that emit far more radiation than manufacturers care to accurately report—and the rise of brain cancer and other neurological changes in users. Although there are steps we can take to minimize our exposure (such as hard-wiring our houses for Internet instead of using wireless technology or switching back to corded phones and technologies when possible), many of these "older approaches" are hard to find or not available where people work. Soon they may become completely unavailable. Progress marches on, even if it is

All Thumbs Book Reviews

Quench:
The New Science of Optimum Hydration
By Dana Cohen, MD and Gina Bria
Hachette Book Group

Eat your Water! *Quench* by Dana Cohen, MD, and Gina Bria is an informative and easy-to-read book describing how hydration affects health in more ways than we previously knew. We have all heard we should drink eight glasses of water a day, but could this be too much or too little, and are all sources of hydration the same? What about how hydration affects your skin, your immune system and even your energy?

Quench informs the reader not just about these subjects but also includes the different types and benefits of proper hydration—as well as providing a daily protocol with recipes. Along the way, the reader also learns how movement, self-massage, sweat, medications, red light therapy and even electronic usage affect hydration levels in the body.

The authors emphasize that it is better to "eat" your water for optimal absorption, distribution and storage in the body and then provide information about food and methods that are consistent with Weston A. Price principles. In fact, Cohen and Bria specifically reference Weston Price's and Mary Enig's work!

Some of the more interesting topics to me were the recent discoveries of structured water as well as how our fascia is a primary hydration delivery system. The discovery of "new" states of water (structured or gel), which fans of Dr. Gerald Pollack would recognize, are also supported by fascinating studies from the University of California, Berkeley as well as Cornell's "spine of hydration" discovery. Another finding is the existence of a denser form of water inside our bodies that is activated by light waves—allowing scientists better insight into how the body repairs and regenerates cells (which any reader of Dr. Tom Cowan would find familiar territory).

Another recent discovery the authors Cohen and Bria share is how the fascia effectively forms the largest system in the body and how this touches every other system. For the first time, researchers have discovered that fascia is more than just a protective wrapping for our organs and muscle, but in fact is one of the body's major water transport systems—a conductor of electricity. Apparently, there are more miles of fascia than the forty-seven miles of nerves in the human body! In other words, because water expedites electrical signaling, "fascia is rather like the fiber optic system of communication and information of the body." Maybe this is why massage and acupuncture have such therapeutic effects!

Along with case studies, the practical portions of *Quench* educate the reader not just about what type of foods are more hydrating and how to source and prepare them better, but also how proper hydration can affect digestion, energy, headaches, skin, bloating and many common chronic diseases.

Finally, it was refreshing to read about a health issue that can immediately complement and support whichever health protocol you may be doing.

One thing is for certain though; since we are mostly comprised of water, staying properly hydrated is absolutely fundamental to allowing our body to function optimally.

Review by Bill Hory

at the price of our health. Smart meters, 5G wireless and so much more—the initial trickle of electromagnetic radiation is now a ceaseless invisible monsoon.

The Invisible Rainbow is massive—almost six hundred pages to work through—and its size and scope make it somewhat hard to review. Which of the many topics should a reviewer focus on? The connection between our biology and electricity (most poignantly seen in our nervous system)? The harmful synergy between chemical and electrical exposures? Or the deep debate and divide over the safety of AC (alternating current) versus DC (direct current)? The mainstream movie, *The Current War*, dramatizes this debate.

Firstenberg's book is a thoughtful read in the same manner as books by Dr. Tom Cowan. You may not agree with or even fully understand all that Firstenberg covers, but he will make you think long and deeply about important matters related to health, history and other topics. Ultimately, this book reminds us that "electricity is intimately connected with biology." As electrical and biological beings, we are now bathed daily in foreign frequencies of our own making. We ignore the connection between electricity and biology at our own peril. Two thumbs up.

Review by John Moody

Vaccination Updates

CHICKENPOX VACCINES AND SHINGLES: HOW THEY'RE RELATED—AND WHY IT MATTERS

By Kendall Nelson, Director, *The Greater Good*

Because chickenpox is generally not harmful in childhood, doctors used to commonly recommend intentionally exposing children to the disease.

Chickenpox was once an almost universal childhood experience and a routine rite of passage. Nearly every child under the age of fifteen contracted the generally mild illness, experienced a full recovery after five to ten days and gained natural immunity for life. Today, however, chickenpox is much less common in the U.S. due to a mass varicella (chickenpox) vaccination program that reaches most children.

Chickenpox is a contagious disease caused by infection with the varicella-zoster virus—a member of the herpes virus family and the same virus that causes shingles. Chickenpox spreads through coughing and sneezing or by touching or breathing in the virus particles that come from chickenpox blisters. Prior to the advent of the varicella vaccine in 1995, chickenpox affected an estimated four million Americans annually (although surveillance data were spotty as only about half of all states reported any cases at all).[1] Children who experienced wild chickenpox developed a distinctive blister-like rash, with blisters appearing first on the chest, back and face and then spreading over the whole body. Other potential symptoms included low-grade fever, headache, runny nose, fatigue, loss of appetite or itchiness. In most cases, chickenpox resolved on its own.

In 2000, researchers at the Centers for Disease Control and Prevention (CDC) estimated that the illness was responsible for an average of ninety deaths per year in the twenty-five years leading up to the vaccine's introduction (1970-1994).[2] However, nearly three in ten deaths (28 percent) were in persons with preexisting high-risk conditions.[2] Adults over fifty years of age reportedly accounted for another 19 percent of deaths, but different CDC authors later observed that "an unknown but large proportion of deaths attributed to varicella among individuals aged 50 years and older are likely to be herpes zoster or causes other than varicella."[3]

Because chickenpox is generally not harmful in childhood, doctors used to commonly recommend intentionally exposing children to the disease. Parents held chickenpox parties, believing it was prudent to let their children get chickenpox at a young age so they would avoid the potentially more serious complications of contracting the disease as a teenager or adult. Nowadays, many parents choose to vaccinate their children to prevent chickenpox, and others are forced to vaccinate so that their children can attend public and private schools and daycare centers. Varicella is on the list of mandatory vaccines in all fifty states.[4]

VACCINE ADVERSE EVENTS

Two varicella vaccines are available in the U.S., both of which are live-virus vaccines made by the pharmaceutical company Merck. The U.S. Food and Drug Administration (FDA) approved Varivax in 1995 for use in people one year of age and older; Varivax is meant solely to prevent chickenpox. In 2005, the FDA also approved Merck's ProQuad vaccine for use in children one through twelve years of age. ProQuad (MMRV) combines the varicella vaccine with the measles, mumps and rubella (MMR) vaccine. The CDC recommends two doses of varicella vaccine, with the first administered at twelve to fifteen months of age and the second administered between four and six years of age.

While avoiding chickenpox may sound like a good idea to some, there are several things one should consider prior to vaccinating, including the safety of the varicella vaccines. According to the CDC's website, rare side effects caused by the vaccines include severe rash, infections of the lungs or liver, meningitis, seizures, viral and bacterial pneumonia and severe infection with the chickenpox virus from the vaccine.[5] Data submitted to the federal government's Vaccine Adverse Event Reporting System (VAERS)

confirm additional serious vaccine reactions that include cellulitis, cerebellar ataxia, convulsions, encephalitis, Guillain-Barré syndrome, necrotizing fasciitis, osteomyelitis, seizures, septic arthritis, septicemia, shingles, thrombocytopenia, toxic shock syndrome, transverse myelitis and death.

In the first three years of the varicella vaccine's use—between 1995 and 1998—VAERS received more than sixty-seven adverse event reports per one hundred thousand doses of vaccine administered (or about one in fifteen hundred). Approximately 4 percent of those reports described serious adverse reactions. However, the true number was likely closer to one *hundred* adverse events per fifteen hundred doses. This is because a report commissioned by the U.S. Department of Health and Human Services concluded that fewer than 1 percent of all vaccine adverse events are ever reported to VAERS.[6]

QUESTIONABLE INGREDIENTS

Ingredients included in varicella-only vaccines include a weakened form of the varicella virus; bovine calf serum or fetal bovine serum; hydrolyzed gelatin; monosodium L-glutamate (MSG); and human MRC-5 cells (including DNA and protein), among other ingredients (see sidebar).[7] The combination MMR-plus-varicella formulations also include genetically-engineered human albumin and sorbitol (a highly processed sweetener often made from corn and associated with digestive distress).[7]

The FDA claims that all of these ingredients are safe when used in vaccine production, but one could easily argue the contrary. For example, scientific studies conducted in Japan in the early 1990s identified anaphylactic reactions associated with gelatin in vaccines,[8] but vaccine manufacturers continue to use gelatin as a stabilizer in eleven vaccines licensed and distributed in the U.S. Additionally, studies by Massachusetts Institute of Technology scientist Stephanie Seneff have shown that all commercial gelatin used in the U.S. is contaminated with the herbicide glyphosate (Roundup) as a result of current animal feeding practices.[9]

Manufacturers use MSG as both a preservative and stabilizer to keep varicella vaccines effective in response to heat, light, acidity and humidity. Most of us know of MSG as a flavor enhancer added to Chinese food, canned vegetables, soups and processed meats, and some of us may have

WHAT'S IN THAT VACCINE—AND WHY IS IT THERE?

In addition to the antigen (the weakened form of the virus), Merck's varicella-only and herpes zoster vaccines include ingredients such as the following:

- Bovine calf serum or fetal bovine serum: component of growth medium
- Ethylenediamine-tetraacetic acid (EDTA): preservative (also a chelating agent)
- Hydrolyzed gelatin (bovine or porcine): stabilizer
- Monosodium L-glutamate (MSG): stabilizer
- Neomycin: antibacterial
- Potassium chloride: medium nutrient, adjusts pH and tonicity
- Sodium chloride: adjusts tonicity
- Potassium phosphate monobasic, sodium phosphate monobasic and/or sodium phosphate dibasic: adjusts pH
- Sucrose: stabilizer
- Human MRC-5 cells (including DNA and protein): "manufacturing residue"
- Urea: stabilizer

Merck's combination MMRV vaccine includes similar ingredients plus recombinant (genetically-engineered) human albumin (used as a component of the growth medium) and sorbitol (used as a stabilizer and solvent).

The ingredients of GlaxoSmithKline's Shingrix vaccine include a genetically-engineered form of the virus as well as many of the same ingredients as Merck's vaccines. In addition, Shingrix contains:

- QS-21 and MPL: adjuvant suspension
- Dioleoyl phosphatidylcholine (DOPC): adjuvant
- Cholesterol
- Polysorbate 80: surfactant
- Host cell protein and DNA

There have been multiple outbreaks of chickenpox among fully vaccinated schoolchildren, and vaccinated students are frequently found to be responsible for the outbreaks.

experienced the flushing, headaches, muscle tightness, numbness, tingling and weakness that MSG can provoke. With long-term exposure, other common MSG symptoms include asthma, neurodevelopmental delays and seizures. The Mayo Clinic reports that the substance can cause disorientation, fatigue and heart palpitations.[10] As an "excitotoxin," MSG can mediate the death of central neuron receptors in the brain.[11] Despite these findings, the FDA classifies MSG as "generally recognized as safe" (GRAS).

Bovine calf serum (called BSA) and fetal bovine serum are cow-derived products used to grow viruses in live vaccine production. BSA has been found to cause allergic reactions in humans.[12] In addition, a study published in 2011 in *The New England Journal of Medicine* described the plausible association of BSA and a very difficult-to-treat form of kidney disease called idiopathic membranous nephropathy.[13]

MRC-5 is a diploid human cell culture line composed of fibroblasts derived from lung tissue of a healthy fourteen-week-old aborted Caucasian male fetus. Varicella vaccines do not contain the original aborted cells, but they do contain traces of human DNA, as do the MMR II vaccines that Merck combines with its varicella vaccine. The FDA has acknowledged that residual human DNA has the potential to cause cancer or to change one's genetic code, so it is hardly reassuring that all vaccine package inserts include a section stating that the vaccines have never been evaluated for carcinogenic or mutagenic effects.[14] A comprehensive study by Dr. Helen Ratajczak, a former senior scientist at a pharmaceutical company, found that spikes in the incidence of autism in the late 1980s and again in the mid-1990s coincided with the increased use of the human-DNA-contaminated MMR II and varicella vaccines.[15]

LESS PROTECTION

When varicella vaccine proponents make their case for vaccination and the suppression of wild chickenpox, chances are they are not disclosing the benefits of actually getting chickenpox. One of those benefits is protection against heart disease, including heart attacks and angina pectoris. In 2007, a study titled "Dual role of infections as risk factors for coronary heart disease," published in the journal *Atherosclerosis*, concluded that contagious childhood diseases not only had a protective effect against acute coronary events but that each additional contagious disease contracted during childhood—such as chickenpox, measles, mumps or rubella—increased the protective effect by 14 percent.[16]

Another study—"History of chickenpox in glioma risk: a report from the Glioma International Case-Control Study (GICC)," published in 2016 in *Cancer Medicine*—found that a history of chickenpox infection was associated with a 21 percent lower probability of later experiencing glioma, a deadly brain cancer.[17] The protective effect was even stronger for high-grade brain cancers.

