What Generation of Pottenger's Cats are You? It's *Primal Body—Primal Mind* time

We can’t opt out of nutrition. We have to eat. We have to drink. We have to do something about it. But the modern nutritional landscape can be complex and contradictory beyond belief.

One-size-fits-all is a size that fits no one.

Ever since we scientified nutrition, our health states have declined, unfortunately. Decisions about what to eat and drink have morphed from habits of culture—of heritage—to calculated choices based on reductionist nutritionism theories, with little consideration for how human beings reached modernity in the first place. Just in the past few decades, for instance, scientific research on what human beings should consume to fuel their metabolisms has produced countless conclusions that contradict one another: traditional whole foods like eggs have bounced between Heaven ("eggs are good for you") and Hell ("eggs are bad for you"), making stops in dietary Purgatory along the way ("more evidence is needed to determine the health effects of eggs"). With all this white noise confounding things, it is no wonder that people feel frustrated with food. This trend is unsustainable, and it does not translate into healthy people in the end. Perhaps, incorporating insights from philosophy of science could help us solve our nutritional science challenges. When we do this, an important theme emerges: At some point, you have to self-experiment with your personal diet to figure out what works and what does not work for your body because each person displays biochemical individuality as a result of varying genomic backgrounds and microbiomic makeups.

However, not all self-experimentation starting points are created equal. Science and history have some important things to say if we approach them the right way. And, since you have to start somewhere, some nutritional science philosophy tools may help you progress along in your personal health journey. To start, modern medicine espouses the slogan "First, do no harm" to emphasize the importance of respecting conservative approaches to healing before resorting to drastic, riskier measures. Applying this warning to human nutrition practice seems wise because it challenges everyone to analyze the assumptions underlying their recommendations, theories, and hypotheses. In practice, there are many ways to answer the question of "What is the safest guide for deciding which foods and drinks to start self-experimenting with?" Personally, I answer this question, with the intention of doing as little harm as possible, by suggesting that looking at traditional cultures' dietary practices is the best place to begin tinkering with foods and drinks. Why? Across the globe and throughout human history, populations consuming diets consistent with their ancestral traditions have averted the *Diseases of Civilization*, such as diabetes and heart disease, that are harming more and more people in contemporary societies. Notably, examining traditional diets provides a large-scale evolutionary experiment with far more enrollees than we could ever herd into a formal clinical trial to test with a double-blind, placebo-controlled intervention experiment. In his famous book, *The Logic of Scientific Discovery*, Sir Karl Popper, a philosopher of science who worked extensively on The Problem of Induction (reasoning from specific to general), famously concluded

that "the majority of the problems of theoretical philosophy, and the most interesting ones, can be re-interpreted ... as problems of method" [1]. Amidst the malaise of conflicting information about human diet available today, a logical method for investigating and understanding nutritional science is to have people self-experiment with diets that are consistent with their ancestral heritages, followed by appropriate responses to physiological feedback, such as inflammation or allergies, to stumble (semi-blindly) upon modern diets that are safe, enjoyable, and practical, all at the same time.

