HOMO OMNIVOROUS
AN INTEGRATED PERSPECTIVE

See also: Comparative Anatomy: A Vegan Perspective

Books: ***The Omnivore's Dilemma*** **by Michael Pollan**
The Vegetarian Myth **by Lierre Keith**
Beyond Broccoli **by Susan Schenck**

Articles:

Websites:

Audio/Video:

Publications:

Organizations:

People: Michael Pollan
Susan Schenck
Lierre Keith
David Rainoshek

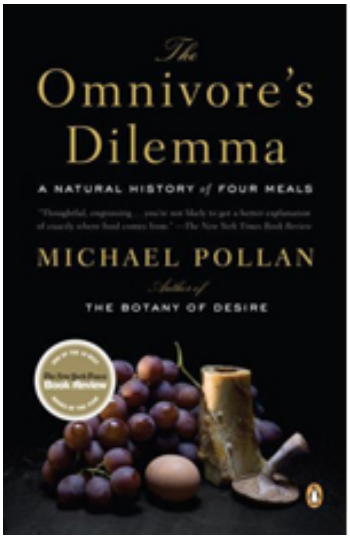
Integral Nutrition: We are Omnivores, eating Whole Foods…

Conventional: We are Opportunists, eating Whatever…

Terms:

HOMO OMNIVOROUS

Source: *The Omnivore's Dilemma* by Michael Pollan, pg 289-294



THE FACT THAT WE HUMANS ARE INDEED OMNIVOROUS IS DEEPLY INSCRIBED IN OUR BODIES, WHICH NATURAL SELECTION HAS EQUIPPED TO HANDLE A REMARKABLY WIDE-RANGING DIET.

Our teeth are omnicompetent—designed for tearing animal flesh as well as grinding plants.

So are our jaws, which we can move in the manner of a carnivore, a rodent, or an herbivore, depending on the dish.

Our stomachs produce an enzyme specifically designed to break down elastin, a type of protein found in meat and nowhere else.

Our metabolism requires specific chemical compounds that, in nature, can be gotten only from plants (like vitamin C) and others that can be gotten only from animals (like vitamin B-12).

More than just the spice of human life, **variety for us appears to be a biological necessity.**

By comparison, nature's specialists can get everything they need from a small number of foods and, very often, a highly specialized digestive system, freeing them from the need to devote a lot of brainpower to the challenges of omnivorousness. The ruminant, for example, specializes in eating grass, even though the grasses by themselves don't supply all the nutrients the animal needs. What they do supply is food for the microbes living in the animal's rumen, which in turn supply the other nutrients the animal needs to survive. The ruminant's genius for keeping itself well fed resides in its gut rather than its brain.

There does seem to be an evolutionary trade-off between big brains and big guts—two very different evolutionary strategies for dealing with the question of food selection. **The case of the koala, one of nature's pickiest eaters, exemplifies the small-brain strategy. You don't need a lot of brain circuitry to figure out what's for dinner when all you ever eat is eucalyptus leaves. As it happens, the koala's brain is so small it doesn't even begin to fill up its skull.**

Zoologists theorize that the koala once ate a more varied and mentally taxing diet than it does now, and that as it evolved toward its present, highly circumscribed concept of lunch, its underemployed brain actually shrank. *(Food faddists take note.)*

More important to the koala than brains is a gut big enough to break down all those fibrous leaves. By the same token, the digestive tract of primates like us has grown progressively shorter as we've evolved to eat a more varied, higher quality diet.

Eating might be simpler as a thimble-brained monophage, but it's also a lot more precarious, which partly explains why there are so many more rats and humans in the world than koalas. Should a disease or drought strike the eucalyptus trees in your neck of the woods, that's it for you. But the rat and the human can live just about anywhere on earth, and when their familiar foods are in short supply, there's always another they can try. Indeed, there is probably not a nutrient source on earth that is not eaten by some human somewhere—bugs, worms, dirt, fungi, lichens, seaweed, rotten fish; the roots, shoots, stems, bark, buds, flowers, seeds, and fruits of plants; every imaginable part of every imaginable animal, not to mention haggis, granola, and Chicken McNuggets. (The deeper mystery, only partly explained by neophobia, is why any given human group will eat so few of the numberless nutrients available to it.)

The price of this dietary flexibility is much more complex and metabolically expensive brain circuitry. For the omnivore a tremendous amount of mental wiring must be devoted to sensory and cognitive tools for figuring out which of all these questionable nutrients it is safe to eat. There's just too much information involved in food selection to encode every potential food and poison in the genes. So instead of genes to write our menus omnivores evolved a complicated set of sensory and mental tools to help us sort everything out. Some of these tools are fairly straightforward and we share them with many other mammals; others represent impressive feats of adaptation by primates; still others straddle the blurry line between natural selection and cultural invention.

The first tool is of course our sense of taste, which performs some of the basic work screening foods for value and safety. Or as Brillat-Savarin put it in *The Physiology of Taste*, taste "helps us to choose, from the various substances offered us by nature, those which are proper to be consumed." Taste in humans gets complicated, but it starts with two powerful instinctual biases, one positive, the other negative. The first bias predisposes us toward sweetness, a taste that signals a particularly rich source of carbohydrate energy in nature. Indeed, even when we're otherwise sated, our appetite for sweet things persists, which is probably why dessert shows up in the meal when it does.

A sweet tooth represents an excellent adaptation for an omnivore whose big brain demands a tremendous amount of glucose (the only type of energy the brain can use), or at least it once did, when sources of sugar were few and far between. (The adult human brain accounts for 2 percent of our body weight but consumes 18 percent of our energy, all of which must come from a carbohydrate. Food faddists take note two.)

Our sense of taste's second big bias predisposes us against bitter flavors, which is how many of the defensive toxins produced by plants happen to taste. Pregnant women are particularly sensitive to bitter tastes, probably an adaptation to protect the developing fetus against even the mild plant toxins found in foods like broccoli. A bitter flavor on the tongue is a warning to exercise caution lest a poison pass what Brillat-Savarin called the sense of taste's "faithful sentries."

Disgust turns out to be another valuable tool for negotiating the omnivore's dilemma. Though the emotion has long since attached itself to a great many objects having nothing to do with food, food is where and why it began, as the etymology of the word indicates. (It comes from the Middle French verb *desgouster*, to taste.) Rozin, who has written or coauthored several fascinating articles about

disgust, defines it as the fear of incorporating offending substances into one's body. Much of what people deem disgusting is culturally determined, but there are certain things that apparently disgust us all, and all these substances, Rozin notes, come from animals: bodily fluids and secretions, corpses, decaying flesh, feces. (Curiously, the one bodily fluid of other people that doesn't disgust us is the one produced by the human alone: tears. Consider the sole type of used tissue you'd be willing to share.) Disgust is an extremely useful adaptation, since it prevents omnivores from ingesting hazardous bits of animal matter: rotten meat that might carry bacterial toxins or infected bodily fluids. In the words of Harvard psychologist Steven Pinker, "Disgust is intuitive microbiology."

Yet helpful as it is, our sense of taste is not a completely adequate guide to what we can and cannot eat. In the case of plants, for instance, it turns out that some of the bitterest ones contain valuable nutrients, even useful medicines. Long before the domestication of plants (a process in which we generally selected for non-bitterness), early humans developed various other tools to unlock the usefulness of these foods, either by overcoming their defenses or overcoming our own aversion to how they taste.

That's precisely what people must have done in the case of the sap in the opium poppy or the bark of the willow, both of which taste extremely bitter—and both of which contain powerful medicines. Once humans discovered the curative properties of salicylic acid in willows (the active ingredient in aspirin) and the relief from pain offered by the poppy's opiates, our instinctive aversion to these plants' bitterness gave way to an even more convincing cultural belief that the plants were worth ingesting even so; basically, our powers of recognition, memory, and communication overcame the plants' defenses.

Humans also learned to overcome plant defenses by cooking or otherwise processing foods to remove their bitter toxins. Native Americans, for example, figured out that if they ground, soaked, and roasted acorns they could unlock the rich source of nutrients in the bitter nuts. Humans also discovered that the roots of the cassava, which effectively defends itself against most eaters by producing cyanide, could be made edible by cooking. By learning to cook cassava humans unlocked a fabulously rich source of carbohydrate energy, one that, just as important, they had all to themselves, since locusts, pigs, porcupines, and all the other potential cassava eaters haven't yet figured out how to overcome the plant's defense.

Cooking, one of the omnivore's cleverest tools, opened up whole new vistas of edibility. Indeed, in doing so it probably made us who we are. By making these foods more digestible, cooking plants and animal flesh vastly increased the amount of energy available to early humans, and some anthropologists believe this boon accounts for the dramatic increase in the size of the hominid brain about 1.9 million years ago. (Around the same time our ancestors' teeth, jaws, and gut slimmed down to their present proportions, since they were no longer needed to process large quantities of raw food.) By improving digestibility cooking also cut down on the time we had to spend foraging for plants and simply chewing raw meat, freeing that time and energy for other pursuits.

Last but not least, cooking abruptly changed the terms of the evolutionary arms race between omnivores and the species they would eat by allowing us to overcome their defenses. Apart from fruits, which have a declared interest in becoming another species' lunch (this being their strategy for spreading their seeds), and grasses, which welcome grazing as a strategy to keep their habitat free of shady competitors, most wild foods are parts of plants or animals that have no interest in being eaten; they evolved defenses to keep themselves whole. But evolution doesn't stand still, and eaters are

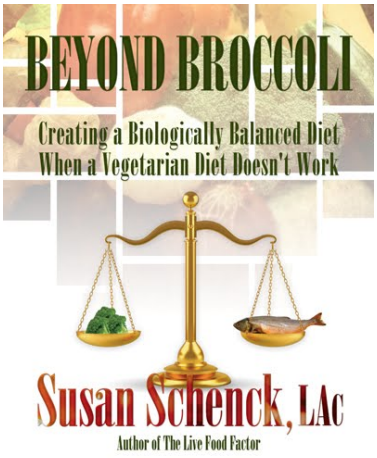
constantly evolving counteradaptations to overcome the defenses of nutrient sources: a new digestive enzyme to detoxify a plant or fungal poison, say, or a new perceptual skill to overcome an edible creature's camouflage. In response, the plants, animals, and fungi evolved new defenses to make themselves either more difficult to catch or to digest. This arms race between the eaters and the potentially eaten unfolded at a stately pace until early humans came on the scene. For a countermeasure such as cooking bitter plants completely changed the rules of the game. All at once a species' painstakingly developed defense against being eaten had been breached and, assuming it could erect a new defense, that was going to take time—evolutionary time.

Cooking is often cited (along with tool making and a handful of other protohuman tricks) as evidence that the human omnivore entered a new kind of ecological niche in nature, one that some anthropologists have labeled "the cognitive niche." The term seems calculated to smudge the line between biology and culture, which is precisely the point. To these anthropologists the various tools humans have developed to overcome the defenses of other species—not only food-processing techniques but a whole gamut of hunting and gathering tools and talents—represent biocultural adaptations, so-called because they constitute evolutionary developments rather than cultural inventions that somehow stand apart from natural selection.

In this sense learning to cook cassava roots or disseminate the hard-won knowledge of safe mushrooms is not all that different from recruiting rumenal bacteria to nourish oneself. The cow depends on the ingenious adaptation of the rumen to turn an exclusive diet of grasses into a balanced meal; we depend instead on the prodigious powers of recognition, memory, and communication that allow us to cook cassava or identify an edible mushroom and share that precious information. The same process of natural selection came up with both strategies; one just happens to rely on cognition, the other goes with the gut.

MAN'S DIETARY HISTORY

Source: Beyond Broccoli by, Susan Schenck, L.Ac. Chapter 6



We have 99.995 percent of our genes identical with those of our big game-hunting ancestors. We are they. We have Fred Flintstone bodies living in a George Jetson world. And therein lies the root of our problems.

—Drs. Mary and Michael Eades, MDs, *The Protein Power LifePlan*

Vegetarians subscribe to a routine myth that man used to be a fruitarian. I even cited this legend in my book *The Live Food Factor*.

It just seemed to make sense: since we originated in the tropics of Africa with plenty of plant life and evolved from mainly vegetarian apes, wouldn't plants be our natural diet? Let's hear from Lierre Keith.