DIMINISHING RETURNS

Over time, universal chickenpox vaccination has become less effective, prompting booster doses that are not as protective as the immunologic boosting that occurred naturally in the pre-vaccine era.[18] A 2017 study of Air Force recruits (comparing varicella vaccination and natural infection) found that vaccine-induced immunity decreased by 8 percent with each year post-vaccination—and varicella-vaccinated young adults were at increased risk for varicella outbreaks compared to those who had experienced ordinary chickenpox infection.[19]

Individuals can also contract chickenpox due to vaccine failure, known as "breakthrough" varicella disease. Breakthrough illness is considered to occur when a vaccinated person contracts wild-type varicella virus more than forty-two days after vaccination. FDA researchers report that approximately one in ten vaccinated children develop breakthrough disease following exposure to chickenpox.[20]

According to the National Vaccine Information Center (NVIC), there have been multiple outbreaks of chickenpox among fully vaccinated schoolchildren, and vaccinated students are frequently found to be responsible for the outbreaks.[21] Describing the period from 2001 to 2005, NVIC notes that at the same time that the CDC was claiming vaccine effectiveness of 72 to 85 percent, some schools were reporting chickenpox in up to 40 percent of vaccinated

students in a single classroom.[21] In response to the significant rise in illness among vaccinated children, the CDC's Advisory Committee on Immunization Practices (ACIP) recommended in 2006 that all children get a second dose of chickenpox vaccine prior to school entry.

Previously vaccinated individuals often report their illness as a milder infection, with fewer lesions and a rash that presents as papules (raised itchy bumps) instead of vesicles (fluid-filled blisters). However, during the documented outbreaks in the early to mid-2000s, up to 30 percent of cases were *not* mild.[21] In those cases, vaccinated students experienced chickenpox symptoms similar to children who developed natural chickenpox.

Recently vaccinated individuals can spread the varicella virus to others through a process called viral shedding—a long-known vaccine complication reported in the medical literature.[22] This can happen when an uninfected person comes in close contact with a recently vaccinated person's body fluids. Although public health officials claim shedding is "rare," package inserts for chickenpox vaccines openly state that "transmission of varicella vaccine virus may occur" and warn that vaccinated individuals should avoid close contact with infants, pregnant women and immunocompromised individuals for up to six weeks.[23]

SHINGLES: A PAINFUL TRADEOFF

Chickenpox vaccines are expensive, costing between one hundred twenty dollars and two hundred twenty dollars per dose. However, universal chickenpox vaccination may be exacting an even higher price in the form of an iatrogenic epidemic of shingles (herpes zoster). There is strong evidence that the incidence of shingles is increasing precisely because the chickenpox vaccine is preventing people from receiving the natural boosting effects of regularly circulating wild-type chickenpox.

Studies show that before routine use of the chickenpox vaccine, individuals who recovered from chickenpox as children later experienced recurrent asymptomatic boosting of immunity by coming in contact with others infected with chickenpox. Parents and grandparents who interacted with their infected children and grandchildren were, therefore, less likely to develop shingles because they had an opportunity to reinforce their immunity. Without this periodic asymptomatic boosting, the dormant varicella-zoster virus can reemerge as shingles, especially in the elderly and in those with a weakened immune system.[24]

Shingles is a painful disease that causes the eruption of a blistery rash, usually on one side of the face or body. Before the rash appears, the affected person may have nerve symptoms of pain, itching, burning or tingling. The rash itself may be uncomfortable, but it is the internal irritation from the affected nerve root that causes many individuals to experience the more intense pain associated with shingles. Although shingles is not contagious, people with shingles can spread chickenpox to those who have neither had varicella disease nor the vaccine.

The shingles rash usually clears up after two to four weeks, yet some individuals experience pain that can last for months or even years. This condition, called post-herpetic neuralgia (PHN), generally affects one in ten people who get shingles. Other complications can occur when shingles infects the eye, which can damage the cornea and cause problems with vision, including blindness. Rarely, shingles can also lead to pneumonia, hearing problems, brain inflammation or death.[25] Shingles results in approximately ninety-six deaths per year, similar to the number of deaths caused by chickenpox before the introduction of the varicella vaccine.[26]

The CDC currently estimates that one in three people will develop shingles during their lifetime,[26] but before routine use of chickenpox vaccines, the agency's estimate was that just 15 percent of adults (approximately one in seven) would experience shingles at some point.[1] The CDC maintains that the condition usually occurs in adults over the age of fifty—and that the risks of getting the disease and having serious complications increase with age—but a growing number of studies show more diagnosis of shingles in children since the CDC added the chickenpox vaccine to the childhood vaccine schedule. Prior to the advent of chickenpox vaccination, clinicians did not expect children to get shingles unless they were seriously immunocompromised.

Universal chickenpox vaccination may be exacting an even higher price in the form of an iatrogenic epidemic of shingles.

From the outset, the Zostavax shingles vaccine has been plagued by questions about its safety.

Regrettably, children are developing shingles from the chickenpox vaccine itself—as proven by molecular analysis. A 2009 study titled "The incidence and clinical characteristics of herpes zoster among children and adolescents after implementation of varicella vaccination," published in *The Pediatric Infectious Disease Journal*, reported that the incidence of shingles jumped by 63 percent among young people ten to nineteen years of age in the U.S. from 2000 to 2006.[27] Reluctant to blame chickenpox vaccination, the researchers stated only that this increase "could not be confidently explained" and continued to advocate the vaccine's "widespread use."[27] North Carolina researchers who reviewed roughly two dozen published cases of vaccine-strain shingles in children and adolescents found that the average age of infection was 5.3 years, with infection occurring, on average, about three years after chickenpox vaccination.[28]

In 2011, researchers examined laboratory characteristics of fourteen suspected shingles cases in varicella-vaccinated children—including three children who had experienced natural chickenpox in infancy before receiving their vaccines; the researchers concluded that a third of the confirmed shingles cases "were due to vaccine-type virus."[30]

The incidence of shingles is also on the rise in the adult population. A 2005 Massachusetts study that examined chickenpox and shingles incidence "during a period of increasing varicella vaccine coverage" (1999-2003) determined that shingles incidence increased by 90 percent across all age groups—but it rose by a whopping 161 percent in persons aged twenty-five to forty-four.[29]

NEW PROBLEMS=NEW VACCINES

In 2006, in response to the burgeoning shingles epidemic, Merck (the same manufacturer that produces the chickenpox and MMR II vaccines) launched the first shingles vaccine, Zostavax. Like the chickenpox vaccine, Zostavax is a live-attenuated vaccine, meaning it too contains a weakened form of the varicella-zoster virus. The vaccine's other ingredients are similar to those in the company's varicella vaccines (see sidebar).[7] Because Zostavax is a live-attenuated vaccine, it also has the potential to cause the disease it is meant to prevent. The CDC admits as much, stating that, rarely, "live shingles vaccines can cause rash or shingles."[31] In 2014, the FDA required that Merck add a warning about the potential for vaccine-strain infection to the list of side effects associated with its shingles vaccine.[32]

From the outset, Zostavax has been plagued by questions about its safety. A 2015 study in the *Journal of Drugs in Dermatology* described a significantly increased risk of developing two autoimmune conditions—alopecia (hair loss) and arthritis—in those who had received the shingles vaccine.[33] Although vaccinated seniors were more than twice as likely to subsequently develop the two conditions, the authors dismissed the adverse outcomes' importance as being non-life-threatening and pronounced the vaccine "relatively safe."[33]

Other researchers disagree, however. In a 2013 letter published in the *New England Journal of Medicine*, a Bethesda, Maryland, geriatric expert cited a statistically significant 36 percent increase in the rate of serious adverse events associated with shingles vaccination in persons sixty years of age or older and pronounced the vaccine's safety "questionable."[34] Despite these concerns, Merck distributed in excess of thirty-six million doses of Zostavax from 2006 to 2017, earning an average of six hundred eighty-five million dollars annually—and seven hundred forty-nine million dollars in 2017 alone.[35]

In his *New England Journal of Medicine* letter, the geriatric expert also observed that the shingles vaccine's efficacy has been vastly overstated.[34] In fact, as NVIC summarizes, efficacy studies have found a significant decrease in the vaccine's effectiveness just one year post-vaccination, "and by nine years, Zostavax was determined to be no longer effective at preventing shingles."[36] Its own package insert states, "The duration of protection beyond 4 years after vaccination with Zostavax is unknown."[37]

Merck has faced (and continues to face) a multitude of lawsuits pertaining to Zostavax, with autoimmune disorders, cardiovascular issues, congestive heart failure, hearing loss, brain inflammation, necrotizing retinitis, spinal cord inflammation, stroke, vasculitis, death and shingles all associated with the vaccine.[38]

Claimants allege that Merck produced and sold "an unreasonably dangerous vaccine" and assert that the company knew—or should have known—that the vaccine was not safe.[38] To make matters worse, these injured individuals may have suffered in vain; a physician at the University of California-Los Angeles (UCLA) has pointed out that one hundred and seventy-five people would need to receive the Zostavax vaccine to prevent one case of shingles.[39] (Note that adults injured by shingles vaccines are fortunate to be able to sue manufacturers for compensation—if the vaccine had been designed for children and recommended by the CDC, the spurious National Childhood Vaccine Injury Act of 1986 would protect manufacturers from any and all liability.)

MORE PROBLEMS=MORE NEW VACCINES

Unfortunately for Merck, a second shingles vaccine called Shingrix became available in 2017, manufactured by GlaxoSmithKline (GSK). The CDC currently recommends Shingrix as the preferred shingles vaccine because of its greater reported effectiveness. Shingrix claims to be up to 90 percent effective at preventing shingles, compared to Zostavax's official estimate of 51 percent.[40]

GSK is aggressively marketing two doses of Shingrix to adults over the age of fifty. Since its 2017 approval, the vaccine has been a top growth engine for the company, reaching sales of 1.6 billion dollars in the first nine months of 2019.[45] The retail cost of the vaccine is around two hundred eighty-two dollars for the two injections, compared to about two hundred twenty dollars for the single-dose Zostavax vaccine.

As with Zostavax, a significant number of common and severe side effects have been reported following the administration of Shingrix. Within the first four months of Shingrix being on the market, VAERS had received one hundred fifty-five adverse event reports linked to the vaccine.[46] According to Dr. Kathleen Dooling of the CDC's Division of Viral Diseases, more than 70 percent of clinical trial participants experienced pain after getting the Shingrix vaccine, and "about one in six people experienced side effects so severe that it actually prevented their normal activities."[40] The Shingrix package insert lists adverse reactions that include allergic reactions (such as rash, hives and swelling of the face, tongue or throat capable of causing difficulty in swallowing or breathing), chills, fever, generally feeling unwell, headache, injection site itching, muscle pain, redness and swelling at the injection site.[47]

About one in six people vaccinated with Shingrix experienced side effects so severe that it actually prevented their normal activities.