To start, some may refute the notion of individuality when it comes to dietary guidelines, but this type of inductive reasoning does not hold up to scientific scrutiny. Each human being expresses what Roger Williams termed biochemical individuality [2]. Dr. Williams captured this sentiment beautifully when he said, “Nutrition is for real people. Statistical humans are of little interest” [2]. What this amounts to biologically is the reality that each person processes and assimilates nutrients differently. In part, these differences result from genomic and microbiomic diversity. With the attention that the Human Genome Project has received recently, people are more aware than ever that genes contribute to individual differences among people [3]. Yet, perhaps more importantly, the emerging Human Microbiome Project shows that people contain ten times as many non-human micro-organismal cells in their bodies than they do human ones, and this has potentially far-reaching implications for human nutritional considerations, disease prevention, and healing interventions [4, 5, 6]. Whenever people consume foods and drinks for energy, these nutrients interact with both human and non-human cells in concert within their bodies. On one hand, the interactions that these nutrients have with human cells can influence genetic expression. In modern science parlance, these dynamics fall under the category of nutrigenomics, a subcategory of epigenetics, or even functional genomics more broadly. These effects, while key to determining our phenotypes, could be trumped by the multidirectional interactions between our diets and our microbiomes. In short, “we aren't who we thought we were” when it comes to gene-environment interplay. By definition, a microbiome is all the non-human micro-organisms (and their genetic material) that live in and on a person’s body. Given this (hopefully) symbiotic relationship, these micro-organisms also consume the foods and drinks that we intake during mealtimes. In response to the environments that these meals produce within our digestive systems, micro-organisms extract and assimilate nutrients for their own use and benefit. In this way, these micro-organisms are intimately linked to our dietary intake habits because they depend on us for energy sources to run their metabolic machinery. Thus, if each person displays microbiomic individuality because our bodies harbor unique compositions of micro-organisms, then it follows logically that this would enhance biochemical individuality even further, over and above the variability associated with human genomics alone [7]. For example, populations of people living in Japan have developed, through lateral gene transfer, the ability to digest seaweed [8]. This type of evolutionary event illustrates concretely how deeply our dietary practices are connected to our microbiomes and how groups of people adapt to their ecological niches in fascinating ways. The new frontier for this nutritional science field could be termed "epimicrobiomics"—a domain where scientists seek ways to alter microbiomic expression in people's bodies by prescribing specific dietary recommendations involving prebiotics (foods and drinks that "feed" beneficial micro-organismal growth and maintenance in our digestive systems), probiotics (foods and drinks that contain beneficial micro-organisms), and/or synbiotics (combining prebiotics and probiotics synergistically). All these rapidly advancing areas of inquiry seem promising, but

when it comes to nutritional science philosophy, the most important message that genomics and microbiomics have to share is the working conjecture that each individual who has a distinctive genomic background and microbiomic makeup has distinct nutritional needs which must be met for optimal wellbeing.

As a reader of this book, you're beginning a personalized cartography (mapmaking) exercise, with Nora serving as your insightful guide. To begin, I have to admit a caveat: I'm a big **Nora Gedgaudas** fan. After all, an author who names a chapter of her book after my ancestor, Dr. Francis M. Pottenger, Jr., MD, is going to hold a special place in my heart. So, I'm biased; biased positively toward what Nora has to say. Everything is subjective anyways.

Because I happen to think that what she's trying to communicate in *Primal Body, Primal Mind: Empower Your Total Health the Way Evolution Intended (... And Didn't)* provides self-experimenting *bricoleurs* with an array of logical health conjectures to evaluate, assess, and then, perhaps, test on their own bodies via **n=1** *clinical trials*. When you read books as an *epistemocrat* (someone who holds his or her own knowledge in great suspicion), you simply reflect on and judge them for what the author intended to accomplish; a single book cannot be all things to all people. Nora, in my opinion, accomplishes what she set out to tackle with this book.

Nora's sharp. And she writes with a memorable, enjoyable punch.

She understands things like the thought-experiment that it's naive to think most plants are our safe, edible friends: from an evolutionary perspective, it seems we'd be wise to be extra careful about the roles of plants in our diets (they may require special preparation and/or cooking, for instance, to be consumed safely) because they've evolved under selection pressures as *immobile* organisms—that is, without the ability to run away or fight back physically, plants protect themselves from herbivores and omnivores by producing, holding, and releasing toxins (such as tannins, lectins, etc.) throughout their bodies. Most animals, on the other hand, have evolved 'fight or flight' capacities and thus, if we catch them successfully, seem safer to eat because their tissues probably contain fewer poisons than plants' cells do.

She also embraces meta-rule formation for individualized health—the process of making our own rules to guide our choices, such as "Don't consume anything that causes a negative physiological reaction"—reminding us to *listen to our own bodies* every step of the way as we deduce, for ourselves, what works and what doesn't work in our **Patient of One** case. And, we must always remember a potent psychology concept that my astute friend, Professor Aaron Blaisdell of the University of California, Los Angeles, introduced me to called 'Overshadowing' (hat tip to Pavlov), which occurs when the initial stimulus is so strong that it blocks perception of a second downstream effect. For example, when people drink sodas, the initial stimulus from the sugar is so large that it overshadows the energy crash and poor health feelings that follow shortly after consumption. In this way, overshadowing inhibits people from responding appropriately to the poisons they ingest, and their abilities to learn via conditioning degrade as a result. Nora hopes to shed light on this type of Overshadowing to help people really listen to their bodies in ways they never did before.