The first myth of the nutritional vegetarians — that we aren't meant for meat — is another fairy tale filled with inedible apples. I try to remember what I believed when I

> ***was a vegan. There was a mythic golden age, long ago, when we lived in harmony with the world…and…ate what? Prehistoric paintings of humans hunting left me confused and defensive, but I was unclear on the timeline anyway. Maybe all the hunting happened before the peaceful vegetarian Goddess culture? Or maybe it was after the fall of the peaceful vegetarian…?*** *104*

In my quest for truth, I spent countless hours on the Internet. I also spent several hundred dollars buying books on Amazon, some out of print. I forked over several hundred more on university-level anthropological textbooks.

I was very surprised to find that the food pyramid that we evolved eating had wild meat at the base. Some anthropologists believe we ate 55 to 65 percent of our calories in raw meat. Some of it may have been cooked, since our ancestors were thought to have taken control of fire as early as 1.4 million years ago.

In fact, no paleontologist doubts that man's forerunners depended on meat as a large chunk of their diets. The only points they may disagree about are whether the meat was scavenged or hunted and what the ratio of plant food to meat was.

Why was I surprised? Like so many others, I had been indoctrinated by much of the media to think that meat causes cancer, that animal fats are bad, and that vegetarianism was our optimal diet. I also fell for the vegetarian chart shown in many "veg" books that insists we are herbivores though our digestive systems are so much different from theirs.

Why Study Our Evolutionary Dietary History?

Ronald Schmid, ND, author of Traditional Foods Are Your Best Medicine, shows us three ways we can determine the viability of a vegetarian diet.

> *You can take the practical approach and look at the empirical evidence — based on what we see among the vegetarians we know, and it is plain that some are not doing well. You can also take the analytical approach of a dietitian and examine the nutrients in the diet to see what is missing and look at the problems of absorption, etc. Or you can look at the historical record and ask, what do the diets of traditional indigenous cultures teach us?*

Dr. Staffan Lindeberg explains in his textbook Food and Western Disease that there are four causes of disease or symptoms from the perspective of evolutionary biology: attack, as with bacteria105 and viruses; defense, as with a fever, in which your body is heating itself up to limit the cell division of the bacteria and viruses; design error, as with choking on food — airway and gastrointestinal system are crossed; and lack of adaptability to a new environment, as with insulin resistance, since we are eating more high-glycemic carbs than our ancestors did.

The drug companies would have you believe that every disease is a design error and needs to be fixed by a new chemical concoction or surgical operation. In reality, most modern diseases are caused by diet and stem from lack of adaptability. These diseases began with agriculture. We have clearly not adapted to diets rich in carbs and especially grains and legumes filled with antinutrients.

Dr. Lindeberg points out the limitations and contradictions found in scientific nutritional studies:

- Epidemiological research, which involves observing factors affecting the health and illness of populations, is unreliable because we cannot control all variable factors.
- Molecular biology is hard to rely on, since lab animals are not biologically the same as humans. Furthermore, there may be many as yet undiscovered nutrients and molecules that can impact the studies.
- An intervention study with a controlled trial has the flaw that people often simultaneously improve their lifestyles in other respects, such as giving up smoking or exercising more.
- Then there is publication bias, as studies with a positive outcome get published more often. There is funding bias, since scientists want to please those who finance their studies so they can get more work.
- Citation bias also occurs: drug studies get quoted much more than nutritional ones do.
- Then there is the influence of preconceived ideas: of course, every researcher hopes that his or her hypothesis will be confirmed.

Evolutionary nutrition provides an important complement to traditional scientific methods. The new field of nutrigenomics looks at the effects of foods and food constituents on gene expression. It considers the diets that people evolved eating. Traditional peoples on their traditional diets have been observed to be free of modern-day illnesses.

Those who were best suited to the food that was available were the ones who had the greatest chances of surviving. Adaptation is very slow, often taking about 40,000 years.106

For illustration, take the last 365 million years and convert them to a calendar year, making each million years one day. On January 1, we have our first amphibian ancestor. The earliest mammal is born on June 10. Our first primate ancestor arrives on October 28. Homo sapiens is born December 31 at 7:30 PM. Agriculture develops at 11:45 PM. At 11:59:50, just 15 minutes after agriculture and 10 seconds before the end of the year, cardiovascular disease begins.107

If agriculture begins 20,000 years ago as now thought, processed food begins appearing right about 11:59:59.8, less than one second before midnight on the last day of the year, assuming processing started about 400 years ago with sugar refining. The types and amounts of processed foods have steadily increased and accelerated throughout this past century to include microwaving; irradiation; insertion of chemical additives, artificial flavorings, and sweeteners; and marketing of nonfoods like soft drinks, margarine, Olestra, and many more.

Lindeberg also dispels the myth that Stone Age peoples had short life spans. He explains that it becomes difficult for osteologists to make estimates on a middle-aged skeleton other than simply saying "40 years or older." So whether a person reached 40 or 90 years cannot in many cases be determined.108

Furthermore, by studying the few remaining modern "Stone Age" people, he found that the health of traditional peoples remained quite good up to the end of their lives. The quality of life in the Trobriand Islands is quite high until they suddenly deteriorate rapidly shortly before dying.109 This is how it should be and how it is with wild animals in pristine environments.

Man Evolved Eating Meat

Archeology tells the story of our ancient omnivorism in so many ways. Hunting spears were often found by the skeletons of our forebears. Excavations and cave art demonstrate that the Cro-Magnon of Europe and Asia hunted and ate large game: bears, lions, hyenas, wild horses, bison, reindeer, woolly mammoths, deer, and woolly rhinoceros.

In the Americas, the animals included over 100 species, including wolves, mammoths, giant beavers, camels, and more. Between 40,000 years ago and 10,000 years ago, many of these animals became extinct due to overhunting. Many researchers believe this lack of big game forced us to develop agriculture.

In addition, in cold places like Europe (and many more areas were very cold during ice ages), plant foods would have been scarce. The only way to survive winters would have been to eat meat.110

In fact, Professor Caleb Finch, PhD, of the University of Southern California believes that early man developed meat-adaptive genes that enabled him to survive the hazards of meat eating, such as cholesterol, phytanic acid, and infectious pathogens.

> ***Brain evolution was crucial to the evolution of meat eating; we may consider as "meat-adaptive" the genes that enabled further brain developments.111***

Finch also believes it was these genes that extended man's life span beyond that of the apes.

Let's look at a brief review of man's predecessors and their diets. Methods of figuring out the diets of skeletal remains include tooth morphology and microwear, carbon isotope analysis, trace element analysis, analysis of "food refuse" from archeological sites, and more.112

The first primates were very small and lived as early as 65 million years ago. They were primarily insectivores and only later ate fruit.113

This is interesting because it means mammals evolved eating animals (insects) right from the beginning. About 50 to 30 million years ago, their diets expanded to include meat from other mammals. Even a pro-vegetarian diet website warns us that man's dietary history was not vegetarian.

> *You sometimes hear the argument that humans are "naturally vegetarian" or that they evolved as vegetarians. This is somewhat dangerous to pursue, as the scientific evidence all indicates that we are omnivores; i.e., we can survive on a wide variety of plant and animal foods …*
>
> *What foods then has Nature programmed Man to eat in order to maintain health, growth, activity, and reproduction? Boyd and Konner state that "from about 24 to 5 million years ago, fruits appear to have been the main dietary constituent for hominids. … Since 4.5 million years ago, our ancestral feeding pattern included increasing amounts of meat."114*

From 7 to 5 million years ago, there was a divergence of chimpanzees into two separate lines, one of which was proto-human.115

Ardipithecus ramidus was the first hominid that walked on two feet. He lived 5 to 4 million years ago. The skeleton of one, named "Ardi," was a biped whose feet, pelvis, legs, and hands suggest she was a biped on the ground but a quadruped when moving about in the trees.

The first upright hominid that walked on two feet lived 4 to 3 million years ago. The famous "Lucy" skeleton was from that era. Lucy and her family were called Australopithecus afarensis.

Next, between 3 and 2.6 million years ago, Australopithecus diverged into three lines of australopithecine species, one of which gave rise to humans.

They ate their food raw, but unlike other primates, they created crude stone tools to collect food more efficiently. They were bipeds, but restricted in agility. According to anthropologist Robert Foley, ScD, australopithecines were likely "occasionally carnivorous."116

The first of the genus Homo arose approximately 2.3 million to 1.4 million years ago: Homo habilis. They were hunter-gatherers, gathering wild plants and hunting and scavenging for dead animals. Unlike their australopithecine ancestors, they were runners. They were athletic and more active.117 Often called "handy man," Homo habilis was the first species of this genus to make tools, as famed anthropologist Richard Leakey suggests.

> ***It is reasonable to suppose that meat eating, either scavenged or obtained by hunting, was a factor, and possibly the major one, in the gradual emergence of the homo line from the basic hominid stock, leaving a predominantly vegetarian niche to be occupied by the australopithecines.****118*

But he adds that the rise of a hunting and gathering existence is more likely to have occurred as early as five million years ago when we broke off from the chimpanzees. Our ancestors may well have been eating meat for four to five million years, though big game hunting likely began no more than two million years ago.

Homo erectus thrived from 1.7 million to 400 thousand BC. Hunting increased. Hand axes 1.4 million years old were found in Africa that were so complex it took modern archeologists several months to acquire the skills to produce replicas of the quality they found.119

These guys had heavy jaws and large teeth — perhaps because they ate their meat raw — and also had low foreheads. They eventually gained control of fire about 1.4 million years ago, but it was not generally used for cooking until at least 50,000 to 40,000 years ago.120

The use of fire enabled Homo erectus to leave his ancestral home in Africa and move to colder climates. Around 400,000 BC, an archaic Homo sapiens appeared.

How Our Brains Developed

Around 150,000 BC, a subspecies of archaic Homo sapiens began to develop, Homo sapiens neanderthalensis, the Neanderthals, who thrived about 100,000 to 30,000 years ago in Europe and western Asia.

Another subspecies of archaic Homo sapiens, called Homo sapiens sapiens, our immediate ancestors, remained for some time in East Africa. Every single person alive today can trace his or her ancestry back to a single female skeleton found from that era. She is called Eve.

Even if you don't believe we descended from the same branch as apes, there is ample proof in the DNA that we all descended from this omnivorous woman. Here is what Wikipedia, an online encyclopedia of communal authorship, says about Eve.

> *Mitochondrial Eve refers to the matrilineal "MRCA" (most recent common ancestor). In other words, this was the woman from whom all living humans today descend, on their mother's side, and through the mothers of those mothers and so on, back until all lines converge on one person.*
> *Because it is generally passed from mother to offspring without recombination, all mitochondrial DNA (mtDNA) in every living person is directly descended from hers by definition. Mitochondrial Eve is the female counterpart of Y-chromosomal Adam, the patrilineal most recent common ancestor, although they lived thousands of years apart.*
> *Mitochondrial Eve is generally estimated to have lived around 200,000 years ago, most likely in East Africa, when Homo sapiens sapiens ("anatomically modern humans") were developing as a population distinct from other human sub-species.121*

They (we) almost became extinct, but then something happened. Dr. Barry Sears, PhD, explains one theory about when we discovered brain food (shellfish, fish, and eggs).

> ***Our immediate ancestors were perhaps only one or two generations from complete extinction, just like the other 97 percent of previous primate species. But something happened that gave them a second chance: they learned to scavenge a new food source that wouldn't have been found in the African savanna. This food was the shellfish found along the shores of the lakes in the East African Rift Valley. Shellfish consume algae and therefore can accumulate algae-derived fats in higher concentrations, in turn giving our immediate ancestors more of these algae-derived fats than have been consumed at any time in history.*** *122*

He explains that eating shellfish was alien to them, since they had hunted land animals. But desperate times call for desperate measures. This one move of eating large quantities of DHA increased the size of their brains. They stumbled upon brain food, and this gave them a cognitive leap that enabled them to conquer the world. The frontal cortex, where thinking and reasoning take place, gave them a huge evolutionary advantage.