MANY NEGATIVES, NO PLUSES

Merck and GSK—with help from the CDC—both claim that even if their herpes zoster vaccines fail to protect recipients from a bout with shingles, the vaccines will make the rashes less painful and help clear them up more quickly. Is this uncertain benefit worth it? By May 2019, the number of vaccine reactions, hospitalizations, injuries and deaths reported to VAERS following vaccination with either Zostavax or Shingrix had climbed to over sixty-one thousand, including one hundred seventy-nine deaths, over two thousand hospitalizations and over one thousand related disabilities.[48]

With all of these negatives, it is hard to imagine why officials continue to recommend chickenpox and shingles vaccines so fervently. The answer seems to lie in some combination

QUESTIONABLE INGREDIENTS IN GLAXOSMITHKLINE'S SHINGLES VACCINE

Shingrix is an inactivated, genetically-engineered vaccine that does not contain a live virus like its competitor Zostavax. The vaccine's primary ingredients include glycoprotein E (gE)—a protein found in the varicella-zoster virus—mixed with GSK's proprietary adjuvant suspension called AS01.[41] The latter consists of the saponin QS-21—a purified extract from the bark of a soapbark tree native to central Chile (*Quillaja saponaria Molina*)—and an immune-stimulating fat called MPL (3-*O*-desacy1-4'-monophosphoryl lipid A). The highly potent QS-21 adjuvant is used to stimulate a strong immune response in lieu of using a live virus, but it is experimental and little is known about its mechanisms of cellular activation.[42] Some researchers have reported uncertainty about QS-21's potential toxicity and "undesirable haemolytic effect" (rupturing of red blood cells and release of their contents into surrounding fluid) in humans.[43] Shingrix also contains the problematic surfactant polysorbate 80, associated with adverse effects on female reproduction and blood-brain barrier permeability.[44]

Doctors have long known that a bout with minor illness strengthens the immune system.

of underlying profit motives and irrational fear, both of which have clouded the judgment of vaccine manufacturers, public health officials and lawmakers. Among the numerous unfortunate consequences of these misguided policies are an *upward* shift in the age distribution of chickenpox cases from children (who generally recover with no complications) to teenagers and adults (who have higher complication rates), as well as a painful shingles epidemic that has shifted *downward* the age at which someone gets shingles. Ironically, the FDA predicted a potentially significant rise in shingles cases prior to the chickenpox vaccine's introduction in 1996 but said nothing when the CDC ignored its recommendation to monitor shingles rates closely.[21]

While some hail childhood vaccines—including the chickenpox vaccine—as a victory over disease, others argue that the multitude of vaccines given to children are causing huge increases in chronic immune and brain dysfunction. Currently, the CDC's recommended childhood schedule includes sixty-nine doses of sixteen different vaccines. Meanwhile, almost one in three children has an allergy,[49] one in six has a developmental disability,[50] one in nine has ADHD,[49] one in twelve has asthma,[51] one in thirteen has severe food allergies[49] and one in thirty-six has autism.[52]

Those who promote vaccination also make the assumption that all infectious diseases are bad—but are they really? Doctors have long known that a bout with minor illness strengthens the immune system. This has not prevented public health officials and the media from expounding on the "dangers" of chickenpox, an illness that was typically so benign that it did not even become a nationally notifiable illness until 1972.

Of course, the bottom line is that the decision to vaccinate should never be in the hands of doctors, educational institutions or the government. It is the responsibility of every parent and individual to weigh the risk of the disease against the risk of vaccination side effects. We must remember that vaccination choice is a fundamental human right, and only with truly informed consent for all medical interventions can we ensure that we live in a free society. Our bodies belong to us—and us only.

Kendall Nelson is a documentary filmmaker actively engaged in directing, producing and distributing media that matter. With over twenty years of television and film experience, Nelson's lifelong commitment is to bring about awareness through her work, including advocating health freedom, simple living and real food. She is a proud Idaho chapter board member of the International Women's Forum.

HOME CARE FOR CHICKENPOX

Home remedies that may help relieve chickenpox symptoms and prevent skin infections include:

- Taking baths with baking soda or oatmeal
- Applying cool compresses
- Applying raw honey, diluted apple cider vinegar or a baking soda paste
- Using a homemade calamine lotion with bentonite clay, baking soda, sea salt and soothing essential oils
- Taking natural immune-boosters such as astralagus, calendula, echinecea, elderberry, garlic or vitamin C
- Drinking ginger tea several times a day
- Taking supportive homeopathic remedies (*Aconite* and *Rhus Tox* are common chickenpox remedies, but there are many others depending on the patient and the stage of illness)
- Using diluted neem or diluted essential oils such as tea tree or lavender
- Consuming plentiful bone broth to reduce digestive demands and support healing

Seek medical attention if any of the following symptoms develop: the chickenpox rash becomes tender, warm or very red; the rash has spread to one or both eyes; or there is vomiting, shortness of breath, dizziness, stiff neck, involuntary muscle movements or fever over 102 degrees Fahrenheit.

NOTE: Never use aspirin or aspirin-containing products to relieve symptoms of chickenpox. In children with chickenpox (or influenza), aspirin is associated with Reye syndrome, a severe and potentially fatal disease that affects the blood, brain and liver.

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Farm and Ranch

THE MODERN SUBSISTENCE FARMER

By Neal Ritter

At mealtime we often play a game to try to figure out what we are eating that we *didn't* produce on the farm.

This morning's breakfast was amazing: pastured eggs from our chickens (cooked in ghee from our A2A2 Jersey cow Blossom), bacon from the kunekune pigs, kraut, warm milk for the kids and decaf cappuccinos for us. Last night's dinner was also delicious, with liver from the cow we processed on the farm two days ago, green beans and zucchini from the garden and radicchio salad. I am already excited for lunch—BLTs on sourdough spelt/emmer bread that came out of the oven this morning, with fresh tomatoes and radicchio from the garden, homemade mayo from our eggs and a combination of olive and coconut oil. Tomorrow will be vegetable soup with beef cheeks cooked in bone broth.

The incredible part about this gourmet menu is that this is our life every day. I could go on about the soups, grain dishes, traditional Italian pastas, vegetables, eggs, cured meats and ferments that grace our table daily. All of this abundance is grown on four acres of our farm in arid Colorado. In fact, at mealtime we often play a game to try to figure out what we are eating that we *didn't* produce on the farm—usually salt, olive oil and grains. What is most remarkable is how easy it all became once we made a fundamental shift in our beliefs around food, farming and nutrition.

SUBSISTENCE REDEFINED

When asked, we define ourselves as subsistence farmers. This may be a little tongue-in-cheek, but it is also the simplest description of our goals in agriculture. "Subsistence," in our minds, is the practice of growing as much of our food as possible, while selling very little. (Our goal is to reach a break-even point economically.)

My wife and I started this journey in our early twenties, with a vague notion of "growing our own food." On borrowed land, we established a large vegetable garden that grew into a micro-CSA (community-supported agriculture). We also raised sheep—selling the meat—and chickens. While remaining a part-time endeavor, our farm generated a reasonable income.

The problem arose when we more carefully contrasted our diet to our farming practices. We were selling all of the lamb in order to buy other meat, namely pork and beef. We consumed but were not ourselves producing large quantities of raw milk and other dairy products. While our vegetables provided the bulk of our meals, they supplied few calories. We had embarked on a Wise Traditions diet but still purchased the majority of our calories.

This changed five years ago when we managed to purchase our own twenty-acre farm. It is a beautiful piece of land, though only about four acres are suitable for agriculture at the moment. We are happy to leave the rest wild, as we run youth educational programs for our livelihood; the four acres supply our caloric needs.

The shift involved a mental adjustment to imagine how to produce as many of our *calories* as possible, instead of simply focusing on *volume*. This meant shifting to animal foods that are rich in fat, along with calorically rich garden staples that can be stored throughout the year. What we have come to realize is that it is possible to produce a large amount of food. We now live in a state of abundance and generosity; at times of excess, we trade and give freely to our community.

We have undertaken to go "whole hog" on this life experiment of growing as much nutrient-dense food as possible. To be honest, this lifestyle requires a lot of time and work. (It also means that we have a certain amount of monotony in our diet; for example, after the harvest of a large animal, we eat a lot of one kind of meat for a while.) Luckily, sitting out under a tree on a summer evening shelling beans or

working together making sausage is our idea of a good time.

This article is a "call to subsistence," hopefully inspiring others to take some level of greater participation in producing the food they eat. Small steps can make a large impact in the pantry and the kitchen. In the following sections, I describe some of the animal and plant foods that, in our experience, can make a huge difference. Many of them can be scaled to smaller spaces.

GOATS: THE PERFECT SUBSISTENCE ANIMAL

When we moved to our new farm and shifted our intention to subsistence farming, goats were the first animal we introduced to the new land. We love goats. They are hardy, productive and very personable animals to work with. We also have large areas of invasive weeds, and goats—less picky than sheep or cows—are ideal to graze in marginal areas. Goats have been immensely helpful in managing our landscape.

We managed to invest in a herd of six weaned does for under two hundred dollars. We raised them, training them to electric fencing. When it was time to breed, we borrowed a buck from some neighbors. The next spring we had a batch of delightful, playful kids racing around. We milked the goats, enjoying raw milk and fresh cheeses, and ate castrated males and females we wanted to cull from the herd. Although it surprises many people, we love goat meat, which is tender, delicately flavored and delicious.

Where neighborhood rules allow it, I believe that a goat is a perfect backyard homestead animal. We have several friends who have raised goats in large backyards, benefiting from the milk, lawn mowing and meat. Goat manure is pretty innocuous and would beneficially fertilize a lawn. While good fencing is always essential with goats, dwarf breeds such as Nigerian Dwarf goats are easier to contain; they still provide all of the benefits of other dairy breeds, just with lower amounts of milk per animal.

PIGS: FAT-FUELED LAWN MOWERS

When we saw our first kunekune pig, we fell in love. Kunekunes are a delightful breed from New Zealand. In addition to their slightly-smaller-therefore-cuter size, they are grazers, meaning they eat and grow fat on grass without much rooting. When we acquired our first two kunes, they literally spent the summer mowing our lawn. They tend to deposit all of their excrement in a single corner, making clean-up easy, and they respect fences. A kunekune is a perfect backyard animal, a friendly lawn mower kindly growing bacon on nothing more than grass and kitchen scraps!

Kunekunes, along with some other great homestead breeds, are lard pigs. They grow more slowly than standard hogs but put on incredible amounts of fat. For those of us focusing on calories, this is a gift. Raising kunekunes has eliminated our need to purchase cooking fat. We generally harvest two animals a year, and this provides all of the lard we require for cooking. The one potential issue is that their meat is also very fatty—we find it ideal for mixing with leaner grass-fed beef, goat and wild game. This is a perfect marriage that graces our table regularly.

COWS: MAKING EDIBLE SUNSHINE

The reason we transitioned from goats to cows as a dairy source can be summed up in a single word: butter. The delights of butter, cream and ghee are daily gifts from our lovely Blossom. Cows are a larger investment of money and space, but they are a game-changer for those eating a Wise Traditions diet.

We have small A2A2 Jersey cows deriving from New Zealand genetics, which means they do very well on an exclusively grass diet. We get less milk than with other breeds—only two gallons a day. Many folks marvel that we can go through even this much milk, but the combination of butter-making and pigs makes it easy. We make all of our butter for the year when the grass is growing quickly (primarily in May and June) and at other times of year keep ourselves well supplied with ghee for cooking. Any skimmed milk and buttermilk go to the pigs. In between, our children drink large amounts of raw milk, and we make yogurt, kefir and hard and soft cheeses. My favorite is making kefir with straight cream instead of milk.

On four acres, in an arid climate with mini-

A kunekune is a perfect backyard animal, a friendly lawn mower kindly growing bacon on nothing more than grass and kitchen scraps!

Learning some level of small-scale butchery is one of the most powerful tools of the subsistence homestead and is the key to abundance.

mal water rights, we raise three to five cows. This includes two milkers and a few calves or steers to sell or eat. Our daily milking in the first hours of the morning is a delight. We enjoy spending time with Blossom and filling a bucket with delicious creamy milk.

Of all the animals I have mentioned so far, the cow is the most significant to add to the family homestead and would be difficult in a more suburban or urban setting. However, the sheer quantity of food coming from a single cow (and yearly calf), plus the immense fertility from manure for the garden, make the cow an easy addition to our life. Also, unlike goats, fencing cows is much easier and much less stressful. And every time we open a jar of ghee, stored for months in our basement, I marvel at the alchemy that transformed sunlight into the miraculous fat that feeds us daily.