Nora's ray of light starts all the way back in the Ice Age, and then she works her way forward to the present, searching our ancestries for hypotheses about our physiologies. From these inquiries, Nora discusses Pottenger's research because she's concerned about our future generations. In his studies, Pottenger witnessed the degradation of health in successive generations when his cats were fed improper (processed/sugary) diets. Since the Industrial Revolution, it seems, as people have consumed more and more non-real, processed foods, human beings have experienced a degradation in health and a concurrent rise in *Diseases of Civilization* that parallel the problems Pottenger observed in his research. Nora hopes that we are not too many generations into our modern metabolic syndrome woes because Pottenger's experiments also showed that it takes a few generations of proper nutrition to restore animals back to vibrant health. Given our current healthcare and medical predicaments, what does Nora suggest? Well, within the "**eat real foods**" domain, she gracefully nudges folks toward good lipids from pastured meats, fish, butter, yogurt, coconut, avocado, and a few other key sources; moderate, quality protein, primarily from animal sources and some nuts; and, low-carbohydrate intake, mainly from non-starchy vegetables and some fruit (seasonally). That's a starting glimpse of her well-developed and thoughtful human diet discussion; I'll leave the rest for you to peruse in her book.

Nora also feels that the destruction of our soil and the changes in the types and quality of our foods today suggests that supplementation may be necessary to achieve optimal health. Personally, I think this hypothesis is one worth heeding.

She even features a chapter on exercise/movement that emphasizes the value of high-intensity, low-duration activities like sprinting and lifting occasionally, coupled with plenty of rest/relaxation (sleeping) and low-intensity energy expenditure (walking outdoors) in between. The *spirit* of her approach to fitness/training, as I see it, is essentially a bricolage of what my friends Mark Sisson, Keith Norris, Doug McGuff, Robb Wolf, Art DeVany, Frank Forencich, and Erwan LeCorre suggest.

At the end of the day, Nora shares a kindred spirit with the rest of the **Ancestral Health** *community* that has emerged recently (her book features notable quotes from Loren Cordain, S. Boyd Eaton, et al.), and she is playing an empowering leadership role in the movement.

So, take Nora’s book as a field guide, as a map for your own evaluation and self-experimentation—hopefully, you’ll stumble upon your own personal protocol along the way.

Get ready, it’s Primal Body—Primal Mind time!

To good health,

Brent Pottenger

References

[1] Popper, Karl. *The Logic of Scientific Discovery*. http://u.nu/48bsb

[2] Williams, Roger J. and Jeffrey Bland. *Biochemical Individuality: The Key to Understanding What Shapes Your Health*. http://u.nu/5fwvb

[3] Pollack, Andrew. "Awaiting the Genome Payoff." *The New York Times*. http://u.nu/2swxb

[4] NIH HMP Working Group. "The NIH Human Microbiome Project." http://u.nu/7xwxb

[5] Candela, M., et al. "Functional Intestinal Microbiome, New Frontiers in Prebiotic Design." http://u.nu/6zwxb

[6] Turnbaugh, PJ., et al. "The Effect of Diet on the Human Gut Microbiome: A Metagenomic Analysis in Humanized Gnotobiotic Mice." http://u.nu/64xxb

[7] Qin, J. et al. "A Human Gut Microbial Gene Catalogue Established by Metagenomic Sequencing." http://u.nu/7jyxb

[8] Hamilton, Jon. "How Gut Bacteria Evolved to Feast on Sushi." *National Public Radio*. http://u.nu/4gzxb

*Special thanks to Dave Lull and Marc Simonson for providing references.
*Please see Seth Roberts' work on self-experimentation: sethroberts.net
*Please see the Price-Pottenger Nutrition Foundation to learn more about Dr. Francis M. Pottenger, Jr., MD: ppnf.org
*Special thanks to Navanit Arakeri for the term Ancestral Health.