The Neanderthals and 97 percent of the unsuccessful primate species before them died out. Homo sapiens sapiens remains. As we shall see, another theory (by Dr. Stephen Cunnane) puts the discovery of brain food much earlier, right at the beginning of when our brains started expanding.

At 40,000 years ago, the brains of our ancestral Homo sapiens peaked. There was a sudden explosion of new art, stone and bone toolmaking, culture, religion, and social organization. Humans migrated around the globe for the next 40,000 years.

There have been only a few significant genetic changes in the most recent 40,000 years, one being that some people, the Northern Europeans, have partially adapted to dairy with the retention of intestinal lactase to digest dairy into adulthood.

From 35,000 to 15,000 BC, the Homo sapiens Cro-Magnons thrived in Europe and added a lot more meat to their diets with big game hunting. If a Cro-Magnon man were alive today, he would be visibly indistinguishable from modern man.

The paleolithic period describes all the time from 2.6 million years ago, when the first homo line began with Homo habilis, until 10,000 years ago, when agriculture became prevalent and the neolithic period began. It has been proven that during that entire paleolithic time, man was a hunter and gatherer. It would be nonsense to say that we have not adapted to meat or that meat is toxic to us. How then did we thrive for 2.6 million years?

It has been proven by anthropologists that man was aggressive at obtaining, systematically transporting, and butchering animal carcasses, and that this increased meat consumption coincided with evolutionary changes resulting in larger brains, dental reduction, and gut modification.123

From the beginning of the homo lineage 2.6 million years ago until 40,000 years ago when brain size peaked, our brains were getting bigger and more sophisticated. Our guts shrank at the same time. We no longer have the big, protruding belly that chimps have. Such bellies are characteristic of vegetarian animals.

Drs. Leslie Aiello and Peter Wheeler came up with the Expensive Tissue Hypothesis. They noticed that the brain and digestive systems take up a lot of metabolic energy. In order for our brains to use up so much energy, we had to give up energy from somewhere else. That place was found to be the digestive tract, which actually got smaller. So as our guts shrank, our brains grew. We effectively traded the ability to digest cellulose for increased intelligence.

> *A considerable problem for the early hominids would have been to provide themselves, as a large- bodied species, with sufficient quantities of high- quality food to permit the necessary reduction of the gut. The obvious solution would have been to include increasingly large amounts of animal-derived food in the diet.124*

A brain uses up a lot more calories — roughly 16 times as much as skeletal muscle tissue! 125 — which is why man needs more calories per unit of weight than do other primates. Fully 20 to 25 percent of our calories go to brain metabolism, compared to only 8 to 10 percent for other primates.126 Brains are expensive to grow and maintain — using ten times more energy for maintenance than most other tissues.127

Have you ever eaten a big meal and noticed brain fog? This is because the digestive system suddenly needs a lot of energy, and it competes with your brain for that energy. But if you eat some very lightly cooked meat with raw or steamed vegetables or some fruit by itself, minimal energy goes to your digestive tract, and your brain continues to function well.

Dr. Loren Cordain, PhD, et al. showed that modern human foraging populations typically derive 45 to 65 percent of their daily calories from animal foods, since these are much more calorie and nutrient dense than plant foods.128

In all primates, the bigger the brain, the higher the diet quality must be. Also, large-bodied primates have expanded colons that are able to digest high fiber amounts, fermenting them to extract additional energy in the form of volatile fatty acids. Humans' short digestive tracts are midway between those of herbivores and those of carnivores, adapted to an easily digested, nutrient-rich diet.129

Large herbivorous mammals spend a lot more time foraging, feeding, and moving to feed than do those that eat meat.130 Even chimpanzees spend 75 percent of their waking day in search of plant foods.131 One would have to forage all day to get the nutrients found in just one small animal. Early man probably didn't like working long hours any more than modern man does.

Furthermore, to chew all the plant food needed to sustain oneself, early humans would have had to spend 42 percent of waking hours chewing, about five hours a day according to Harvard primatologist Richard Wrangham.132 He claims that the amount of time spent chewing is related to body size in primates, and this is how he got that figure.

Humans had to expend a lot more calories than we do today, remember. Between foraging and chewing, a whole day would be spent in feeding. By hunting and eating meat, they found time for socializing with the tribe. Modern hunter-gatherers have generally been observed to put in four-hour days concludes Katharine Milton, an anthropologist at the University of California, Berkeley.

> *We would never have evolved as large, socially active hominids if we hadn't turned to meat. … The vegetarian primates (orangutans and gorillas) are less social than the more omnivorous chimpanzees, possibly because collecting and consuming all that forage takes so darned much time.133*

Hunting forced early men to collaborate to a degree not displayed by any of our primate cousins, says Richard Leakey.

> ***Meat eating was important in propelling our ancestors along the road to humanity, but only as part of a package of socially oriented changes involving the gathering of plant foods and sharing the spoils. …***
> *A plant-eating existence tends to make the individual members of a troop very self-centered and uncooperative. In spite of the intense social interactions that take place, especially in our closest relative the chimpanzees, and even though there is group awareness of a sort in the search for food, to be a vegetarian is to be essentially solitary. Each individual tears the leave from a branch, or plucks fruits from a tree and promptly eats them.134*

Leakey explains that chimps experience no communal eating or even sharing of food with close relatives. Hunting, however, demands collaboration.

When early man eventually gained more energy from a diet high in meat, he no longer needed extra digestive room to process all the plant roughage. He therefore lost the chimp's or gorilla's ability to digest massive amounts of greens and vegetables, instead going for the nutrient-and calorie-rich animal foods and becoming more efficient at digesting them. Since our ancestors also had hands, unlike other animals, they could break open an animal's skull and eat its brains. This increased man's brain size, since brains are rich in DHA, needed by our own brains.

There are several different theories as to how early man got this extra energy to feed a larger brain, though all agree it was from animal meat. These theories attempt to account for how we got larger brains and smaller digestive tracts, teeth, and jaws. Large teeth and jaws like those that other primates have are needed to grind fibrous plant food that has low energy density.

Richard Leakey says of the tooth size reduction that it was "probably an adaptation produced by a shift in diet from one made up exclusively of plant foods to one that included meat."135

The Savanna Theory holds that the climate in East Africa got so harsh and dry that the newly bi-pedal australopithecines were forced to rely less on fruit trees, which were disappearing. The savanna was abundant in grasses that supported plant-eating animals, but lacked fruit-and nut-bearing plants. Humans therefore had to hunt the abundant herbivores for food.

A brain's growth also depends on the fatty acids DHA and arachidonic acid (AA). Wild plant foods available on the African savanna (tubers and nuts) were found to have only trace amounts of DHA and AA, whereas the organs and muscle meat of wild African ruminants contained these important fatty acids.136

Later it was found that East Africa didn't get that dry, and there would have been more trees. So it transformed into the Woodlands Theory. The problem with this theory, as we shall see, is that the woodlands did not provide enough of the brain-specific nutrients.

Another theory is the Aquatic Ape Theory. It postulates that certain primates spent a lot of their time in the water, and these evolved to become humans. By eating seafood rich in DHA and EPA, their brains developed.

Then there is the Cooking Theory, that cooking made us human. You can imagine what I, as a raw fooder, think of this theory! The theory goes that we had to use fire for warmth and to keep predators away as we came down from the trees, so we discovered that cooking food makes it give us more energy.

Although no pots and pans over 20,000 years old have been found, Richard Wrangham points out that traditional peoples find ways to cook without pots. An example is to poke a hole in an egg and set it by the fire. Cooking food enables more of the calories to be absorbed, which is one reason people lose weight on raw food diets.

The issue I see here is that a few hundred calories a day isn't that big of a deal, certainly not enough for our brains to evolve so well. Also, most plant food — raw or cooked — is not high in DHA or its omega-3 precursors, so the brain would need a lot of in order to expand, as we will see in chapter 8.

Besides, I believe we ate at least 50 percent raw and likely much more until roughly 10,000 years ago when agriculture became well established. That is when we began eating so many foods (grains and legumes) that are too toxic to eat raw unless properly soaked and rinsed, as will be explained in chapter 15.

The theory I find most plausible is the Shore-Based Scenario, which theorizes that it was not the meat from land animals that made our brains grow. Rather it was eating brain food from the ocean, rivers,

lakes, or seas. This differs from the Aquatic Ape Theory in that early man did not live in the water. Instead he discovered shellfish, eggs, and seaweeds washed up on the shore.

In his textbook Survival of the Fattest: The Key to Human Brain Evolution, Dr. Stephen Cunnane explains that the theories that eating land animals made our brains grow larger are flawed.

Our australopithecine ancestors may well have been able to hunt animals if they cooperated as a group, as chimpanzees have been observed to do, but chimps do not readily share their meat — except for male monkeys who trade meat for sex! It is therefore unlikely the australopithecine would have done so either.

Yet an abundance of meat-sharing would have been absolutely necessary because babies and children need a lot of brain food for their fast-growing brains. Young children could not easily have hunted land animals but could easily have gathered shellfish. They have been observed doing so in modern hunter-gatherer societies. Therefore, the development of children's brains would not have depended on the sharing of meat.

Furthermore, we now know that seafood, shellfish especially, is brain food due to its DHA and EPA content. Shellfish (and fish and eggs to a lesser degree) contain five brain-specific minerals that work together synergistically. When there is a deficit of even one of these minerals, a person's brain cannot function well, let alone evolve.

These are iron, iodine, selenium, copper, and zinc. Without adequate intake of these minerals, found naturally in shellfish and fish, we cannot reach full intellectual potential. Iodine is the most critical one. Stephen Cunnane attributes the 11 percent brain shrinkage that began 10,000 to 11,000 years ago to the shortage of iodine typically found in inland soils.

People inland, especially in the mountains, often are deficient in this critical brain nutrient. As a consequence, refiners in the US were required to add an inorganic form of it to table salt starting in 1924 in order to combat goiter. Many of those who are aware of how toxic table salt is have cut back on it without adding iodine from other sources, such as sea vegetables, part of the reason why there is an epidemic of hypothyroidism today.

Dr. Cunnane points out that getting our extra brain energy could not have happened on vegetarian or even insect diets. The energy expended in searching for nuts, digging up tubers, and raiding termite colonies would not have yielded extra energy for the brain to grow. If vegetation were all that was needed, why didn't the other primates, who shared our brain's genetic potential for expansion, also evolve in the same direction that ours did? Clearly there was a branch of australopithecines that discovered brain food, and this led to the evolution of their brains on the path to becoming human.

Cunnane explains that to evolve, man's brain needed to have a steady, easy supply of nutrient-dense food. The shores of lakes, rivers, and oceans provided that supply. It was thus environmental permissiveness rather than environmental pressure that led to our evolution.

Having the secure source of food, we had leisure time to play with sticks and stones, invent tools, and play in the sand to make art. Our time was freed up. Even today, Cunnane points out, "These traditional groups measure affluence not in material possessions, but in time available for storytelling, music, and dancing." 137

Cunnane explains that another reason there had to be an abundant, relatively easy way to access food is that people (especially women and babies) had to be able to get a bit fat. By having surplus food stores, a woman could eat enough to have a baby with plenty of baby fat lasting three to five years. This baby fat, unlike adult fat, is rich in DHA stores. This assured proper brain nutrition in the human, who has a very vulnerable brain in early development.

In fact, if mother's milk with its DHA is not available, the infant's body fat DHA will last for two to three weeks. By age three, the toddler could relatively easily find shellfish or go egg hunting by himself, if need be. Thus there is a great disadvantage in a baby born prematurely or with a low weight.

Cunnane further asserts that we are still in the shore-based phase of human evolution and still need a shore-based food supply. The main brain food is shellfish with fish second. Eggs from chickens fed omega-3-rich feed are also brain foods, but they don't contain much copper. Copper is relatively easy to obtain from plant foods however.

One fifth of the world's population consumes diets that do not support brain development. In the mountainous regions of several continents, many people are mentally challenged because of iodine deficiency. Remember, Dr. Price found that coastal tribes exchanged seafood for plant food from mountainous tribes despite the fact that they were at war with each other! The mountain people found that they could get by only three months without seafood.