POULTRY: THE GATEWAY LIVESTOCK

With more and more municipalities legalizing backyard flocks, poultry is the easiest entry point into subsistence living. While chickens are most common, ducks, geese and turkeys are all easy, producing delicious eggs and different meats to add variety.

Eggs are our "fast food" and a staple in our kitchen. In the spring, when the birds are laying like crazy, eggs feature in every meal, from quiches to custards, boiled eggs, frittatas and more. Our chickens live in mobile houses that move daily in the summer, following the cows onto fresh pasture. In winter, they still move but less often, as we keep them in more protected areas in the colder weather.

Chickens have been the cornerstone of our broth-making, especially before we started raising larger animals. We simmer the carcasses gently for twelve to twenty-four hours, and after straining the delicious broth, pick off the meat for tacos, soups and casseroles. Chickens raised in this way are tougher than supermarket chicken, to be sure, but deeply flavorful.

BUTCHERY: THE KEY TO SUBSISTENCE

I often say that we eat the best food in the world, and if there is anything that has made this possible, it is learning the craft of butchery. I believe that learning some level of small-scale butchery is one of the most powerful tools of the subsistence homestead and is the key to abundance. We harvest and process all of the meat we eat. The journey of learning this potent practice has given us access to a wide variety of nutrient-dense and delicious foods.

We started with chickens and turkeys, which initially went into bone broth and stews. Although we see lots of folks in our area raising chickens, there is a point when no one is willing to process their birds due to sentimental attachment. I find that chickens are actually the simplest first foray into animal processing, and it is how I got started. Learning to harvest the feet, livers, hearts and fat are great ways to begin to add nutrient-dense foods to the diet. Fresh liver is my children's favorite, as well as the feet we add to broth. With a couple of friends and a little practice, processing five birds is a short morning's work. We have processed hundreds of layers over our thirteen years of homesteading.

Sheep and goats were the next port of call. These animals are manageable for a couple of folks to do together, and the meat is delicious. With our goats, we harvested every scrap of bone for broth, while the meat went into delicious stews. We also made jerky for snacks.

Harvesting our kunekune pigs changed our whole diet. Suddenly, we had luscious leaf lard for flaky crusts and long-fermented sourdough biscuits. I have also gone down the rabbit hole of curing pork, so now we eat slabs of bacon (christened "steak-on" by a friend), coppa, lomo and salami. We work organs into paté or eat them fresh, while our sausages feature beautiful herbs from the garden. The fatty pork mixed with our leaner grass-fed beef or wild game adds succulence to a variety of dishes.

THE GARDEN: FOCUSING ON CALORIE-DENSE FOODS

When we shifted our mindset to growing calories, our relationship to the garden and preserving changed. Previously, we grew lots of greens, and we vinegar-pickled jars and jars of vegetables. At present, while we still grow beautiful greens, we also have several beds of dry beans, potatoes, garlic and onions. We grow corn for popcorn and polenta, and naked seed squash for seeds that we turn into pepitas for

snacking on throughout the winter. We freeze much of the harvest—especially green beans, peas, zucchini and celery—for hearty soups throughout the winter, and we can tomato sauce. In addition, we now ferment more vegetables, leaving them in the basement to add to meals throughout the year.

During the summer, we eat a more vegetable-heavy diet (though still dressed with butter, cream and bacon), while in winter, we shift to hearty soups, stews and roasts. We eat herbs fresh all summer and dry them for use in winter.

FORAGING: FOOD FOR FREE

My entree to subsistence living was through teaching primitive skills. Identifying edible plants, foraging and hunting were skills that I taught before I began growing food. We still supplement a certain amount of our diet with wild foods harvested on the landscape, both plant and animal.

There are several that have had a large impact on our diet. The first is wild greens. Without a greenhouse, our garden is a little slow to start at our high elevation. Hardy and robust wild greens are one of the first things that we eat after the long winter. There are so many different greens that grow in many different regions, and one can add them to any dish that uses cooked greens. We add lambs quarters, nettles and orache to spanakopita, green soups, eggs and green pasta.

Foraging for mushrooms and wild fruits adds adventure to our summer and produces dramatic results on the table. Porcini are our favorite mushrooms. We harvest saskatoons, chokecherries and many feral fruits to freeze, dehydrate and flavor mead, creating treats in winter.

Wild game is food that is available to many, even without access to land for farming. Pursuing big game is exciting and romantic and results in the most meat; however, I am a fan of small game. The quantity is less overwhelming (particularly if you don't have a chest freezer), and small game provides more variety—from upland birds to waterfowl to squirrels to rabbits. Some of the more "edgy" meats yield surprising results in the kitchen. I have served raccoon to folks who now claim it is the best meat in the world! The primary consideration with wild foods is care in cooking, so that their inherent deliciousness is honored. Many of the best restaurants in the world actively seek wild foods, acknowledging the powerful culinary potential of these foods that are free to all.

OUR MAIN IMPORTS

We don't produce all of our food. For a variety of reasons, including time and sentimental attachment to certain global flavors, we buy a portion of our food. For example, we buy spelt, einkorn and khorasan for our sourdough baking. Olive oil and vinegar dress our salads and many vegetables. Some products, such as coconut milk and spices, allow our menu to reflect flavors from around the world. We also balance the shortfalls in our harvest with root crops from local farmer friends.

HEALTHY AND CONNECTED

Devoting our life to a subsistence lifestyle has given our family access to nutrient-dense foods, engaged our children and community and inspired generosity as we share the harvest with friends and family. It keeps us healthy and connected to our landscape. I advise anyone interested in delving deep into food, nutrition and health to grow some vegetables, learn simple butchery and keep a grazing pig in the backyard. In other words, take little steps day by day to ensure your health and that of future generations.

During the summer, we eat a more vegetable-heavy diet (though still dressed with butter, cream and bacon), while in winter, we shift to hearty soups, stews and roasts.

Legislative Updates

FEDERAL POLICY UPDATE

By Judith McGeary, Esq.

LABS VERSUS FARMS

In January, the *Guardian* published an article by famed environmentalist George Monbiot entitled "Lab-grown food will soon destroy farming—and save the planet." Monbiot's core message can be summarized in this quote from the article: "We are on the cusp of the biggest economic transformation, of any kind, for 200 years. While arguments rage about plant- versus meat-based diets, new technologies will soon make them irrelevant. Before long, most of our food will come neither from animals nor plants, but from unicellular life. After 12,000 years of feeding humankind, all farming except fruit and veg production is likely to be replaced by ferming: brewing microbes through precision fermentation. This means multiplying microorganisms, to produce particular products, in factories. I know some people will be horrified by this prospect. I can see some drawbacks. But I believe it comes in the nick of time."

He goes on to compare the laboratory food to the conventional agriculture system. He correctly points to the water shortages, the devastating loss of topsoil and fertility, water and air pollution, and the destruction of valuable habitats and wildlife resources that have been caused by so-called modern agriculture. Monbiot touts the new fermentation approach as providing immense energy and water savings, as well as the reduced need for land. But he skips several vital points in his analysis.

First, what will be the nutritional quality of the resulting food, beyond simply providing calories? What will be the cost, in human health and welfare, from eating laboratory-grown foods produced by genetically engineered bacteria? As is typical in the conventional system, Monbiot appears to focus solely on protein, carbs and fats as categories, without concern for nutrient density.

Second, what is the true life-cycle cost of the labs, both in resources and the resulting impacts? How much concrete, steel and energy will be used in building and maintaining these factories?

And remember that not all resources are the same. The labs will be run entirely with what is known as "blue water"—water pulled from aquifers or reservoirs. In contrast, pasture-based farms use "green water"—water that comes as rainfall or snowpack, as part of the natural cycle. Green water usage is far more sustainable than blue water. And that's just one example of the sort of logical gaps in arguing that lab-based foods are sustainably raised.

Which brings us to the point that the comparisons are largely based on a false dichotomy between conventional agriculture and labs. There is another alternative: regenerative agriculture. It massively reduces the water needed for agriculture, affirmatively cleans air and water through natural processes, rebuilds topsoil—and provides high-quality food that can improve human health and reduce our existing health crisis.

Yet Monbiot's article claims that this alternative is not sustainable. He cites a study in *Nature* that looked at what they term "extensive farming" (as opposed to "intensive farming," namely feedlots and confined operations). He points to a single study, which claims that extensive farming is even more harmful for the environment than intensive—not only using more land (which is the common critique of pasture-based systems), but somehow creating greater greenhouse gas emissions, soil loss, water use and nitrogen and phosphorous pollution.

That sounds bizarre to anyone familiar with pasture-based farming. But it all makes sense when you read the study and realize that the example of "extensive farming" was done on cleared forest land in the Amazon, using only cows, and no mention of rotational grazing.

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This isn't evidence for Monbiot's conclusion that if we all ate pasture-raised meats, we'd need several more planets. Instead, it's proof that we need diverse farms that are managed based on their unique ecosystems, rather than a single answer imposed on every system.

It's disturbing to see a renowned environmentalist fall into the techno-trap, seeking answers to our problems in the world of high-tech, with its big profits for large companies that will exert ever-increasing control over the food system. While Monbiot recognizes that danger and calls for a decentralized system for these new laboratories, it is inevitable that such a resource-intensive, high-tech approach will continue the cycle of consolidation of economic (and with it, political) power.

We don't need the false promise of biotechnology and fake food. We have the solution to all the crises Monbiot identifies, and that is in local, regenerative agriculture that preserves genetic diversity and traditional foods while healing the soil, stewarding our vital water resources and supporting rural communities and real people.

REGULATING MEAT: IS THE PRIORITY FOOD SAFETY OR PUBLIC IMAGE?

Unfortunately, farmers face often unnecessary challenges in providing high-quality pasture-based meats to consumers, particularly when it comes to finding processing plants. I recently attended a roundtable discussion with top officials from the USDA's Food Safety Inspection Service (USDA-FSIS), which regulates meat processing. The three-hour discussion consisted primarily of the USDA officials explaining the status of recent proposals and policies under consideration to a group of small-scale processors and the producers who rely on them.

While there was some back-and-forth with the processors in attendance on topics relating to humane animal welfare and labeling, the topic that generated the most discussion and heat was the salmonella "performance standard" for poultry processors. This USDA policy has already caused many small-scale poultry processors around the country to shut down.

To provide some background: The USDA-FSIS has a protocol that requires a series of tests for salmonella at poultry processing plants. Because salmonella is not an "adulterant" under the Federal Meat Inspection Act, these tests aren't designed to identify meat that would make people sick from these bacteria. Instead, the tests seek to identify the presence of the bacteria, even if it is too low or of the wrong type to cause human illness. If the bacteria are detected, FSIS treats that as proof that the processing facility's "process controls" are inadequate.

This testing regime was implemented a while ago, and over the years the agency has changed the type of test being used. At this point, the testing looks for the DNA of these bacteria. That means that a processor may get a positive test even if there isn't a single live bacterium on the chicken—just the DNA showing that, at some point, there had been! One of the few ways to consistently avoid positive test results is to soak the chickens in a high-chlorine bath (which degrades the DNA), something that most small-scale farmers oppose doing and that is inconsistent with most consumers' desires.

What happens when the tests detect DNA from salmonella? FSIS inspectors come in and demand that the facility change its Hazard Analysis and Critical Control Point (HACCP) plan to address the perceived flaw.

Large scale-facilities have entire departments of lawyers and consultants to deal with the agency demands. They may make some changes to their processes, but they can stonewall any attempt to make the significant changes necessary to truly improve food safety.

What happens to a small plant? They don't have lawyers and experts on retainer, and they quickly find themselves buried in paperwork and impossible agency demands—even if the salmonella detected was at such a low level or of a type that posed no real health risk. In the end, many small processors will be driven out of business, "HACCP'd to death."

Two small-scale poultry processors raised this issue at the listening session with FSIS, and the resulting discussion was both interesting and disturbing.

I pointed out that it would be a better use of both the agency's and the processors' resources

We don't need the false promise of biotechnology and fake food.

In other words, we have a system that doesn't work to stop the sale of tainted meat, but that is penalizing small producers who aren't selling dangerous products.

if the tests were changed to focus on where there was an actual human health risk—that is, test for the main strains that cause the most illnesses, and set a standard based on when there is enough salmonella present to make someone sick. Notably, the agency staff did not disagree with the logic of that approach. Instead, the staff raised concerns about "perception" and the blowback the agency would receive if it was viewed as "lowering standards."