The Fat Debate

All anthropologists agree we evolved eating meat. They disagree on the ratio of plant food to animal food, and they also debate whether the meat was low or high in fat. Dr. Stanley Boyd Eaton, MD, one of the authors of *The Paleolithic Prescription*, argues that the cave man diet was low in fat, but others cite evidence that we ate large quantities of animal fat.

Bison and camels had humps composed largely of tallow (fat). Organ meats are known to be treasured by traditional peoples for their rich nutrients, including healthful fats. People needed the fat-soluble vitamins, such as A and D found in animal fats.138 There may also have been differences in dietary ratios of meat and fat among paleolithic peoples according to the foods available in each region.

Our Meat-Based Dietary Origins

Dr. Loren Cordain, PhD, professor at Colorado State University, is one of the world's leading experts on the paleolithic diet. He is author of the book *The Paleolithic Diet: Lose Weight and Get Healthy by Eating the Food You Were Designed to Eat*.

R.B. Lee, a Canadian anthropologist, had written a paper explaining that paleolithic man ate a diet consisting of a 65:35 ratio of plants to animal foods. Dr. Cordain ran a computerized nutritional analysis of the 65:35 plant to animal ratio. He found that for a human to get enough calories on a plant-based diet, he would have to gather 12 pounds of vegetation, which would have been unlikely.

He also found that Lee was including shellfish under gathering, though it is clearly an animal product. Lee also included only 58 of the 181 hunter-gatherer societies.

When Cordain revised the analysis, he found the ratio to be flipped at 65 percent animal foods and 35 percent plants. This corresponds almost identically to the Zone Diet, which is 40 percent carbs (plants), 30 percent fat, and 30 percent protein. Consider also that before agriculture with its increased cooking, it would have been difficult to obtain much food from plants because of all the antinutrients found in grains, beans, and other foods. Antinutrients evolved in plants to prevent predators from eating too much of them.

Nowadays, it would be unsustainable for the planet and financially untenable for most individuals to eat that much animal food. Also, as man domesticated animals, they were given progressively inferior diets to consume, accelerated in the past century, which makes them less healthful to eat today. It may not be necessary to eat such a high ratio of animal foods for health if you consciously keep your insulin levels under control and also eat some seaweed and algae for brain food.

Our brains and nervous systems are about half composed of complicated, long-chain fatty acid molecules that do not occur in plants. These fats are found in human milk in order for a baby to grow a large brain, but not in cow's milk, since cow's brains are only a fifth to a third as big as ours despite their much larger body size. Bones of prehistoric people have been found with animals, and sometimes the animals' skulls were broken, indicating that people ate their brains.139 By eating the animals' brains, they could feed their own brains.

Dr. Henry Bunn, PhD, professor of anthropology at the University of California at Berkley states it bluntly.

> *I contend that the procurement and consumption of meat by early Homo erectus is knowable from the Plio-Pleistocene archaeological record and created selective pressures for the evolution of human behavior.140*

He notes that the pattern of bone damage of thousands of mammalian specimens shows this.

> *The fragmentation occurred predominantly when the bones were fresh, rather than during fossilization. A high degree of fragmentation is a common feature of humanly broken bones at more recent archaeological sites, in contrast to the relatively more complete bone elements characteristic of many bone accumulations generated by large carnivores.141*

Man may have been a scavenger, or even a "power" scavenger initially, aggressively driving predators from their kills. But because 95 percent of the carcass fat is found in the brains, organs, and muscles, not just the bones, there was a need for man to hunt the animal directly.142

Gnawing bones left over from another animal's kill would simply not have provided enough nourishment, according to anthropologist Dr. Martha Tappen, PhD.

> *Scavenging opportunities are too unpredictable and rare to be a highly ranked food item for early hominids because deliberate search for them has a high rate of failure.143*

Indeed, the evidence is strong that we were not just scavengers or hunters of small animals only. For example, in America there are 10,000-year-old fossil remains of 300 buffalo near the Arikaree River in Colorado. These animals were trapped by being driven down sloping banks of ice. Their bones were found arranged in an orderly fashion, indicating there may have been an assembly line for butchering.

A 120,000-year-old Cro-Magnon cave painting shows bison with spears piercing them. A rock painting in the Transkei of South Africa shows an eland herd being driven over a cliff by Late Stone Age hunters. There is evidence in the ancient Near East (Tel Abu Hureyra) that animals were driven into a corral to be killed, similar to the Native American practice of driving bison or antelope herds over cliffs.

Evidence of meat eating dates back to 2.6 million years ago, with the size of the brain steadily increasing since then, especially starting about 1.9 million years ago.144

Not only has man adapted to eating meat over the past 2.6 million years, man has actually developed — for peak health, at least — a dependency on meat! As we will later see, it is the high-carb diet that most people have not adapted to. It spikes the blood insulin, and this wreaks havoc on the body.

The caveman diet consisted of vegetables, fruits, nuts, greens, roots, and meat. Cereals, potatoes, bread, and milk were not eaten at all. His diet was not the cause of his shortened lifespan, according to Mark Thomas, professor of evolutionary genetics at University College London.

Paleolithic man may have died earlier than we do now, but he didn't die of bad nutrition.145

The Human Diet in Recent Pre-agricultural Societies.

Dr. Weston Price was a practicing dentist active in the 1920s. He spent 10 years of his retirement traveling all over the world to examine the last of the traditional peoples, those who had not yet assimilated into modern diets and lifestyles. His Nutrition and Physical Degeneration is a classic, arguably the most extensive study of native nutrition we have. This book is an in-depth examination of extremely healthy people and their diets, including a number of different races and genetic variations, not just one.

He found that people everywhere ate animal products. Organ meats such as liver were considered the most nutritious. Some even regarded them as sacred. The people he examined who continued on the traditional diets had almost no cavities and were very happy, with robust health. If someone had health problems, it was common knowledge that the solution was to be found in nutrient-rich animal products.

Hygienic author Arnold De Vries researched the available literature extensively and wrote the book Primitive Man and His Food. By primitive, it is meant that technology had not yet developed. The people themselves were anything but primitive.

As I read about all the journeys and all the observations documented throughout the world, one thing stood out: All primitive peoples were not only healthy, but also intelligent and happy — very happy. There were no signs of mental illness or depression in any of them.

There is a belief among many spiritually inclined people nowadays that if you are ill, you must work deeply on your "spiritual issues" in order to heal. Yet, few of these guys had any spiritual (happiness)

issues. So, which came first, the unhappiness and spiritual issues that led to disease, or the disease that led to unhappiness and spiritual issues?

I think the answer should be obvious.

Very few of these guys suffered from physical illness, let alone unhappiness or lack of intelligence. Yet nowadays we say, "Oh, it's just my cross to bear" if you're a Christian or, "Oh, it's just my karma" if you're into the Eastern thinking.

I think it's pretty clear in this chicken-and-egg matter that the modern high-sugar, high-grain diets lead to disease. The disease and nutrient deficiency permeating our entire civilization lead to the unhappiness. So to fix all of our mental woes, our depressions, our physical illnesses, we must return to our traditional ways of eating.

De Vries's research revealed that "primitive" people from all over the world ate a mostly raw diet consisting of a wide variety of whole, unrefined foods, sometimes including raw meat. The food that was cooked was exposed to heat only for a short time.

The percentage of animal products varied according to the tribe, ranging from high in complex raw carbs with some meat once every couple of weeks and daily raw milk and cheese (the Hunzas) to extremely low in carbs and 95 to 100 percent meat (the Eskimos).

Most people think that considerable pain and length of delivery time are necessary evils of childbirth. However, traditional women throughout the world gave birth with little or no discomfort and quickly — less than an hour. They were often expected to do so without any assistance. Many would go right back to work after giving birth, while modern women often take weeks to recover.

People on their traditional diets were able to withstand very extreme hot or cold temperatures. Though furs were available, they were often not used in bitterly cold weather.

For example, natives of Australia would sleep without clothes in the cold. In Chile, during the coldest winters, weather that would kill birds, women would wash their heads in cold water and not dry their hair. The Indians of Tierra del Fuego would survive the cold climate without clothing.

Weston Price noted of the Peruvians, "They can sleep comfortably through the freezing nights with their ponchos wrapped about their heads and their legs and feet bare." The torrid jungles of the Amazon region were also well tolerated without fans or air conditioners.

People's teeth very rarely had cavities. People kept their teeth into old age. The women were nearly always beautiful, another sign of health. Cancer and other degenerative diseases were nearly nonexistent. Many people did not have gray hair, even when old, and men were not bald. It was not uncommon to live to be 100.

It is often said in the vegetarian community that meat could not be man's original food because man could not possibly run as fast as his prey. Yet, the Native Americans of the Great Plains would run a hundred miles in a single stretch without stopping for rest.

The need for sleep would make itself apparent before physical exhaustion, and it was only this, and possibly hunger, that forced a halt to the run. A tribesman would start chasing a deer in the morning and continue the race until sundown if necessary, until the animal was worn out and caught. The Indian was a creature built for speed — a free, swift, graceful animal — and his physical power in running was always noted by the white explorers making first contact with the people.146

The explorer Dominguez found Indians from Brazil to be so "swift of foot and so long-winded that they tired out the deer and would catch them with their hands."147

De Vries attributes the following reasons for the superior diet leading to peak health in tribal peoples: proper soil care; proper feeding of domesticated animals; no stimulating, irritating, or intoxicating foods or beverages; no canned or processed foods; no pasteurization of dairy products; cooking kept to a minimum in temperature and time; all infants breastfed; foods eaten fresh soon after gathering; use of whole grains instead of refined; use of honey or natural sweeteners instead of sugar; liberal consumption of fruits, nuts, and other foods eaten in their raw state; maximal variety of healthful foods.148

The Biological Case for Omnivorism

If you go to vegetarian websites or books, you can see charts that compare the human digestive tract with those of herbivores. Other sites compare the human digestive system with those of carnivores. The Stone Age Diet has one that shows how similar we are to dogs, reprinted in *The Vegetarian Myth*. So which is right? Both are. **We can digest both meat and plants.**

Listen to Drs. Michael and Mary Eades, MDs.:

Although in anthropological scientific circles, there's absolutely no debate about it — every respected authority will confirm that we were hunters — many people still believe in the dangers of meat eating in light of our supposed vegetarian past. We've had at least twenty people send us copies of the same tables published in an anti-meat book from the 1970s showing how sundry parts of our anatomy or physiology are more like those of herbivores than of carnivores, thus "proving" our vegetarian inclinations. We are, of course, neither. We're Omnivores, able to subsist on meat and plants — hence the intermediate size of our intestinal tract.149

One such chart by vegan raw fooder John Coleman compares various body parts and attributes to conclude that humans are frugivores.150 As we will see, it really depends on which parts are compared. Coleman omits parts that don't suit his agenda.

Dr. Walter Voegtlin argued that our digestive systems are similar to those of dogs. Sally Fallon and Mary Enig, PhD, summarize the observations of Dr. Walter Voegtlin's The Stone Age Diet.

Like the carnivorous dog, man has canine teeth, ridged molars, and incisors in both jaws. His jaw is designed for crushing and tearing, and moves in vertical motions. Mastication of his food is unnecessary [but improves human digestion], and he does not ruminate. His stomach holds two

quarts, empties in three hours, rests between meals, lacks bacteria and protozoa, secretes large quantities of hydrochloric acid and does not digest cellulose.

His digestive tract is short relative to body length, the cecum is nonfunctional and his appendix vestigial [now it is thought to be involved in immunity]. His rectum is small, contains putrefactive bacterial flora [if the food is cooked], and does not contribute to the digestive process. The volume of feces is small [depending on fiber content], digestive efficiency borders on 100 percent; his gallbladder is active and well-developed. Both the dog and man feed intermittently and can survive without a stomach or colon.

The herbivorous sheep, by contrast, lacks canines, has flat molars, and incisors only in the lower jaw. His jaw is designed for grinding and rotary movements. Mastication and rumination are vital functions. His stomach holds eight and one-half gallons, contains bacteria and protozoa, never empties, and has but weak production of hydrochloric acid. His colon and cecum are long and capacious; the cecum performs a vital function; the bacterial flora of his rectum is fermentative rather than putrefactive: feces are voluminous; gallbladder function is weak or absent; and total digestive efficiency [if food is cooked] is 50 percent or less.

The sheep feeds continuously. He cannot live without his stomach or colon. His entire digestive tract is about five times longer, as a ratio of body length, than that of man and his dog.151

Unlike herbivores, human eyes focus forward like those of predators, and humans have ample hydrochloric acid for digesting meat when healthy. We have small incisors for cutting meat that we no longer need since we have tools. Our digestive tract is intermediate in length. It is neither as long as that of an herbivore nor as short as that of a carnivore. Meat does not putrefy in the intestines if eaten raw or rare. Unlike herbivores but like carnivores, we have gallbladders that help us digest fats.

We have only two stomach compartments, un-like cows, which have four. We also do not have much of the bacteria they have to help digest the cellulose of high-fiber plant food. Herbivores would die without plant food. We can live without plants, as we have no biological need for carbohydrates in order to live. Without protein or fat, we would die. The Eskimos often ate only the plant food found in the stomachs of seals, yet they were the healthiest of traditional peoples. This is not ideal, just possible.

104 Keith, *The Vegetarian Myth*, 147
105 I explain in chapter 4 of The Live Food Factor that bacteria do not “attack” us. It is their metabolic waste products that poison us.
106 Physicist Guy-Claude Burger calculates that it would take 1 to 2 million years for complete biochemical adaptation. Adaptive tolerance is not the same as true adaptation.
107 Lindeberg, *Food and Western Disease*, 4
108 Ibid., 56
109 Ibid., 62
110 For more information: Eaton, Paleolithic Prescription; Crawford, Driving Force
111 Finch, Biology of Longevity, 391–402
112 Ungar, Evolution of Human Diet, 4

113 Seinandre, Los Orígenes del Hombre, (Spanish Edition), Larousse: Paris, France, 2005; Klein, Cambridge Encyclopedia of Human Evolution, 1994 ed., 25; Klein, Human Career, University of Chicago Press, 1999, 93; Campbell et al., Primates in Perspective, Oxford University Press, 2007, 11

114 Humphries, "The Diet of Early Humans: What did our ancestors eat?" www.ivu.org/history/early/ancestors.html , accessed 1-12-10

115 Gathered from various anthropological texts, including those by Eaton et al. and Cunnane.

116 Bunn, ed., Meat-Eating and Evolution, 318

117 Leakey, Origin of Humankind, 55–57

118 Leakey, Origins, 148

119 Leakey, Origin of Humankind, 39–40

120 Abrams, Jr., "Vegetarianism: Another View," www.biblelife.org/abrams 2.htm , accessed 1-24-10

121 http://en.wikipedia.org/wiki/Mitochondrial_Eve, accessed 4-18-11

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124 Aiello and Wheeler, "The expensive-tissue hypothesis: the brain and the digestive system in human and primate evolution," Curr Anthropol, 1995,

125 Ungar, Evolution of Human Diet, 349

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128 Ungar, Evolution of Human Diet, 350

129 Ibid., 351

130 Ibid., 6

131 Finch, Biology of Longevity, 385–86

132 Wrangham, Catching Fire, 139

133 Corliss et al., "Should We All Be Vegetarians?" www.time.com/time/magazine/article/0,9171,1002888-8,00.html , 15 Jul 2002

134 Leakey, Origins, 11

135 Leakey, Origin of Humankind, 43

136 Ungar, Evolution of Human Diet, 354

137 Cunnane, Survival of Fattest, 220

138 Fallon and Enig, "The Cave Man Diet," P-P Jnl of Hlth & Healng, 1997, 21 (2)

139 Groves, "The Naïve Vegetarian," www .second-opinions.co.uk/vegetarian.html, accessed 1-11-10

140 Ungar, Evolution of Human Diet, 192

141 Ibid., 194

142 Ibid., 199

143 Bunn, ed., Meat-Eating and Evolution, 28

144 Ungar, Evolution of Human Diet, 205

145 Roxby, "Recreating the caveman diet," www.bbc.co.uk/news/health-11075437, accessed 11-25 -10

146 De Vries, Primitive Man, 12

147 Ibid., 19

148 Ibid., 132–33

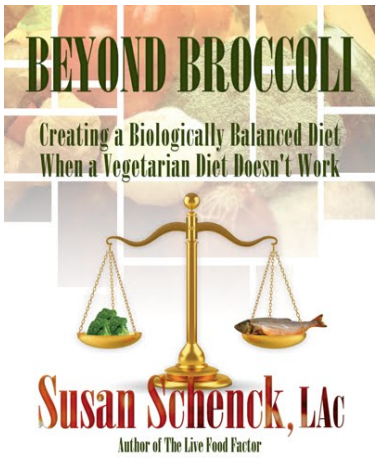
149 Eades, Protein Power Life Plan,2

150 Coleman, "Comparative Anatomy and Taxonomy vs. Opportunistic Feeding," http://home.earthlink.net/~mr.kerchak /VEGAN.html, accessed 4-13-11

151 Fallon and Enig, "The Cave Man Diet," P-P Jnl of Hlth & Healng, 1997, 21 (2)

MEAT: CORRECT PHYSIOLOGICALLY IF NOT POLITICALLY

Source: *Beyond Broccoli* by Susan Schenck, L.Ac. Chapter 17



Understand when you eat meat that something did die. You have an obligation to value it —not just the sirloin, but also all those wonderful tough little bits.

—Anthony Bourdain, American author, chef, and host of Anthony Bourdain: No Reservations

There is a hilarious scene from Woody Allen's 1973 movie *Sleeper* in which the owner of a health food store wakes up and finds himself in the future. Two doctors who revived him are discussing his case. The male doctor asks if the patient had requested anything special. The female doctor says he did in fact request odd items like wheat germ, organic honey, and "Tiger's Milk" (the original "energy bar").

The man laughs and says, "Oh yes, those were the charmed substances that some years ago were felt to contain life-preserving properties."

The female doctor, stunned, asks, "You mean there was no deep fat? No steak or cream pies or hot fudge?"

The male doctor replies, "Those were thought to be unhealthy, precisely the opposite of what we now know to be true."

Such irony is relevant to this book, at least for the steak and cream — certainly not for the sugar or deep fried fat!

Before I began to write this book, I spent months making recipes to jump-start my right brain and move through writer's block. I was inspired by the Meryl Streep movie Julie & Julia, in which the main character makes a different Julia Child recipe every day and blogs about it.

Then something funny happened. I ordered some wild meat off the internet. I started eating three ounces or so at breakfast. My obsession with food disappeared in just a day or two!

For nearly eight years, I had made intensely tasty, gourmet raw recipes. Now I had no desire for that. My cravings were suddenly gone, though I didn't know exactly what I had been craving. The protein and the nutrients in the meat stabilized my blood sugar so much that not only was I not hungry, but I had very little interest in food or in making tasty, spicy recipes. I had a lot more energy to put towards the more daunting task of writing this book.

Many people besides me have found nuts, seeds, and sprouted lentils very hard to digest, even when soaked and rinsed of phytates. I get fatigued when I eat more than a handful, but raw or lightly steamed meat goes through my system so gently that I barely notice it. It may take a bit longer to

digest than plant protein, but it is so much easier to digest, because my ancestors evolved eating it as a staple in their diets.

In The Live Food Factor, I wrote about the time many years ago just after starting to go raw when I first experimented with raw meat for about a month.

I found that after eating raw meat, I maintained the light feeling that I had on a raw vegetarian diet. When I ate raw meat alone, it was actually easier for my body to digest than raw nuts, raw vegetables, raw sprouts, or raw seeds. I even slept better, with no disturbances, on the days that I had meat instead of the raw vegan food.449

As I stated earlier, it was my carb addiction as well as my philosophical desire to be in on the vegan movement that ended that experiment.

Even though wild or free-range organic meat is not cheap, I save money because I spend a bit less on food than before. I no longer need so many supplements, especially after adding cod liver oil to my regimen.

Again, when I eat nuts and seeds, I get fatigued and sluggish, even when they are sprouted; but when I eat raw meat, I feel light and energetic. It is so much easier for me to digest.

If you have been eating a high-fruit diet, you may have temporarily lost some of your digestive ability because fruit is so easy and quick to digest. You may have to ease into eating animal products gradually.

If meat is so bad, why do I feel so much better when I eat it? Why do I sleep through the night every time I eat red meat, the "worst" kind of meat to eat?

I usually eat some free-range beef once a week or so. My moral programming says, "How can you eat a mammal?"

My spiritual programming haunts me: "Red meat will create the densest consciousness!"

My nutritional programming dictates, "Red meat gets stuck in your colon and causes cancer!" (Even though studies have shown this isn't true.)

My political programming screams, "Red meat causes water depletion and global warming!"

But my body's cells say, "This is great; it's what we wanted; it gives us carnitine, B12, carnosine, and some other undiscovered ingredient(s) that makes me sleep more soundly than ever." The X factor might be tryptophan, but red meat often works better than tryptophan or 5-HTP supplements for inducing a sound sleep.

When I eat this at breakfast, I experience no hunger or cravings all day long. My blood sugar is stable. I have peak energy.

What Does Meat Have That Plants Lack?

Meat has been much maligned in recent decades while the myth of cholesterol and saturated fats was prevailing. There are also studies that "prove" that meat causes cancer. What do you expect when most of the studies used the meat of factory-farmed animals typically eaten in American diets? What do you expect when the meat is cooked at temperatures so high that toxic by-products are formed? What do you expect when it is heated in hydrogenated oils, man-made trans fats that our bodies cannot digest? What do you expect when meat is eaten in such high quantities as it has been in the West over the last century?

Over the past few decades, numerous studies purport to show the superiority of vegetarian diets, but usually the control group is eating the Standard American Diet (SAD)! That means they're eating cooked meat with all of its toxic by-products from animals that were factory farmed without exercise; improperly fed unnatural diets of grains too high in omega-6 fats, usually GMO grains full of pesticides; and injected with hormones, antibiotics, and vaccinations.

In processing after slaughter and butchering, meat is often infused with nitrates and other toxins for flavor or preservation, as with hot dogs and lunch meats. The newest destructive fad is to sterilize the meat by irradiation with radioactive nuclear waste materials. In addition, the consumer often eats twice as much meat as his body needs.

Um, hello? Just about any diet would be more healthful than that!

The China Study is often trotted out to make meat look inherently bad; however, the Chinese are known to deep fry much of their meat, making it full of trans fats. Furthermore, several of the conclusions drawn from the study are debatable, as will be discussed in chapter 19.

So where are the studies in which people ate the diets that we evolved on: meat from wild or at least free-running animals fed their natural, organic diets and not tortured with unnatural injections?

The largest experiment of humans eating meat lasted 2.6 million years. The meat was from wild animals, organically fed and free range. While some was cooked, much was eaten raw. While people often ate large quantities of meat after a kill, they also went days or even weeks with no meat, so meat was not overeaten as it is today by so many. The results? The skeletons of prehistoric man showed virtually no chronic disease, no osteoporosis, no arthritis, and no dental problems. Cancer, diabetes, heart disease, and all other chronic diseases became rampant mainly as a result of agriculture, not meat per se.

Factory farming of animals, the addition of nitrates to lunch meat, the feeding of grains to herbivorous animals in lieu of their natural foods, the barbequing and grilling of the meat — all of this made the meat toxic. In its natural form, meat is likely the highest quality super food on the planet, especially the meat of animals that have been wild or properly fed for at least three or four generations.450

Furthermore, Dr. Weston Price found that primitive peoples cherished meat and knew that it held powerful ingredients.

It is significant that I have as yet found no group that was building and maintaining good bodies exclusively on plant foods. A number of groups are endeavoring to do so with marked evidence of failure.451

The healthiest people he found didn't eat only the muscle meat. The organs were cherished above all. The entire animal would often be eaten: bones for soup, glands, and organs, all of which are very nutrient dense.

Skeletons of meat eaters were found to be much healthier than those of modern-day people: taller, stronger bones, no evidence of arthritis and osteoporosis. I doubt their health was perfect, and some probably suffered cancer because many of them cooked their meat in open flames. Plenty of studies have shown this creates carcinogenic by-products.452 But the fact that they were nonetheless much freer of degenerative diseases than we are today reveals just how toxic grains and legumes can be as alternative sources of protein.