In other words, we have a system that doesn't work to stop the sale of tainted meat, but that is penalizing small producers who aren't selling dangerous products. And they can't change it because it would look bad.

Lots of people get sick from salmonella, and the agency wants to look like it's doing something and being as strict as possible. The current tests are not only super-sensitive, but they are quicker than tests that look for specific strains or quantify the levels of bacteria present. And the situation is evolving. The USDA staff noted a new factor in their considerations: a petition filed by Bill Marler, the Seattle lawyer who represented hundreds of victims in the Jack in the Box food poisoning case in the 1990s. Two decades ago, Marler courted the media to get the *E. coli* bacteria on the agenda of policymakers, and he played a key role in getting USDA to outlaw the most virulent strains of *E. coli* in meat. He was a major player in the passage of the Food Safety Modernization Act, and his ability to influence legislators and agency officials should not be underestimated.

Marler recently submitted a petition to USDA to label thirty-one different strains of salmonella as "adulterants," with a zero-tolerance approach. Previous petitions have taken a more reasonable stance, focusing on the three or four strains that truly cause the most problems. (USDA rejected the most recent one in 2018.) In contrast, Marler's petition includes every strain of salmonella that has made anyone sick in the last two decades. And it fails to recognize that, unlike *E. coli*, salmonella can be in the animal's lymph nodes, and thus can be found on the meat even if there was no fecal contamination.

The petition seeks to have these thirty-one strains of salmonella declared adulterants in any type of meat, so it impacts all livestock farmers and their processors.

There are several possible outcomes of this petition. USDA may simply reject it (as it has with previous petitions). USDA may identify a handful of strains as adulterants—which would impose significant burdens on the plants that have those strains present. Arguably, if the USDA also stopped the pointless performance tests for all strains, this could be a good outcome overall. But the USDA may also identify some strains as adulterants and continue with the performance testing, which would be the worst of both worlds.

FARMER WINS LAWSUIT AGAINST BAYER

Shifting attention to the plant side of agriculture, there is some encouraging news. In mid-February, a jury found that the agrichemical corporations Bayer and BASF should pay two hundred fifty million dollars in punitive damages and fifteen million dollars in compensatory damages to farmer Bill Bader.

Bader is a peach farmer in Campbell, Missouri, who sued the companies after more than thirty thousand of his trees were damaged due to drifting of dicamba, an herbicide developed by BASF and Monsanto (purchased by Bayer in 2018). After dicamba damaged the Bader Farms trees, the peach harvest dropped from an average of one hundred sixty-two thousand bushels in the early 2000s to twelve thousand bushels in 2018—a loss of more than 92 percent!

Dicamba is an herbicide used to kill weeds in corn, soybeans and other food crops. By the end of 2020, the EPA must determine whether to renew the two-year extension it gave in 2018, allowing farmers to continue its use.

Monsanto developed dicamba-resistant seeds called Xtend to be planted in conjunction with the use of the dicamba formulation Xtendimax. From the beginning, the Xtend crop system has caused problems for all kinds of farmers. Famers growing both organic and conventional (not genetically-modified) soybean and cotton have suffered losses. And "specialty crop" farmers, raising peaches, grapes and broccoli, have faced a crisis.

Dicamba simply doesn't stay put, no matter how it's applied. Farmers have known this for years. And although the EPA has imposed label restrictions (such as limits on how and when dicamba can be applied), the complaints of off-target damage have only increased as more acres are planted in GMO dicamba-resistant crops. No label restrictions will change the tendency of dicamba products to volatilize (change from a liquid to a gas) and travel long distances, nor how toxic they are to native and domestic vegetation, even in very low concentrations.

And the evidence presented at the trial showed that Bayer and BASF not only knew that fact but banked on it. The companies predicted that dicamba drift would cause losses and planned that as a marketing tool, using it to sell their genetically-modified seeds to farmers as a "defensive" measure.

So, farmers who don't use the Xtend system suffer damages to their crops, while Bayer and BASF make even more profits thanks to the farmers who switch to buying their GMO seeds to protect themselves. It's reminiscent of the old gang protection rackets.

Bader's lawyers recommended that the jury award punitive damages of two hundred million dollars, equal to 2.5 percent of Bayer's net worth, to deter the corporation from continued behavior that hurts farmers while they collect profits. This comes on the heels of juries awarding over two *billion* dollars in damages to plaintiffs in several lawsuits over another harmful Bayer product—glyphosate.

There are about thirty-five more cases filed against the company by farmers in Illinois, Arkansas, Missouri and other states. Bader Farms' victory in this case opens opportunities for more farmers to hold Bayer and BASF legally accountable for the dicamba drift crisis that these companies created in their push for profits.

Which brings me full circle to the first topic in this article: high-tech farming systems. Technology is a wonderful tool, useful for many, many things. But relying on it to be the answer to how to provide food for humanity is unscientific. It ignores all the data we have from the real-world experiments over the last fifty years. The high-tech approach to agriculture has created multiple serious crises: loss of topsoil, contamination of water supplies, nutrient-deficient foods that have contributed to an epidemic of chronic disease, and corporate control of a fundamental human need. The idea that the next technological breakthrough will somehow be different isn't logical or data-driven. Rather, it's fueled by the interests of large companies that want to amass profits at the expense of everyone else.

Lawsuits like Bader's are part of the process of cracking the veneer of corporate "solutions." The suit would probably never have happened but for the activism of nonprofits and individuals fighting the approval of the genetically engineered dicamba-resistant crops. And in turn, the jury finding in Bader's case can help fuel further grassroots efforts to fight back against GMOs, educating both farmers and consumers as to the importance of protecting non-GMO crops and food sources.

To quote Martin Luther King, Jr., "The arc of the moral universe is long, but it bends toward justice."

ENTHUSIASTIC ABOUT WAPF

Presentation by Bern, Switzerland, chapter leader Judith Mudrak (center) in February in Berrysburg, Pennsylvania. Mike Mudrak staffed a WAPF table. The event was organized by Answers Pet Food and attended by about forty farmers. Both Answers Pet Food representatives and the farmers attending were thrilled with the WAPF materials.

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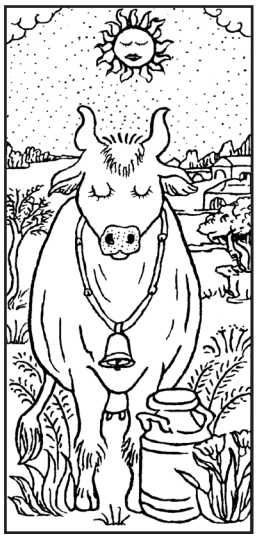
WHY IS FRESH CHEESE ILLEGAL?

By Pete Kennedy, Esq.



With all the laws on the books today favoring industrial food under the guise of protecting the public health, one that stands out is the federal prohibition on fresh cheese (raw cheese aged less than sixty days). The cheeses whose producers are hurt by the sixty-day aging requirement are the soft-ripened and semi-soft cheeses defined in regulation by FDA in the Code of Federal Regulations, 21 CFR 133.182 and 21 CFR 133.187.

The production and sale of fresh cheese has been legal in Europe for centuries, with an excellent overall track record for safety. Moreover, the legal shelf life of a raw cheese like camembert in Europe is only fifty-five days, mainly due to the increased chance of the growth of listeria after that time; so in the U.S., artisan cheesemakers producing camembert or a similar cheese must wait longer than they should have to in order to get paid while being forced into selling a product that has a higher risk of contamination. Each type of cheese has its own pH and moisture level, two among other factors that need to be taken into account before determining the proper aging time for the cheese.

The FDA has no intention of changing its one-size-fits-all aging requirement for cheese, but a recently published book, titled *Ending the War on Artisan Cheese*, should help any effort to go in that direction. The book, written by Catherine Donnelly who is a professor of food science and nutrition at the University of Vermont, covers in extensive detail how the FDA's policies on raw cheese aren't based on science but rather on creating a climate of fear and intimidation against artisan producers to protect and expand the market share of industrial cheese makers.

The FDA actions Donnelly lists against artisan producers include:

- Inspections, along with product detentions during each inspection, of every cheesemaker (as well as two Whole Foods stores) who attended a 2013 workshop in Georgia titled "Food Safety and Hygiene in Artisan/Farmstead Cheesemaking" that was co-sponsored by the Georgia Department of Agriculture, the Innovation Center for U.S. Dairy and Whole Foods.[1] The workshop was designed for small-scale cheesemakers and also included invitations to federal and state inspectors, the thought being that many of the inspectors were "not always knowledgeable about artisan cheesemaking."[2] The inspections and detentions occurred the day after the workshop. As Donnelly states, "the notion that attendance at, or sponsorship of, an educational workshop could subject an artisan cheesemaker or cheesemonger to regulatory scrutiny defeated the very purpose for which these workshops were intended."[3]

- The American Cheese Society (ACS) is the leading organization in the U.S. supporting the promotion of artisan, farmstead and specialty cheeses. As Donnelly explains it, "Attendees at the American Cheese Society began to notice some interesting connections between the dates when the annual ACS meetings were occurring and the timing of FDA recall announcements and unannounced visits to their establishments. Cheesemakers would lament that they were unable to bring the quality assurance members of their organization to the ACS annual meetings because it becomes a matter of routine that unannounced inspections from the FDA occur during the ACS meeting."[4]

- FDA officers would take cheese from producers for "microbiological compliance sampling," which then requires cheesemakers to "withhold the production lots being tested from distribution into commerce until results of the FDA's analysis were returned. Affected companies noticed a pattern: Many times results were released only after the products had reached the end of their sell-by dates. And in most cases, the tested products met compliance criteria: They were salable products that fully complied with regulations, but they could not be sold, because of regulatory targeting and testing of these goods."[5]

- In 2009-2010 FDA changed the tolerance level of generic *E. coli* in raw milk cheese from ten thousand colony-forming units per gram of cheese (cfu/g) and lowered it to ten Most Probable Number (MPN) per gram in "two or more subsamples or greater than one hundred MPN per gram in one or more subsamples."[6] The European Union hasn't established a generic *E. coli* tolerance level for raw cheese, only pasteurized cheese. The new tolerance levels effectively prohibited artisans from being able to release significant amounts of their product into commerce. Extensive sampling by FDA from 2004-2006 before the new requirements went into effect showed that about 70 percent of the cheese tested then would not have met the new standard.[7] This standard especially created trouble for producers of raw milk soft and semi-soft cheeses; the long acidification times often involved in the production of those cheeses can easily lead to levels above ten MPN. There is no scientific evidence that these new standards lead to safer cheese. Thanks to political pressure, FDA finally halted using the one hundred-to-ten MPN standards in 2016.[8]

During most of the time FDA actions against artisan cheesemakers were occurring under the aegis of the Center for Food Safety and Applied Nutrition (CFSAN), John Sheehan was the director of FDA-CFSAN's Division of Dairy, Egg and Meat Products. Monica Metz was the chief for FDA-CFSAN's Milk and Milk Products Branch; both Sheehan and Metz were former employees of industrial cheesemaker Leprino Foods.[9]

FDA established the 60-day aging rule in 1950. Donnelly shows that: the regulations were formulated around the behavior of bacterial pathogens such as *Salmonella typhi* and brucella in Cheddar cheese, the predominant cheese variety produced in the United States in 1950. Cheddar cheese has a low moisture content, high salt content and low pH/high acidity, and these parameters interact to create an environment that is inhospitable to bacterial pathogens, so they die off as cheese ages over the course of sixty days or longer. Not all cheeses share these characteristics, however, and the regulations currently upheld in the CFR have been broadly applied to a number of specified cheese varieties despite scientific evidence that suggests such regulations are inappropriate for certain cheeses, such as soft-ripened varieties like Brie and Camembert.[10]

For reasons of food safety and quality, soft and semi-soft cheeses should have shorter aging requirements. While it's true that soft and semi-soft cheese have been responsible for more foodborne illness outbreaks than hard cheeses, there is plenty of evidence that these cheeses can be produced safely.