The American Dietetic Association believes a vegetarian diet is healthful when "appropriately planned."453 But after researching for this book, I have come to the conclusion that even carb types, the only ones who thrive on vegetarian diets, would reach higher levels of health by becoming "flexitarians," vegetarians who occasionally eat meat.

From what I have seen, people who would rather die than eat animal products sometimes do — prematurely. Just as the toxic effects of cooked foods can take decades to show up, the correlation going unnoticed, so can nutritional deficiencies. The correlation likewise goes unnoticed because the effect is gradual. Rather than immediately killing people, these deficiencies shorten their life spans.

Now, let's take a look at what eating meat moderately can do for you. Dr. Stanley Bass told me that eating just 8 ounces a day (probably 6 for women) provides all the protein you need. Then you can eat plant food for the rest of the day's diet. If you eat the meat raw, as will be discussed in detail in chapter 24, even less is needed.

Vitamin A

True vitamin A is not found in plant food. Americans hold the common misconception that beta-carotene and vitamin A are the same, but they are not. Foods like carrots and pumpkins contain only the beta-carotene precursor to A, and it is hard for many people to make the necessary conversion. Children under five, diabetics, and those with thyroid or liver problems make the conversion very poorly, if at all.454

The conversion requires dietary fat, and the rate is often thought to be somewhere between 6 (World Health Organization) and 12 (US Institute of Medicine) International Units (IUs) of beta-carotene to make 1 IU of vitamin A. A review in the Journal of Nutrition reported studies which demonstrated that some people need twenty-one units of beta-carotene in foods to convert to one IU of true vitamin A! 455

The bioavailability of beta-carotene increases if a vegetable is cooked and if vegetables are eaten with fat, but blending or juicing are better ways to accomplish this. The problem with cooking is that you lose some of the nutrients, including the enzymes that help digest them. You also create some toxic by-products.456 Lightly steaming is not as bad as grilling, as low heat is used, and the inside is still raw. If you are having trouble with all the cellulose in raw vegetables, lightly steam them and add butter or olive oil for increased absorption of beta-carotene. Better yet, eat some raw and some lightly steamed. Juicing is even better, but it is time consuming. Blending may also work for you.

Vitamin A is needed for eyesight and secretion of gastric juices for protein digestion, which assists with protein assimilation. It also plays a role in building strong bone, rich blood, and crucial ribonucleic acid (RNA) proteins. Vitamin A is needed to maintain normal skin.

Cod liver oil is a great source for this nutrient, as are other animal livers and liver extracts. Egg yolks also have some vitamin A. In traditional cultures, it was often known that blindness could be reversed by eating the eyes of fish, rich in vitamin A.

Excess vitamin A has been implicated in osteoporosis, but a closer look reveals that it may actually be a deficiency of vitamin D in relation to the A. Nutritionist Chris Masterjohn presents evidence that "high vitamin A intakes might be safe and beneficial when vitamin A is consumed in the proper ratio to vitamin D" and that a wide range of ratios between the two vitamins might be acceptable.457 Sara Johansson of Uppsala, Sweden, also wrote her PhD thesis on this theory.458

Another reason to avoid supplements is that in natural foods, the nutrients come in the proper ratios in which we evolved eating them.

Dr. Weston Price observed that vitamin A from animal sources is needed for the body to utilize protein, minerals, and water-soluble vitamins. Vitamin A is needed to properly utilize iodine, which is essential for the thyroid. The robust people that he observed consumed about ten times the amount of vitamin A used in his era. Nowadays, with the use of vegetable oils and the drastic reduction of quality fats from grass-fed animals, we obtain far less vitamin A than in the 1930s and 1940s.

Chris Masterjohn points out the near-impossibility of attaining enough vitamin A from plant food.

Eating liver once a week or taking a half teaspoon of high-vitamin cod liver oil per day provides the RDA of 3,000 IU. 459 To obtain the same amount with plant foods, one would have to consume two cups of carrots, one cup of sweet potatoes, or two cups of cooked kale every day. The presumed conversion rate, however, is just an average. … People who convert carotenes poorly may suffer from vitamin A deficiency even if they eat large amounts of carotene-rich foods every day.460

The Weston Price Foundation recommends about 10,000 IU of vitamin A for an adult (about double the RDA) and 20,000 if pregnant or nursing.461 This can be attained easily through cod liver oil supplementation. The foundation recommends supplementing with plant sources to get even more.

Let's revisit just how hard it is to get that amount from plant food alone. Assuming the person is a healthy adult (children and infants being poor at this particular conversion), then he would need 10 to 12 times that amount in beta-carotene according to the later research on conversion rates. For the sake of simplicity, let's go with ten. So you need 100,000 IU of beta-carotene to get 10,000 IU of vitamin A.

You would have to juice about 1 pound 10 ounces of carrots every day to get sufficient vitamin A, provided you could make the conversion. If your conversion rate is 20 instead of 10, as studies show that some people have, you would need over three pounds of carrots a day! 462

I believe this is the reason that vegetarians and vegans who juice are healthier than those who don't. Norman Walker, a mostly raw vegetarian, lived to 109. Few people would sit down and eat over two or three carrots a day, but juicing makes it possible to eat many more.

For those who are carb sensitive, however, ingesting that many carrots is not a good choice. At 21,383 IU per cup (nearly 4 ounces), carrots just happen to be the vegetable highest in beta-carotene. Spinach, for example, has only 2,464 IU per cup (about 2 ounces), so to get 100,000 IU, you would have to eat 40 cups a day! One cup of pumpkin (about 4 ounces) might be a better choice at 12,231 IU. You would need "only" eight cups a day of pumpkin. Two cups of mangos would give you 12,850, along with a load of carbs.

So, it would be very unlikely for a vegan to get enough vitamin A without juicing and taking supplemental beta-carotene. But don't take a beta-carotene supplement: massive amounts of this supplement increase oxidative stress and stimulate the production of enzymes that degrade true vitamin A, which was shown to lead to cancerous changes in lung tissue even worse than those seen from cigarette smoking in one controversial study! 463 Of course, whole-food supplements don't have this potential drawback.

Fallon and Enig have another excellent article about Vitamin A online, "Vitamin A Saga."464

B Vitamins

Meat is rich in folic acid, vitamin B12, vitamin B6, and choline. These nutrients lower serum homocysteine levels, which is considered desirable as already mentioned. Note that overeating meat will result in increased methionine levels, raising homocysteine levels, so balance is key. B vitamins are found mainly in beans and animal foods. Choline is highest in eggs, beef, organ meats, and fish. In one study, pregnant rats were given choline supplements and gave birth to babies that had superior brains with great memories their whole lives.465

B12 is found in nutritional yeast, but not naturally: the yeast is fortified with B12. Nutritional yeast is not the best food if you are dealing with candida overgrowth. It also contains mycotoxins and is nearly impossible to find in an uncooked state.466

B12 is also made in the colon and therefore shows up in feces. According to raw vegan proponent Dr. Cousens, we cannot utilize the B12 made in the colon because it is absorbed only from the small intestine.467 This explains why so many animals facing a deficiency condition sometimes instinctively eat their own feces.

It may be that some people can access the B12 made in their digestive tracts, which could explain why some can remain vegan for decades without experiencing deficiency symptoms.

There is evidence that if we properly fertilized the soil with a proper balance of natural fertilizers, compost, and manures of diverse sources, that some B12 could be made available through plant food.468 An Iranian vegan sect that fertilized their vegetables with human feces, and then did not wash the vegetables, managed to get enough B12.469 This concept would not work in developed countries, since sewage sludge contains so many toxic chemicals from sources other than human waste.

Natives of India who foraged for wild greens got sufficient B12, but when they moved to England where they bought greens at the supermarket, they acquired deficiencies. They had previously been consuming insect eggs from unwashed greens.470

Currently, there is no plant source found in nature with reliably significant amounts of B12. Raw sea vegetables may have some B12, but not enough to raise the B12 levels in humans. Dried seaweeds often have B12 analogues that actually increase the need for B12. Even those who eat cooked meat can develop B12 deficiencies, because B12 is heat sensitive.

B12 deficiencies can be serious, possibly leading to irreversible damage to the nervous system, including blindness, dementia, and degeneration of the spinal cord.471 Often people with dementia are found to have a B12 deficiency.472

British scientists at the University of Oxford found that brains low in B12 actually shrink! Over a five-year period, people with the lowest B12 levels had brain shrinkage six times more than those with the highest B12 levels. Shockingly, even those considered at the low end of "normal" experienced some of the worst diminution of their brain tissues.473

B12 deficiency can be hard to detect before irreversible damage is done, as test results can be fooled by high intake of folic acid. Eating high amounts of green leafy vegetables increases folic acid to the degree that blood assays of B12 may appear normal while deficiency may be progressing and damaging the neurological system. For this reason, some prefer the more definitive urine test.

In my case, I had a B12 deficiency with symptoms that wouldn't go away with injections, sublingual pills, and even eating two or three raw egg yolks a day. I finally ate meat three to five times a week, and the symptoms began to disappear. I was back to normal when I began eating a tablespoon of freeze- dried beef liver from Argentina every day.

After my recent move to Ecuador, where supplements are scarce, I now eat fresh raw liver, frozen for two weeks to kill parasites and then blended with orange juice to chug it down. Adding ginger reduces bitterness. Not the best food combining, but as the Mary Poppins song goes, "A spoonful of sugar helps the medicine go down." Since it is blended, I have no trouble digesting it even though fruit doesn't generally combine well with meat. Also, acid fruits have more capacity to combine with other foods as compared to nonacid fruits.

Vitamin C

Some organ meats have vitamin C provided they are eaten raw. This is why the traditional Eskimos were able to get sufficient vitamin C. Most modern people would rather just eat fruit.

Vitamin D

The RDA for vitamin D is only 400 IU per day. This is supposedly attained by being out in peak sunlight hours for 15 to 20 minutes with a fair amount of body exposure, more for those with dark skin, yet many experts conclude that this is not enough. Dr. Price noted that robust people attained ten times the amount eaten in the American diet of his day, which was considerably more than Americans obtain today. The Weston Price Foundation recommends getting vitamin D from cod liver

oil in addition to plant sources and sunlight: 1,950 IU per day for adults and 3,900 IU if pregnant or nursing.474 Dr. Mercola recommends 5,000 IU a day for adults.475

Cod liver oil varies in the amount of D, so you have to read the labels carefully. This is because some manufacturers are afraid people might overdose on D and A. It may be true for synthetic vitamins, which can be toxic in high doses and concentrated forms, but the natural forms found in cod liver oil are safe in moderate amounts. On the other hand, some people think it is best to take a cod liver oil that is not artificially concentrated in D, but has the same A:D ratio that is found in the cod.

To get this large amount of vitamin D otherwise, one may have to spend hours sunbathing at peak hours in a swim-suit. For example, if getting 20 minutes of sun exposure gives you the minimum requirement, you might need 10 times that, or 200 minutes!

I lived in San Diego, often called "Sun Diego" for its 70° F temperatures and sunny skies year round, and I know of no one who has the luxury of time to do that, especially considering that you get more sun horizontally than vertically. Most people work during the day. When they go for afternoon walks, it is not in their swim suits; neither are they lying horizontally.

Foods rich in vitamin D include fish, especially fatty fish like salmon, mackerel, tuna, and sardines. Surprisingly, pork lard is also rich in vitamin D. Free- range pigs are out in the sun a lot. They don't have fur to block the sun's rays, and it's fat tissue that stores vitamin D. Tara Weaver writes about visiting the Prather Ranch, where the proprietors noticed that their customers would lose weight and gain a twinkle in their eyes through eating lard! 476

There is some evidence that UV-zapped mushrooms contain vitamin D2, the precursor to D3, but it is questionable as to whether dietary D2 is very effectively utilized in humans.477

Dr. Sarfraz Zaidi, MD, cites studies in his book Power of Vitamin D in which D deficiencies were linked to cancer, heart disease, diabetes, high blood pressure, fibromyalgia, kidney disease, osteoporo.sis, asthma, depression, and much more. He believes we don't get enough from the sun and diet combined, so we should take supplements.