Donnelly herself has been part of a successful effort to produce safe raw cheese through her work with the Vermont Institute for Artisan Cheese (VIAC), which has developed risk reduction protocols and process control measures for Vermont artisan cheesemakers that have resulted in more sanitary facilities. When FDA conducted nationwide environmental sampling for listeria at soft cheese firms, not a single Vermont cheese facility tested had a positive test for listeria out of one hundred to three hundred environmental swabs taken at each facility.[11]

FDA has more than shown it is interested only in destroying artisan cheesemakers, but the legislative process is a vehicle to lower and/or eliminate aging requirements to allow the sale of fresh cheese. There is no prohibition against the sale of unaged raw cheese in intrastate commerce; Wyoming, Kansas and some seventy to eighty towns in Maine currently allow the direct producer-to-consumer sale of fresh raw cheese. Fresh cheese is a great opportunity for small farmers and local artisans to produce a safe, nutritious product. The demand and the safety protocols are in place to make that happen.

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RAW MILK UPDATES by Pete Kennedy, Esq.

FEDERAL: FDA DENIES RAW BUTTER PETITION

As expected, the U.S. Food and Drug Administration (FDA) has denied a citizen petition from the Farm-to-Consumer Legal Defense Fund (FTCLDF) and Organic Pastures Dairy Company (OPDC) to lift a ban on the interstate distribution and sale of raw butter.

In a February 27 letter to FTCLDF and OPDC, Mark Moorman, director of the FDA's Office of Food Safety and Applied Nutrition, stated: "Your petition does not contain facts demonstrating reasonable grounds. . . to allow the interstate delivery or sale or distribution of raw cream butter. Further, your petition does not substantially show that your proposal is in the public interest and will promote the public health objectives of FDA and the statutes we administer."

Allowing access to a nutritious raw dairy product like butter is not a "public health objective" of FDA.

While FDA's decision wasn't a surprise, the weakness of its response to the petition was. At the end of the FDA letter was a five-page table on "Illnesses and deaths associated with butter not known to be pasteurized, (1908 to 2003)." There were thirteen outbreaks during that ninety-five-year timeframe attributed to raw butter consumption, with one of the outbreaks occurring in England.

Of those thirteen outbreaks, all but one described the butter as "not specified but commonly unpasteurized" or "not specified." The one entry listed as "unpasteurized" is a 2001-2002 outbreak where two hundred two people in North Carolina allegedly became ill from butter. This entry conflicts with the CDC's foodborne illness outbreak database, which attributes the illnesses to "other milk, unpasteurized." According to published articles, homemade butter was served to elementary school students as part of a demonstration.

Seven of the thirteen outbreaks fail to specify the "total number of illnesses"; one shows "reports of consumer injuries" while six show "NA" (meaning "not available or not reported").

One of the entries, a 1991 outbreak where two hundred sixty-five people became ill in California and Nevada, lists the implicated food as "blended butter and margarine products." How often has raw butter been blended with margarine—ever?

Two of the thirteen outbreaks indicate that someone was hospitalized—one person in one case, four in the other. The remainder indicate that no data are available. Only one of the thirteen outbreaks specified whether there were any deaths (six in a 1913 Minnesota outbreak). Again, the remainder indicated that no data are available.

If a petitioner had submitted a graphic to FDA with data this incomplete, the agency would have rejected it out of hand. Even if FDA is correct on the number of outbreaks attributed to raw butter consumption, the total amounts to one outbreak every seven or eight years. If that is the standard for banning a food in interstate commerce, many foods would be illegal.

Much of FDA's response consisted of disagreeing with the petitioners' interpretation of various studies regarding butter and pathogenic bacteria, as well as citing challenge tests (such as studies in which butter is inoculated with pathogens, then observed to monitor what happens). Shouldn't the ultimate determining factor, from a scientific standpoint, be how many people have gotten sick from consuming a food?

The CDC database on foodborne illness outbreaks from 1998-2016 that FTCLDF and OPDC used in their petition to FDA doesn't blame a single outbreak on commercially produced raw butter, and only one outbreak is blamed on homemade raw butter.

FDA tried to downplay raw butter's impressive safety track record by pointing to the 1987 interstate ban as the reason there have been almost no outbreaks. However, raw butter sales have been legal in California since the state's inception.

Mark McAfee, OPDC's president, stated that his company has sold well over two million pounds of raw butter over the past twenty years without illness. About ten other states allow the sale or distribution of raw butter.

Aside from the small number of foodborne illness outbreaks attributed legitimately or otherwise to raw butter consumption over the past one hundred twelve years, the FDA denial of the petition could be vulnerable to a court challenge in other areas.

NEW INFORMATION RESOURCE FOR WAPF MEMBERS

Consult with Pete Kennedy on state laws, regulations and policies including food freedom legislation and issues regarding consumer access to raw milk, cottage foods and on-farm meat and poultry processing. (Pete cannot give individual legal advice or recommend support for or opposition to pending legislation.) Contact Pete at pete@realmilk.com.

The butter ban is illegal according to a statute (21 USC 341) in the Federal Food, Drug and Cosmetic Act that governs "standard of identity" for food, which are requirements prescribing what a food product must contain to be marketed under a certain product name in interstate commerce. For instance, the standard of identity for milk requires that it be pasteurized or ultra-pasteurized and that it contain not less than 3.25 percent milkfat [21 CFR 131.110]. The citizen petition notes that FDA addressed the question of requiring pasteurization as part of a standard of identity regarding milk and found that such health-based requirements were properly addressed as standards of identity stating, "The Commissioner rejects the contention that section 401 of the act does not permit provisions of a standard of identity to be promulgated for health reasons." [39 Fed. Reg. 42,351 (Dec. 5, 1974)]

Congress has given FDA power to establish standard of identity requirements for most foods but specifically prohibits the agency from doing so for butter. In its response, FDA justified its violation of the standard of identity by claiming the Public Health Service Act gives it authority to require pasteurization for butter as part of its power to regulate communicable disease, a stretch given the food safety track record of raw butter. FDA, in its response, argued that standard of identity was about protecting consumers against economic adulteration and reflecting consumer expectations about food, contradicting its earlier statement that health reasons can also be a factor in these regulations.

A second area where FDA is on weak ground is that, in the lawsuit that resulted in the court order to FDA to impose the ban [Public Citizen v. Heckler, 653 F. Supp. 1229 (D.C. District, 1987)], butter is not mentioned at all in the court record of the case. Butter, like cheese, is considered a manufactured milk product. The lawsuit sought the ban of all raw milk and raw milk products in interstate commerce. The definition of "milk products" in the FDA Pasteurized Milk Ordinance (PMO)—the governing document for the production and distribution of milk and milk products in interstate commerce—does not include butter or cheese.

The court record discussed only dairy products that were listed in the PMO definition of "milk product." When the court ordered FDA to ban "raw milk" and "raw milk products" it was only those products under that definition.

In its response, FDA claimed the court order banned all products made from raw milk but if the agency is correct in its interpretation, aged raw milk cheeses wouldn't be legal in the U.S. as they have always been. The impetus for the litigation that resulted in the court order was the lack of FDA enforcement on standard of identity regulations requiring pasteurization for milk and various milk products—because of the statutory prohibition, there is no standard of identity regulation for butter.

FTCLDF is appealing the FDA denial to the federal district in court in the District of Columbia. The appeal to challenge FDA is likely to be costly as it will require paying scientific experts as well as attorneys. FTCLDF could really use your financial support. Overturning the butter ban is a big step toward a day when all raw dairy products will be legal in interstate commerce. To donate specifically to support the case to overturn the FDA decision, please go to farmtoconsumer.org/rawbutter or call (703) 208-3276. The Weston A. Price Foundation has provided twelve thousand dollars in support of this cause.

KANSAS: BILL BANNING RAW MILK FAILS

In November 2019, the Kansas Department of Agriculture agreed in settling a lawsuit not to enforce the off-farm advertising ban on raw milk sales in the state; the expectation was that the Kansas Legislature would repeal the statutory provision establishing the ban in the 2020 legislative session [see Wise Traditions Winter 2019 issue for background].

What raw milk supporters did not anticipate in the 2020 session was the introduction of Senate Bill 300, legislation proposing to ban the sale of any raw milk product (other than aged raw cheese by licensed manufacturers). Kansas has one of the more favorable raw milk laws in the U.S., allowing the unregulated on-farm sale of all raw dairy products.

Thanks to a big response in opposition to the bill, SB 300 did not make it out of committee.

The bill legalizing off-farm advertising, Senate Bill 308, was introduced but there was a surprise in that legislation as well. SB 308 had labeling and advertising requirements mandating that the following statement be included in each: "This product contains ungraded raw milk that is not pasteurized and, as a result, may contain organisms that cause food-borne illness, especially in infants, young children, older adults, pregnant women and people with weak immune systems." The warnings were to be the same size as the largest font used elsewhere in the label or advertisement.

Thanks again to a strong response from raw milk proponents, the Senate Committee on Agriculture and Natural Resources amended SB 308 so that the only required labeling and advertising language for the sale of raw milk and raw milk products was a statement that the raw dairy product is not pasteurized. The bill is expected to become law some time this spring.

Healthy Baby Gallery

A typical meal enjoyed by fifteen-month-old Vincent is sweet potatoes, sauerkraut and ham steaks followed by homemade beet kvass. He also loves sardines and fermented veggies for breakfast as well as liver meatballs and—you name it! All meals generally come accompanied by sounds of gratification.

His older sister Roslyn's favorite meal is what she refers to as "meat on bone." She also enjoys venison, bone marrow and all things pork, and starts her day with a large glass of raw milk. Roslyn accompanies her dad every week to a farm to pick up milk, eggs and cheese and loves to help mommy cook. Her favorite breakfast is daddy's famous eggs made with onions, grass-fed cheese. . . and don't forget the side of bacon.

DIRECTORS NEEDED

The Farm-to-Consumer Foundation is looking for individuals willing to serve as volunteer directors on their board of directors. They need farmers or consumers who support their mission and have skills that will further their goals.

If interested, please e-mail a paragraph about yourself including name and contact information, the areas of their mission that energize you and the interests and skills you can share.

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WAPF AT LIVE AWARE CONFERENCE

Five chapter leaders helped at our table at the Live Aware Conference held in San Francisco in February. Left to right: Joy Farrar de los Santos (Pasadena); Elaine Lou (Santa Clara County); Karen Hamilton Roth (Marin County); and Elissa Hirsh and Shelley Lane (San Mateo County).

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SPREADING THE WORD ABOUT THE FALL WAPF CONFERENCE

Karen Lyke (pictured), chapter leader for Toledo, Ohio, along with chapter leaders Jennifer Grafiada (Douglas County, Oregon) and Elizabeth Hoth (Silverton, Oregon) met many health-minded attendees at the Nutritional Therapy Association "Thrive" conference held in Portland, Oregon in February. They signed up over twenty new WAPF members and passed out one hundred flyers for the WAPF Portland conference in November 2020.

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LOCAL CHAPTER BASIC REQUIREMENTS

1. Create a food resource list of organic or biodynamic produce, milk products from pasture-fed livestock (preferably raw), pasture-fed eggs and livestock and properly produced whole foods in your area.
2. Provide a contact phone number to be listed on the website and in our quarterly magazine.
3. Provide Weston A. Price Foundation materials to inquirers, and make available as appropriate in local health food stores, libraries and service organizations and to health care practitioners.
4. Provide a yearly report of your local chapter activities.
5. Be a member in good standing of the Weston A. Price Foundation.
6. Sign a contract on the use of the Weston A. Price Foundation name and trademark.

OPTIONAL ACTIVITIES

1. Maintain a list of local health care practitioners who support the Foundation's teachings regarding diet and health.
2. Represent the Foundation at local conferences and fairs.
3. Organize social gatherings, such as support groups and pot luck dinners, to present the Weston A. Price Foundation philosophy and materials.
4. Present seminars, workshops and/or cooking classes featuring speakers from the Weston A. Price Foundation, or local speakers who support the Foundation's goals and philosophy.
5. Represent the Weston A. Price Foundation philosophy and goals to local media, governments and lawmakers.
6. Lobby for the elimination of laws that restrict access to locally produced and processed food (such as pasteurization laws) or that limit health freedoms in any way.
7. Publish a simple newsletter containing information and announcements for local chapter members.
8. Work with schools to provide curriculum materials and training for classes in physical education, human development and home economics.
9. Help the Foundation find outlets for the sale of its quarterly magazine.

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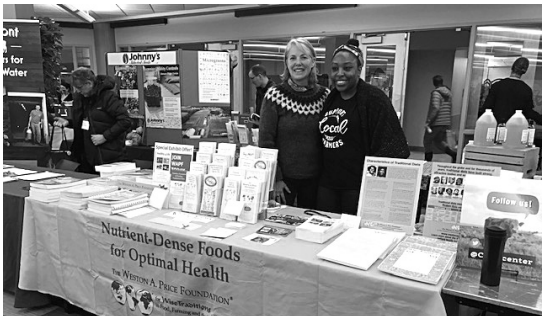
CHAPTER LEADERS REPRESENT WAPF AT MINNESOTA AND VERMONT CONFERENCES

Members of the Minnesota chapter represented WAPF in December at Acres' 2019 Eco-Ag Conference in Minneapolis. From left to right: Catherine Troendle, Johanna Jalbert and Jennifer Villamil.



Leigh Merinoff and Jessica Johnson hosting a WAPF booth at the Northeast Organic Farming Conference in Burlington, Vermont, February 2020.

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DC CHAPTER DISCUSSES ANCESTRAL HEALTH

The WAPF chapter in Washington, DC met in January at Hilda Gore's home for a potluck and a panel on ancestral health that included Bob Souliere (Wim Hof coach), Gina Rieg (NTP) and Tania Teschke, author of *The Bordeaux Kitchen*.

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CHAPTER RESOURCES

Resources for chapter leaders can be accessed at westonaprice.org/local-chapters/chapter-resources, including our trifold brochures in Word format, chapter handbook and PowerPoint presentations.

LOCAL CHAPTER CHAT GROUP

Thank you to Maureen Diaz, a chapter leader in Virginia, for administering the local chapter chat group. Chapter leaders may join once the chapter is listed. Send your name and chapter name to her at outreach@westonaprice.org.

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HEALTH SEMINAR DOWN UNDER

The Sydney NW chapter in Australia recently held a health seminar featuring the principles of the Wise Traditions diet, presented by holistic dentist Dr. Ron Erhlich and organized by chapter leader Brenda Rogers (far right) and team (from left to right) Sandra Santoro, Elise Maasepp, Larissa Wright and Elise Wong.

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Noord-Nederland: Esmee Verbaan +0031614787969 esmeeverbaan@hotmail.com facebook.com/WestonA.PriceFoundation.nl.NoordNederland/

NEW ZEALAND
Wellington: Ian Gregson +0064 934 6366 wapf@frot.co.nz & Deb Gully (04) 934 6366, deb@frot.co.nz wapfwellington.org.nz
Auckland, North & West: Alison Ellett +09 420-8548 alison@wapf-auckland.co.nz wapf-auckland.co.nz/
Christchurch/Lincoln: Tane Patten Webster 64 2208 20300, wapfgreaterchristchurcharea@gmail.com
Coromandel Peninsula: Caroline Marshall (027) 438-4654 whitiangawellness@gmail.com & Carl Storey 027 355-1701, carlstorey@xtra.co.nz
Gisborne East Coast: Bridget Scully kiwilampo@gmail.com bridgetscully@gmail.com & William Lane kiwilampo@gmail.com
Hawkes Bay: Phyllis Tichinin +(64 27) 4651906 phyllis@truehealth.co.nz
Palmerston North: Susan Galea (646) 324-8586 dekmatt@ihug.co.nz realmilk.co.nz
Northland: Janie Cinzori (09) 601 1110, janiecinzori@gmail.com
South Canterbury: Carol Keelty +03 6866 277 bckeelty@outlook.com & Inez Wilson inezmwilson@xtra.co.nz
NZ Resource List: Deb Gully deb@frot.co.nz diet.net.nz

NORWAY
Hedmark (Stange): Sindre Vaernes sindre.vaernes@gmail.com & Tom Olsen 4847 1030

PHILIPPINES
Metro Manilla: Tess Young +63 915 6462538 livingfoodsbc@gmail.com chapters.westonaprice.org/metromanila/, livingfoodsbuyingclub.com

POLAND
Brodnica: Adam Smiarowski +1 01148606209914 szkolarycerska@gmail.com

PORTUGAL
Algarve: Julia de Jesus Palma julia@onelinedesign.info
Lisboa: Duarte Martins duarteccmartins@gmail.com

SINGAPORE
Singapore: Alexander Mearns +65 9239 7427 alex@levitise.com.sg

SLOVAKIA (SLOVAK REPUBLIC)
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SPAIN
Madrid: Ana de Azcarate (346) 168-2103 aquilina68@yahoo.com
Tarragona/Baix Ebre: Monica Fernandez Perea +1 692468952 blogdisidente@gmail.com

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Neuchâtel: Ann-Sophie Clerc 41 79 128 22 17, moncharbleu@gmail.com

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CO

Meadow Maid Foods, 100% grass-fed, grass-finished beef. On pasture year-round at the family ranch in WY. Production practices detailed on our website. Custom beef, Farmers markets, and food co-op in Fort Collins. meadowmaidfoods.com, (307) 534-2289.

Rafter W Ranch, Simla, CO. A family-owned ranch, practicing regenerative agriculture, bringing you nutrient-dense food. Our animals are **100% certified American Grass-fed**. Our beef is 30-day dry-aged. We also offer pasture-raised lamb and broiler chickens. Bones, offal (liver, tongue, oxtail, kidney, cheek, heart) and other choice cuts available. Bulk and piece orders. Pick-up locations along the Front Range and **NOW shipping** in CO. (719) 541-1002, rafterwranch.net

FL

Pineshine Farms – We raise Grass-Fed, Grass-Finished Beef and Pasture Raised Pork, Chicken and Eggs! Our animals are free from vaccines, antibiotics and hormones. We offer **national shipping** and local pick-up. Please visit our website pineshinefarms.com or send a note to info@pineshinefarms.com.

IA

Washington, Iowa. Harmony Farm SOY FREE WHEAT FREE chicken and duck eggs. Pastured on 40 acres. Fed Organic grains from local mill. $4.00/dozen chicken eggs and $7.00/dozen duck eggs. Farm pickup and delivery from Iowa City to Fairfield. (319) 653-9109 harmony4healthiskey@gmail.com.

IN

Spring River Dairy (Fry Farms Co-op) has raw milk and milk products including 5 raw milk cheeses from healthy Jersey cows grazed on organically managed pasture and hay. Available to herd-share members. Delivery to Fort Wayne and Columbia City. Fry Farms Co-op (260) 704-0132.

MA

Health Hero Farm on the agricultural island of South Hero, VT, delivers high-quality 100% grass-fed beef to the Boston area. Our farm is certified humane and our pastures are certified organic. See our video at https://HealthHeroFarm.com/video

Many Hands Organic Farm in Barre, MA. All products certified organic and free range. Lard, pork, chicken and turkey stocks, pork, chicken, turkey and 26 weeks of CSA. No till, nutrient dense. mhof.net; (978) 355-2853; farm@mhof.net.

MD

100% soy-free chicken, eggs, pork and beef. Chicken livers, chicken feet and heads. Bacon and sausage. Raw pet milk. Raw milk blue and cheddar cheese by cheesemaker Sally Fallon Morell. **Will ship** whole cheese wheels. Southern Maryland, within 1 hour of downtown Annapolis and Washington, DC. Saturday farm tours. Store open Thursday to Saturday 10-6 or by appointment. P. A. Bowen Farmstead, 15701 Doctor Bowen Road, Brandywine, MD. (301) 579-2727, pabowenfarmstead.com.

Nick's Organic Farm, since 1979 offering quality products to Washington, DC, suburban MD, No.VA, Baltimore and Frederick areas. Pick up locations in Potomac and Buckeystown MD. 100% grass-fed beef (no grain ever) and pastured poultry. Using regenerative practices, we constantly move our livestock to fresh pastures, and we use a 12 year crop rotation to continually build our fertile organic soils. Our animals receive only organic feed raised on our farm, no hormones, no antibiotics, no animal by-products, no GMOs. We raise pastured eggs, pastured chickens, pastured heritage and white turkeys. We offer beef and poultry liver, organ meats, fat, and bones. We also sell chicken and turkey feet, all beef sausage and jerky. We sell hay, straw, poultry feeds and food grade grains, stone ground heirloom cornmeal and popcorn. (301) 983-2167; nicksorganicfarm.com; nicksorganicfarm@comcast.net. **JOIN our mailing list** to receive **order forms** and an invitation to our annual **Buckeystown Farm Tour** the third weekend in October.

MN

Farm On Wheels offers animals raised green grass-fed & certified organic. Nutrient-dense beef, lamb, chicken, eggs, turkey, goose, duck, and pork, No corn or soy. Farmers Market year around in St. Paul, Prior Lake, Northfield. Linda (507) 789-6679, farmonwheels.net, farm_on_wheels@live.com.

NY

Raw milk, cheese, butter, etc. from 100% grass-fed Jersey cows. 100% grass-fed beef and lamb. Pastured pork, chicken and turkey (soy-free options available). Fermented veggies and more! Have dropsites in select areas or **can ship**. Call for details. Pleasant Pastures (717) 768-3437.

Dutch Meadows brings you the finest in high-quality grass-fed meats and organic dairy products, raised in harmony with the land. Order online and choose from hundreds of farm products, **WE SHIP.** Convenient pick-up locations in NYC. (717) 442-9208 info@dutchmeadowsfarm.com – DutchMeadowsFarm.com.

OH

Certified organic fresh picked garden peas. Pastured, soy free, organically fed, chicken eggs. Fresh maple syrup, certified organic rye seed, transition rye seed, certified organic fresh cracked corn. Call (330) 939-5980. Address is 10148 Eby Rd, Sterling, Ohio 44276.

Heritage Devon beef, 100% grass-fed, no antibiotics, no growth hormones. Selling full cow, 1/2 cow or individual cuts from my ranch in St. Leon, Indiana (5 miles off I-74) or at "Lettuce Eat Well Farmers Market" in Cheviot, Ohio (western suburb of Cincinnati, OH – lewfm.org) first Friday of every month. Also pastured pork, 100% antibiotic free, fed 2 lbs of organic corn/day, 100% outdoors on pasture and woods. Pigs use small huts for shelter and farrowing. All meats USDA inspected. To see how we raise our beef and pork plus important health links visit our website abundantgreenpastures.com. For more information call Mike at (812) 637-3090.

Sugartree Ridge Grassfed Herdshare/PMA, located 60 miles east of Cincinnati in Highland County. We deliver 100% grass-fed milk, optional A2-A2 milk and many other products to twelve delivery sites in Cincinnati. Farm and contact address is: 6851 Fair Ridge Road, Hillsboro, OH 45133-9548.

OR

Grass-based biodynamic raw milk dairy offering Jersey Hi-creamline milk, cream, golden butter, cottage cheese and aged cheeses. Soy-free veal and pork seasonally. On farm sales and membership club. **Can ship.** Sherry and Walt (541) 267-0699.

PA

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high-quality grass-fed meats and organic dairy products, raised in harmony with the land. Order online and choose from hundreds of farm products, **WE SHIP.** Visit our farm store. 694 Country Lane Paradise, PA. (717) 442-9208 info@dutchmeadowsfarm.com – DutchMeadowsFarm.com.

RAW CHEESES made from milk from our herd of 100% grass-fed cows on our organically managed farms. Prices start at $5.25/lb. **WE SHIP.** Oberholtzer at Hilltop Meadow Farm. (570) 345-3305.

Thousand Hills Grazing (in Central PA) is taking orders for nutrient dense pastured poultry (soy free and non-GMO) and 100% grass-fed beef moved daily to fresh pasture. Contact Ben and Cassie Seppanen at (717) 636-0299 or visit thousandhillsgrazing.com for more information.

Raw milk cheese from our grass-fed Jerseys, made on our family farm with Celtic sea salt. No grain feed. Also grass-fed beef and pastured chickens, turkeys and eggs. All soy-free, no hormones or synthetics. On-farm sales, **will ship cheese**. Wil-Ar Farm, Newville, PA (717) 776-6552.