Vitamin K2

Vitamin K occurs in two forms: K1 and K2. When animals ingest K1 from green plants, they convert part of it into K2. This ability to convert K1 into K2 varies widely among species and is known to be weak in humans. Humans cannot absorb the amount of K1 needed to convert to adequate levels of K2.478 The maximal amount of K1 absorbed is thought to be around 200 micrograms a day. However, large amounts of K2 are readily absorbed. Evidence shows that to acquire peak health, humans need K2 in the diet.

A great online article about this, written by nutritionist Chris Masterjohn, contains 81 footnotes with scientific studies to support the above information.479

Dr. Weston Price discovered evidence of a nutrient he called "activator X." The vitamin hadn't yet been discovered, but he observed its properties and knew it was in animal fats and organs alone, not in plant food. He observed that it was important for tooth health, growth/development, reproduction,

protection against calcification of the arteries, and brain function. He knew that it worked synergistically with the other fat-soluble vitamins A and D.

We now know that this mysterious activator is vitamin K2. Vitamins A and D tell the cells to produce certain proteins, but vitamin K2 is needed to activate those proteins. Those proteins can only function after being activated by K2. K2 is preferentially used by tissue to place calcium where it belongs, in the bones and teeth, and to keep it out of where it doesn't belong, in the soft tissues.

Dr. Price knew this mysterious nutrient was present in butter, but butter varies widely in K2 content, making it not an ideal source. So he combined cod liver oil with butter as his protocol for reversing dental caries. This not only stopped tooth decay, but caused the dentin to grow and remineralize, sealing the once-active cavities with a glassy finish. Nutrition advisor Aajonus Vonderplanitz writes about his experience with this in his book We Want to Live.

K2 has also been used in the treatment of epileptic seizures and rickets. Vitamin K2 also prevents fractures, including the dreaded broken hip common in old age.480

Vitamin K2 is needed by the heart. A deficiency of K2 causes calcification of the cardiovascular system which nearly everyone has to some degree by age 65. K2 protects against inflammation and the accumulation of lipids and white blood cells that are found in atherosclerosis.

Vitamin K2 is needed by the heart and brain. Autopsies showed that K2 made up 70 to 93 percent of the vitamin K found in the human brain, where it helps synthesize the myelin sheath of nerve cells, which contributes to learning ability. Children's learning capacity has been found to increase with the addition of K2 to the diet.

Deficiencies of K2 have resulted in fatigue, learning disabilities, and even epileptic seizures. K2 supports the enzymes that produce sulfatides (lipids in the brain). Autopsies of brains in the early stages of Alzheimer's show up to 93 percent lower sulfa-tide levels than normal.

More and more roles of K2 continue to be discovered. The highest concentrations of K2 have been found in the salivary glands and pancreas, so no doubt this vitamin is critical for their functions. A deficiency of K2 is also thought to be a factor in kidney stones. K1 is preferred by the liver to activate clotting factors, but most tissues prefer to use K2 to activate the other K-dependent proteins. For example, to maintain bone health, the human body prefers K2 to K1.

The only plant food known to contain significant amounts of K2 is natto, an Asian soy dish with a very strong odor. It is fermented for a long time to get rid of the antinutrients in the soy. Sauerkraut also has a little. Animal sources include goose liver paste, hard cheese, soft cheeses, egg yolks, butter, chicken liver, salami, chicken breast, chicken leg, ground beef (medium fat), bacon, and calf liver. Some is also produced by bacteria in the gut of healthy people,481 but as stated earlier, humans have a hard time absorbing the amount of K1 needed to convert to adequate levels of K2.

Cobalt

A cobalt deficiency occurs most often in vegetarians. Cobalt is a molecule that resides in the center of the vitamin B12 molecule. This mineral works with copper to help assimilate iron.

Coenzyme Q10

The chemical ubiquinone, also known as coenzyme Q10, or CoQ10 for short, is an essential nutrient for the heart and for the production of energy by the body's mitochondria. It is produced in the body from precursors found in nuts and seeds. It is also found fully formed in meat, especially hearts and

Vegans may not get sufficient amounts of dietary CoQ10 or its precursors, so this is a supplement they might consider taking. As people age, their bodies are less able to manufacture or assimilate it from foods, vegan and non-vegan alike.

It's a very expensive supplement, and unscrupulous suppliers dilute it, with the FDA looking the other way. Finding a reputable vendor is important if you wish to supplement.

Iodine

Vegetarians often become deficient in iodine, and so even do omnivores who are aware of the toxicity of table salt, which is supplemented with iodine. People who cut down on meat and eggs, moderate iodine sources, often become depleted if they don't eat enough seafood, plants grown in iodine-rich soils, or iodized salt. One can be vegetarian, even vegan, and get sufficient iodine by incorporating small amounts of sea vegetables, especially kelp and nori, into the diet.

Iron

Iron and zinc are often deficient on vegan diets.482 Iron is found in meat, fish, liver, eggs, and to some extent in green, leafy vegetables, especially spinach.

Some people say a myth was created that spinach is high in iron when actually someone put the decimal point in the wrong place! 483 In some databases, it actually doesn't have appreciably more than other greens. One database shows one cup of spinach (56 grams, or about 2 ounces) containing 0.8 mg of iron, with chard at 0.6, mustard greens at 0.8, kale at 1.1, and lamb's-quarters at 1.3.484

On the other hand, the famous Firman Bear Report from Rutgers University in 1948 found that spinach and other vegetables varied enormously in their iron and other mineral contents, depending on the soils in which they were grown.485 Our soils have only deteriorated since that study was published.

Iron from animal sources, called heme iron, is more readily absorbed by the body than the non-heme iron of plant sources. In addition, there is an as-yet-unidentified factor in meat that enhances its absorption.486 While 10 to 30 percent of iron is absorbed from animal foods, only 2 to 10 percent is absorbed from plant foods.

One study showed that non-heme absorption for lacto-vegetarian women was 70 percent lower than for the nonvegetarians who ate beef.487 Phytates and oxalates (prevalent in spinach and existing in various degrees in all vegetation) interfere with its absorption. Women during childbearing years may have problems getting adequate iron on vegetarian diets, while iron is common in animal foods, especially liver.

Note that iron deficiency can be masked by inflammation.Chronic inflammatory disorders like arthritis raise blood iron levels, indicating that there is no deficiency when there often is.488

Too much iron is thought to speed the aging process.489 Excess iron buildup in the brain can lead to dementia.490 Iron surplus is also implicated in heart disease. As with everything, balance is key.

Zinc

The ideal dietary ratio of the essential minerals zinc and copper is thought to be as high as 8:1 zinc to copper.491 The best sources for zinc are eggs and land animals, especially those with red meat. Plant foods are rich in copper but poor in zinc, with the exceptions of wheat germ and pumpkin seeds, so vegetarians and especially vegans may develop a skewed ratio of copper to zinc. High levels of copper in relation to zinc cause chronic fatigue. Low levels of zinc can cause infertility in men by decreasing sperm counts. This is why oysters, very rich in zinc, are considered aphrodisiacs.

Nutritionist Ann Louise Gittleman saw so many people with chronic fatigue as a result of vegetarian and vegan diets that she wrote a book about it. She found that the high copper in relationship to zinc also made it increasingly difficult to digest animal protein.

Many people switch to a lighter diet because red meats and other types of animal protein feel "heavy" in their system[s]. Ironically, this feeling can develop from copper excess or zinc deficiency (or adrenal insufficiency…). Individuals with cooper-zinc imbalance have trouble digesting and absorbing fat and protein in particular, so they often opt for diets that avoid foods rich in these nutrients.

> *At first it might be only red meat that feels like a brick in their digestive tract[s], so they avoid it. Then, as their zinc deficiency or copper imbalance gradually worsens, they begin having trouble digesting other types of animal protein and usually eliminate them one by one — first poultry, then fish, then eggs and dairy products, on down the line. Yet the more an individual with copper imbalance eats a low-protein, high-carbohydrate diet, the more his or her metabolism will slow; then, as a consequence, the copper overload will worsen and digestion will further decline.492*
>
> *Gittleman points out that the problem with vegetarian and vegan diets is that they often contain grains and soy that contain zinc-inhibiting phytic acid. She says that research has shown that high calcium intake along with high phytic acid synergistically decreases zinc absorption. So if a person combines dairy or sea vegetables (rich in calcium) along with soy, grains, bread, cereal, or pasta, they will increase the likelihood of zinc deficiency.493*

Furthermore, plant proteins (soy, other beans, whole grains, nuts, and seeds) are rich in copper. You may need to eat lots of pumpkin seeds or wheat germ to get enough zinc to balance out the copper. But if you ate a lot of pumpkin seeds or wheat germ, you would get an excess of omega-6 fatty acids and skew your omega-6:3 ratio.

Phosphorus

Meat is the most concentrated source of phosphorus. Phosphorus intake is often insufficient in vegetarian diets, which is another reason besides high-carb intake and low K2 consumption for vegetarians' more frequent dental and bone problems.

Complete Amino Acid Profile

Unlike plant foods, meat contains not only the 8 essential amino acids, but also all of the other 14 standard amino acids found in the human body. The 8 essential amino acids are phenylalanine, valine, threonine, tryptophan, isoleucine, methionine, leucine, and lysine.

Vegan diets are often low in the following amino acids: lysine, methionine, carnitine, taurine, and tryptophan.494 Plant foods are also low in cystine and threonine.495 Some people cannot manufacture the supposedly nonessential (meaning that they can be produced in the body from precursors) amino acids taurine and carnitine but must get them from meat in order to be healthy.496

In order to get the amount of methionine, a precursor to the major antioxidant glutathione, found in just 8 ounces of elk meat, you would have to eat 22 heads of lettuce, 127 bananas, 550 apples, or 46 slices of bread! 497 But eating excessive amounts of methionine can shorten one's lifespan, so balance is key.

If you choose to eat legumes, you will have too little methionine, and if you choose to eat grains, you will have too little lysine. This is why every culture traditionally combines beans (lentils, soybeans, et al.) with grains (rice, corn, et al.). The grain/bean combo is difficult to digest because of all the phytates and lectins. They are not our natural foods and were only introduced to our diets after agriculture and cooking began. Eating large amounts of them will bind minerals and create bloating and uncomfortable amounts of gas. This can be reduced if they are soaked, rinsed, sprouted, and/or fermented.

Meat has a comprehensive amino acid profile. Although plant combinations of grains and legumes can bring you all the eight essential amino acids, the case has been made that another eight should also be classified as essential. These are glycine, proline, arginine, glutamine, tyrosine, serine, cysteine, and taurine.498

Furthermore, Lindeberg points out in his nutrition textbook an intermediate category besides essential and nonessential amino acids.

> *A third group [is] thought to be conditionally indispensable, i.e. they must be supplied under certain physiological or pathological conditions.499*

Could You Use More Energy? Carnitine in Red Meat

Meat is the only appreciable source of L-carnitine. Red meat, especially mutton and lamb, is the richest of all. Chicken and turkey also have carnitine, but not as much as red meat. Tempeh, tomatoes, asparagus, eggs, orange juice, and avocados contain only small amounts of carnitine.500

The mitochondria are tiny powerhouses within all of our cells other than mature red blood cells. They are rodlike structures that handle much of the process of turning food into energy. They produce 90 percent of the energy used by our cells.

When I think of mitochondria, I am reminded of the Gary Larson (Far Side) cartoon in which a medical student was put in a straightjacket and sent to a mental ward due to his frustrations in trying to memorize the complicated Krebs cycle, which explains how energy is formed by the mitochondria. I sympathize with the student in the cartoon, since I had to memorize the Krebs cycle in college.

Nearly all the energy you get comes from the mitochondria, so you will be tired if they don't get the ingredients to do their thing. If they are healthy, you will be energetic. An active, energetic body has more mitochondria in its muscles, healthier mitochondria, less fatigued mitochondria.

Nutrition expert Robert Crayhon compares the mitochondria to "nonstop parties." As we age, we party less, and so do our mitochondria.

> *Liven up your mitochondria with the right nutrients, however, and you will slow the aging process. … A fish rots from the head down. The cells of your body rot from the mitochondria out. You are only as young and energetic as your mitochondria.501*

He compares the mitochondria to our hearts. Our hearts feed oxygen and food to our bodies and speed away waste products. Think of the mitochondria as the heart of each cell.

> *[Carnitine is] the most important nutrient for increasing mitochondrial energy and efficiency. Carnitine keeps energizing compounds coming into the mitochondrial party. It also acts like a bouncer and quickly gets rid of anything that could slow the party down.502*

Carnitine is used by the mitochondria to clear their waste products to avoid free-radical damage as a toxic by-product of food oxidation. It helps the liver protect itself from toxins. The liver is the body's chief organ of detoxification.

Carnitine is critical for producing energy and having an active metabolism. Carnitine escorts fatty acids from the blood into the cell for them to be burned in the mitochondrial furnace. Weight-loss gurus Nicholas Perricone (*The Perricone Weight-Loss Diet*) and Ann Louise Gittleman (*The Fat Flush Plan*) recommend taking carnitine supplements even if you do eat red meat!

Carnitine helps prevent muscle loss during illness and aging, offers liver protection, and helps the immune system. But it doesn't work without adequate omega-3 fats, and it should not be taken at night, as it can cause insomnia. People who have a tendency toward mania or manic-depression should avoid taking carnitine supplements.

Gregory Westbrook and his family spent several years as raw vegans. When their health failed, they slowly added some animal foods to their diets. They finally ate red meat, which because it is from a mammal and because it has received so much bad press, always seems to be the last thing a vegetarian dares eat. All of them remarked at how much energy they suddenly had. It was likely the carnitine that made red meat give them such an energy boost.

Carnitine has helped stabilize my blood sugar. When I eat red meat, I go a long time without any hunger.

Carnosine for Antiaging

Meat is the only significant source of carnosine — especially chicken, pork, and red meat.503 It is also in eggs, cheese, and milk to a lesser extent.

Carnosine has well documented antioxidant, antiglycating, aldehyde-scavenging, and toxic metal-ion chelating properties. It increases the synthesis of nitric oxide and decreases erroneous protein synthesis.504 It also helps suppress Alzheimer's disease.505 This nonplant-source nutrient is a powerful antiglycating agent, meaning that it slows down the formation of the advanced glycation end products (AGEs) that age a person.506

Carnosine is one of the most potent inhibitors of the accumulation of cholesterol in atherosclerotic plaque.507

Creatine

Meat and fish are the best sources of creatine, an amino acid used to form ATP, the fuel which powers our cells. Creatine helps bodybuilders and improves exercise tolerance in patients with congestive heart failure.508

Taurine

Terrestrial animals and certain seafoods are rich in taurine. Taurine is important for cardiac function, vision, the brain, overall nervous system, and bile acid conjugation. It is also a detoxifier.

Infants, unable to manufacture it, depend on milk to get it. Even some adults have trouble synthesizing it. It is rare in plant foods, though found in red algae in high concentrations.

> *The plasma taurine concentrations in the vegans were significantly reduced to 78 percent of control values. … Although taurine is synthesized in humans, the current study suggests that the rate of synthesis is inadequate to maintain normal plasma taurine concentrations in the presence of chronically low taurine intakes. … Long-term adherence to a strict vegetarian diet may lead to clinical manifestations of taurine deficiency.509*

Studies have found that neonatal primates developed abnormal eye function after being fed a taurine-free diet.510 Herbivores, unlike primates, have an ability three times greater than humans to synthesize taurine. The inefficient status of human taurine synthesis suggests a long dependence on dietary animal foods.

Taurine is also great in assisting in relaxation and sleep. I have talked to several former vegetarians who sleep better after going back to eating meat, and this may be one reason for that.

Fat Profile

Few realize this due to the anti-saturated-fat campaign, but the main fat in bacon and red meat is actually monounsaturated, the kind found in olive oil, nuts, and seeds that lowers your LDL cholesterol and raises your HDL cholesterol. If an animal is grass fed, its polyunsaturated fats will also be the good omega-3 fatty acids. Even the saturated fats, as we have seen, are critical for physical and mental health.

Don't worry about the fat in meat unless it comes from factory-farmed animals, in which case you should worry due to toxins and the omega-6 overload. Studies show that a high consumption of lean meat, including red meat, does not cause dyslipidemia, a disruption in the kinds or amounts of lipids in your bloodstream.511

Conjugated Linoleic Acids

Conjugated linoleic acids are available in the meat of ruminants: cows, buffalo, sheep, goats. These fats help with losing weight and keeping firm muscles, according to researchers at the University of Wisconsin School of Medicine. Grass-fed animals have three to five times as much CLA as grain- fed animals. CLAs have promising health benefits that range from favorable body composition to reducing the risk of cancer and diabetes and lowering blood lipids. Animal foods provide 97.6 percent of the total CLA consumed, with beef providing over one-third.512

One study in Finland showed that a diet composed of CLA-rich foods may protect against breast cancer in postmenopausal women.513

Brain Foods

Seafood contains a number of nutrients beneficial to the brain. Fish, sardines especially, are rich in DMAE, which helps with learning, attention, memory, and behavioral problems. DMAE reduces anxiety, stops mind racing, improves concentration, and promotes learning.514 Fish and shellfish are rich in the five minerals needed for brain development and function: iodine, iron, selenium, copper, and zinc.515 One study also found that while cooking other meats reduces their B12 content, the loss of B12 from cooked fish is not high.516

Organ meats and mackerel have an abundance of phosphatidylserine (PS), a phospholipid which helps with memory, learning, vocabulary skills, concentration, mood, alertness, and sociability.517

As discussed previously in this book, fish is high in DHA and EPA, needed for intelligence and mental well-being. We need 300 to 400 mg of both DHA and EPA a day for maintenance and double or triple that to correct a deficiency.518

Unlike Plant Food, Meat from Organic, Free-Range Animals Contains Few Antinutrients

A plant can't run away, bite you, or claw you, so it evolved the defense of poisoning you with antinutrients. But once you are able to catch the running or fighting animal, it won't poison you. The factory-farmed animal is the exception. Poisoned by greedy, ignorant humans, it gets its revenge by passing along these poisons to whoever eats it.

Eating meat allows people to grow taller because there are no phytates to bind minerals crucial for growth. I once had a boyfriend from Bangalore, India, who was 6'2" in height. This is very unusual for India, where the average male is 5'7". He attributed his daunting stature to having been raised on meat, since he was a Catholic.

When you add meat to a diet, it displaces some of the grain and legume combinations which would otherwise be used for protein. The phytates in those plant foods block mineral absorption. This is especially true in cultures that don't soak, sprout, and ferment these foods. Their people wind up being shorter.519

> *Phytates are a leading cause of poor growth, anemia, immune system incompetence, and other health woes in Third World countries where plant- based diets are the norm and mineral deficiencies common. … Although it is widely assumed that these plant foods contain plenty of phosphorus for growth, anywhere from 50 to 75 percent is bound up in the phy.tates and not readily bioavailable.520*

Unlike plants, meat does not feed candida, especially when raw or lightly cooked. This is why it is commonly used on anti-candida diets such as the Body Ecology Diet.

Meat Is Easier to Digest Than Most Plant Foods

One thing I noticed when I resumed eating meat is that I had no digestive problems. My bloating was gone. I no longer had to wear stretch jeans so that after I ate I could still button them at the waist. Give me more than just a cup of sprouts or broccoli, even steamed to break down the cellulose walls, and I will look pregnant for sure — for hours. I will also get uncomfortable levels of gas.

These are low-calorie foods. If you don't eat much, you certainly can't sustain yourself on them. So I would eat a lot of nuts and seeds, even though I could only eat them in small amounts, including when presoaked and rinsed, without experiencing bloating and fatigue in their digestion.

I have heard many others make the same comments about meat being easier to digest than many plant foods. But some people, after going without meat so long, might have to ease into eating meat more slowly. It could be hard to digest at first.

My stomach's hydrochloric acid returned quickly however. I am a blood type O, which is said to have more hydrochloric acid, so maybe there is something to that theory.

For people who have lost much of their hydrochloric acid production from vegetarian diets, or simply from aging, it helps to take a tablespoon or two of raw apple cider vinegar or lemon juice along with the meal. Digestive enzymes can also help.

I have a friend who was hooked on antacids. When she turned 60, I gave her a card that said, "A child of the '60s turns 60. Want to drop some antacid?" When I turned her on to lemon juice, she was grateful to get off the toxic antacids. Antacids can even lead to kidney stones.

Meat Is Satisfying and Non-addictive

Meat is filling and satisfying, keeping the blood sugar stable. Meat is "unbingeable." No one feels like eating meat past the point of feeling full unless it has monosodium glutamate (MSG), salt, or sugar in it. Carbs, especially refined ones, can easily pull one into an addictive nonstop eating frenzy. Unadulterated meat, no matter how good it tastes, does not override one's natural feeling of satiety.

Meat Needed to Slow Muscle Loss in the Elderly?

Loss of muscle mass in the later years is a significant problem. The elderly lose their independence with the progressive loss of strength. In a 12-week study of 19 men aged 51 to 69, it was found that the men eating meat experienced greater gains in skeletal muscle mass and fat-free mass during resistance training than the lacto-ovo-vegetarian group, those who ate dairy and eggs.521 Other studies have confirmed this association.522

> *A vegetarian diet is associated with a lower muscle mass index than is an omnivorous diet at the same protein intake. A good indicator of muscle mass index in women seems to be animal protein intake.523*

Yet another study documented changes in skeletal muscles at the genetic level (DNA transcription) induced by short-term inadequate protein intakes, as low as 7 to 10 percent of calories, in older humans. The changes were the kind that might precede adverse metabolic, functional, and structural events, including muscle wasting.524

What about E. Coli and Mad Cow Disease?

Outbreaks of Escherichia coli, or E. coli, poisoning and mad cow disease represent further reasons to make sure your meat comes from a healthy source. E. coli is a normal constituent bacterium in feces. The variant known as H157:O7 is formed when cows are fed unnatural diets, such as grains.
The pH in the stomachs of ruminants changes when they are fed grains instead of grass.

This results in a change of bacterial communities living in a symbiotic relationship with their hosts. Among the bacteria taking charge is variant E. coli, which can displace good strains, leading to the bad results we have seen reported in the news. The cows are then given antibiotics because their stomachs cannot properly handle grains.

Another factor in E. coli contamination is the extension of meat with genetically modified soy, as GM soy is thought to be even more dangerous than E. coli from the guts of commercially raised cattle.525

Bovine spongiform encephalitis (BSE), or mad cow disease, was thought to result from feeding cows dead animals, which is not one of their natural foods. However, Creutzfeldt-Jakob disease (CJD), which is the human disease from eating the beef of cows infected with BSE, never showed up in the Shetlands where feeding cows dead animals was a common practice.

There is much evidence that mad cow disease occurred as a result of farmers treating their cattle with organophosphate pesticides in a warble fly eradication program.526 After all, wild vegetarian animals like deer and squirrels develop a similar brain wasting condition. They don't eat meat, but they are exposed to pesticides. In addition, a similar disease is found in animals and humans living in areas of volcanic soils, where diets are high in inorganic aluminum and manganese, known to be toxic to the nervous system.527

Some people like to play it safe and purchase beef from New Zealand, where no mad cow disease has ever been found. Sure, it has a high carbon footprint, but so does importing plant super foods from Asia or South America. Sometimes our health is just worth it.

Meat Cautions

Don't overdo red meat. Eating an excess of even raw red meat can give you too much iron, leading to oxidative damage.528

Don't overdo meat high in purines, such as sweetbreads, anchovies, sardines, liver, beef kidneys, brains, meat extracts, herring, mackerel, scallops, and some game meats. Overeating these can result in gout, an inflammatory arthritis caused by caused by elevated levels of uric acid in the bloodstream.

Overeating meat is implicated in Alzheimer's.529 This is because cooked meat creates toxic heterocyclicamines. Many cured meats also contain nitrosamines, also implicated in Alzheimer's.

This doesn't apply if the meat is fish or poultry. These meats can actually deter Alzheimer's.530

About three to four ounces of meat a day is sufficient for many people. For some, just a few times a week is enough. American diets average nine ounces a day, an overdose for most of us. The meat also consists mainly of toxic factory farmed meat cooked at dangerously high temperatures.

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