VA

Salatin family's Polyface Farm has salad bar beef, pigaerator pork, pastured chickens, turkeys and eggs, and forage-based rabbits. Near Staunton. Nationwide delivery available. Call (540) 885-3590, polyfacefarms.com.

Raw milk, cheese, butter, etc. from 100% grass-fed Jersey cows. 100% grass-fed beef and lamb. Pastured pork, chicken and turkey (soy-free options available). Fermented veggies and more! Have dropsites in select areas or **can ship**. Call for details. Pleasant Pastures (717) 768-3437.

VT

Health Hero Farm delivers high-quality 100% grass-fed beef within a wide radius of Burlington, VT. Our farm is certified humane and our pastures are certified organic. Our cattle breeds finish well on only grass. See our video at https://HealthHeroFarm.com/video

WY

Meadow Maid Foods, 100% grass-fed, grass-finished beef. On pasture year-round at the family ranch in Goshen County. Production practices detailed on our website. Custom beef, Cheyenne farmers markets and local delivery. (307) 534-2289, meadowmaidfoods.com!!

Health Practitioner

Have you been eating an ancestral diet for years without the expected results? Do you still suffer from fatigue, anxiety, anger, poor sleep, and digestive issues? Nutritional balancing could make the difference. Contact Moneca Dunham RN, BSN, RCPC mountainthrive@yahoo.com.

Healthy Products

FLUORIDE FREE AMERICA Mission: Enhancing communication between individuals and organizations to exchange information and create strategies to end water fluoridation. facebook.com/waterliberty * Twitter.com/FluorideFreeAmerica/waterliberty * 70% of Americans are fluoridated. JOIN IN THE EFFORT TO END FLUORIDATION - You have the right to safe drinking water.

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Crafts & Clothing

Beautiful crafts by local artists. Keep your gift-giving dollars in the USA. Alpaca blankets, socks and yarn; hand painted decorations, paintings by award-winning artist David Zippi; handmade quilts. Exclusive source of Nourishing Traditions posters. Saturday farm tours. Store open Thurs-Sat 10-6 or by appointment. P. A. Bowen Farmstead, 15701 Doctor Bowen Road, Brandywine, MD. (301) 579-2727, pabowenfarmstead.com.

BEES ARE BEAUTIFUL T-SHIRT Available on Amazon for $19.99. Are you a beekeeper or just love honey bees? Show your love with this t-shirt! Clink on the link at: linktr.ee/simplevirginialife.

DVDs

DVD "Nourishing Our Children" recently launched a DVD that may be used for one's self-education or to present to an audience. You will learn how to nourish rather than merely feed your family. nourishingourchildren.org/DVD-Wise.html **Free shipping**!

Employment Opportunities

GRASS VALLEY DAIRY is seeking a motivated website coordinator to manage online marketing of farm fresh food. Secluded log cabin house on 6 acre wooded lot ajoining farm available for rent to qualified party. Also delivery driver wanted 2-3 days of week. Call Mel at (610) 593 2811.

SUCCESSFUL RETIRING FARMER SEEKING PAID APPRENTICE. Rural S. Oregon Cascades 100-ac. forested/9-ac. pastured organic beef main operation. Very established customer base. Seek mature, responsible, teachable person with desire/willingness to learn. Basic Ag/Husbandry is necessary but the willingness to learn is most important. Ongoing projects in construction, soil/pasture management, agronomy, large composting, husbandry, agriculture, irrigation, gardening, forest management, heavy equipment, mechanics, welding, etc. We try to do it all here. Looking for a long-term potential partnership. Opportunity of a lifetime. inforoc@wildblue.net.

Film

AUTOIMMUNE DOCUMENTARY in post production seeks funding or investors. This film tells the stories of those who kept searching for an answer to their challenge and are now lighting the path of healing for others. Contact: Gabe (310) 779-2816 goldenfilmproductions.com/in-production.

Diana Rodgers is a real food nutritionist living on a working farm making a documentary called Kale vs. Cow that will defend the nutritional, environmental

and ethical case for better meat. Endorsed by WAPF, Savory Institute, Animal Welfare Approved. Contributions are tax-deductible. Sustainabledish.com/film.

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Healing Arts

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Homes & Land Sale

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PROPERTY FOR SALE IN SC, near Lake Keowee and Hwy 11, secluded 4br 4ba, 3,200 sq. ft., 10 ft. ceilings, hardwood floors, full basement, two 50'x10' covered porches. On 52 wooded acres (10 acres in bottom land), 2 streams, pond, 2 outbuildings, and more! Ted or Bonnie at (864) 292-5001 or tddms@yahoo.com.

S&S HOMESTEAD FARM, sshomestead.org, on Lopez Island, Washington has a 50-year biodynamic history. Please contact Dr. Roy Ozanne at (206) 914-3810 to help secure additional acreage already managed by S&S by January, before this pristine land with rich soils is converted to a solar panel field. See sshomestead.org.

TENNESSEE RURAL HOMESTEAD Fifteen acres of beautiful farmland, which has been resting for six years. Elegant/rustic straw clay house built with & non toxic materials 2018. Fenced pasture with barn. Two miles from historic community, The Farm. $449,000. (802) 272-9276.

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Crafts

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SOUTHERN MARYLAND – Farm stay at P A Bowen Farmstead. Living room with kitchenette, 1 bedroom, plus cots, to sleep 4, even 6 total. Barbeque, pool, private entrance. Tree house for children. Walks, farm activities. 1 hour from downtown Washington, DC and Annapolis. Listed at AirBNB or contact Lindsay at farmstay@pabowenfarmstead.com. 15701 Doctor Bowen Rd, Brandywine, MD

Research

ONGOING PROJECTS SHARING THE BENEFITS OF A WAPF DIET FOR GROWING CHILDREN: Johanna Keefe, PhD, RN, GAPS/P, has completed her doctoral research through the California Institute of Integral Studies (CIIS) revealing, though in-depth interviews, the lived experience of mothers as they describe their lifestyle following a real food diet based on the principles of the WAPF. Please consider contributing to her post-doctoral project to collect a more robust sample of mothers who are finding positive outcomes over time for their children and teenagers on a traditional diet. You can begin by offering your story to the research blog growingsuccessstories.org, which may serve to seed other doctoral studies, and also contribute to her forthcoming project: a published photo-essay leading to an uplifting film to inform and inspire our next generation of parents. If you would like to find out how to contribute to these projects, please contact Johanna through email at jmkeefe@endicott.edu or by phone at (978) 290-0266.

WITH THE AUSTRALIAN DAIRY INDUSTRY STRUGGLING, farmers walking off the land and suicides at dismal highs—it's time for urgent action. Our biggest project this year will road test the 2009 risk assessment by Food Standards Australia New Zealand (FSANZ). Please DONATE here www.ausrawmilk.org/donate

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- Sally Fallon Morell

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The greatest fine art of the future will be
the making of a comfortable living from
a small piece of land.

Abraham Lincoln

Health is much easier to preserve than it is to regain.

Ben Franklin

True health is the harmony of life within us, consisting of a mind full of true knowledge to live by, happiness of heart from living by this knowledge with integrity, and physical well-being also from living by this knowledge. Therefore, if we really want health, we must be willing to work for it the same as we do for wealth, education, or any other accomplishment in life.

Dr. Randolph Stone

The results of man's trying to improve on Nature is deteriorating the human race, especially in America where people are accustomed to so-called luxuries, including fast, convenient and junk food.

Jethro Kloss

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Information / Training

Iqaluich Niginaqtuat
Fish That We Eat

I highly recommend that anyone interested in eating fish, amazing wild fermented food, indigenous food preparation or becoming a wild human in general check out this INCREDIBLE book: Iqaluich Niginaqtuat, The Fish that we Eat. The author, Anore Jones, like a modern day Weston Price spent decades among the Inupiat of Northwest Alaska learning their INCREDIBLE food traditions. This book is almost too good to be true – recipes include fermented salmon heads, cod livers with black berries, how to dry salmon eggs, pretty much everything! Much more than a recipe book, this offers a complete picture of how the Inupiat live with the fish in a beautiful way, giving us ideas and methods that may apply to many other bioregions. Absolutely amazing!

Download it for free here:
http://alaska.fws.gov/asm/fisreportdetail.cfm?fisrep=21

(Scroll down the page to the Northwest Arctic section, you'll find the link there.)

Information / Training

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Tom Cowan, MD, author of ***Cancer and the New Biology of Water***

and many other fine speakers on diet and health!

Details and registration at wisetraditions.org

ANNOUNCING THE RELEASE OF SALLY FALLON MORELL'S SECOND COOKING VIDEO

Comfort Foods: Cooking for Skeptical Family Members

$25 for DVD or USB flash drive

Includes 4 parts, 3.5 hours total, showing the preparation of 3 meals:

PART 1: Cutting Up a Chicken and Marinating Chicken including Livers for Frying; Meat Loaf and Rissoles

PART 2: Mashed Potatoes, He-Man Sauce, Steamed Spinach with Butter, Almond Spice Cookies and Potassium Broth

PART 3: Pork Hock Enchiladas with Homemade Sauce and Fried Bananas in Honey Orange Sauce

PART 4: Southern Fried Chicken, Tomato Salad, Sautéed Corn and Peach Ice-Cream

The Shop Heard 'Round the World

Dedicated to Helping the Consumer Obtain Nutrient-Dense Foods and Accurate Nutrition Information

Information / Practitioners

WISE CONVERSATIONS
A NEW REASON TO BE A MEMBER

We have a new membership perk! We are having monthly meetings online for members in order to educate further. We want to answer your questions. Each month we pick a specific topic and have a guest who is someone working closely with the Foundation. As members, you can submit your questions in advance by email and we will ask as many as possible during the hour. We send an email notice announcing the meetings. They are scheduled for the last week of the month. We have room for up to 500 at each meeting but if you cannot attend live, you can view the recordings afterwards either on our website or on our members-only Facebook group.

Logging in on our website:
If you need your login or password, let us know: info@westonaprice.org

Members-only Facebook group:
https://www.facebook.com/groups/westonapricefoundation/permalink/784319591978068/

If you have suggestions for topics or have not been getting our email about these events, please let us know. info@westonaprice.org

"Worry and panic are churned up by the media. It's important to stay calm. If you're really stressing out you're depleting yourself of the very vitamin you need to fight this virus: vitamin A."

- Sally Fallon Morell

westonaprice.org
Wise Traditions Podcast #232

The Shop Heard 'Round the World

Dedicated to Helping the Consumer Obtain Nutrient-Dense Foods and Accurate Nutrition Information

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4200 Wisconsin Avenue, NW, PMB #106-380 Washington, DC 20016

Please submit classified ad copy, advertisement graphics, questions and payments to: info@westonaprice.org, (703) 820-3333.

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The Weston A. Price Foundation reserves the right to refuse advertising space to anyone. We do not accept ads for coffee, tea, chocolate, hemp (as a food) or protein powders, nor products offered by Multi-level Marketing Companies.

Membership

NEW OR RENEWAL

Yes! I would like to become a member or renew my membership in the Weston A. Price Foundation and benefit from the timely information in **WiseTraditions**, the Foundation's quarterly magazine!

_____U.S. membership $40
_____International membership $50
_____U.S. Reduced membership (financial hardship) $25

Yes! I would like to support the work of the Weston A. Price Foundation with an additional donation.

_____$10 _____$25 _____$50 _____$100 _____$250 _____$500
_____$1,000 _____$2,500 _____$5,000 _____$10,000 _____other $_____

Yes! **Count me in!** I would like to help spread the word!
Please send me_____copies of the Weston A. Price Foundation informational brochure at $1.00 each, so I can pass them along to my family, friends and colleagues, and be true to Dr. Price's dying words:
"You teach, you teach, you teach!"
(Health professionals are encouraged to provide this brochure to their patients.)

Yes! I would like to provide my family and friends with the gift of membership in the Weston. A Price Foundation.
(Please attach information on gift memberships.)
_____U.S. gift membership(s) $40 _____Canadian and overseas gift membership(s) $50

Yes! _____Please send me details about starting a Weston A. Price Foundation local chapter in my community.
Chapters are listed on our site: westonaprice.org/find-local-chapter/

I'm enclosing $_____for brochures and $_____for ____annual membership(s), a total of $_____

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