

BOOK REVIEW

Jeffrey S. Bland, PhD—*The Disease Delusion: Conquering the Causes of Chronic Illness for a Healthier, Longer and Happier Life*

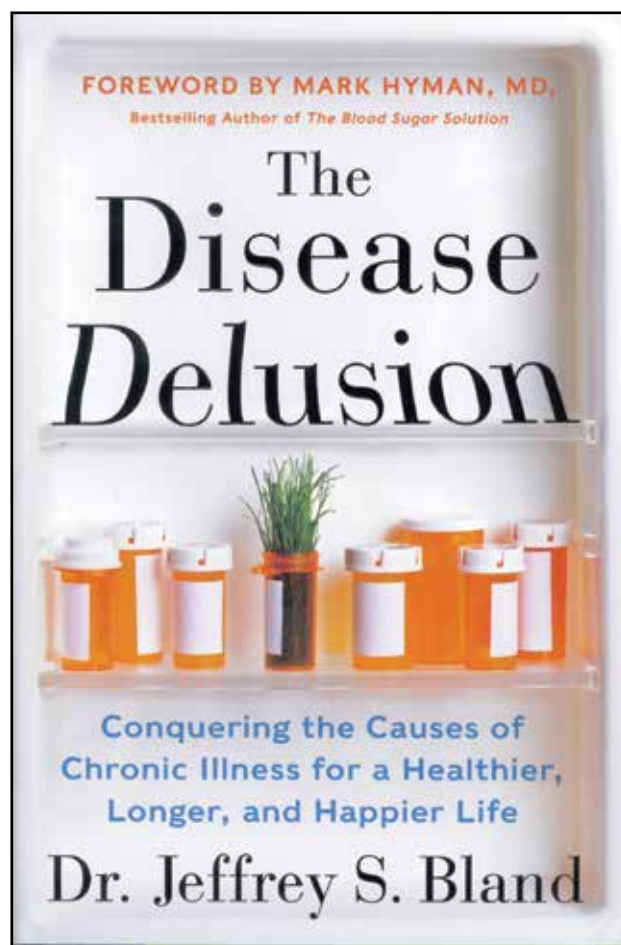
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*The Disease Delusion: Conquering the Causes of Chronic Illness for a Healthier, Longer and Happier Life*¹ is a tour de force that reviews the evolution of medical thinking, particularly over the last century, to weave a web of interconnections that draws together every major insight and becomes the foundation of 21st-century functional medicine. Only Jeffrey S. Bland, PhD, could have written this book.

In *The Disease Delusion*—a 30+ year retrospective in which Dr Bland distills insights gained from his experiences with literally thousands of the world's most groundbreaking, influential clinicians, researchers, and health educators—he gives us functional medicine: a systems-biology approach to personalized health care that will enable us to determine the true sources of an individual's chronic complaints and what that person needs to do to restore metabolic balance and health. His goal is to jumpstart the transformation of health care from a medicine for the mythical “average” human to a medicine that treats the unique individual—treats initiating causes, not just downstream symptoms—and will end the tsunami of chronic diseases that plague us in the 21st century.

As Dr Bland explains in the opening chapters, the last century was all about conquering acute infectious disease, a mission largely accomplished with antibiotics, whose efficacy was expanded into an overarching “single pill for an ill” paradigm. In the 21st century, however, chronic illnesses—heart disease, diabetes, cancer, arthritis, digestive disorders, dementia, autoimmune disease, etc—are what deprive us of our health and kill us, slowly. Even the health of our children is rapidly deteriorating. Conditions that appeared only in adults (eg, obesity, type 2 diabetes) are now regularly seen in children, so much so that this generation is predicted to be the first whose lifespan will be shorter than that of their parents.²

Using a slew of current, and taken together, frightening statistics, Dr Bland makes a very strong case for what anyone in medical practice already knows: Our major health challenges today are not caused by infectious microbes and cannot be treated by a single pill like an antibiotic or even an array of pharmaceutical agents that work downstream to suppress symptoms (and cause



others). We require a medicine capable of identifying and treating upstream causes and, furthermore, one that recognizes that the constellation of causes of chronic disease in one individual is going to be an array unique to that singular person.

We are now seeing the development of upstream medicine because the deterministic landscape of cast-in-stone genomics has been replaced by the malleable terrain of epigenetics, where health or disease outcomes form at the intersection of lifestyle, environment, and diet. This is a seismic revelation whose worldview-shattering effects are rapidly beginning to force the appearance of a new

medical paradigm: a systems' biology (aka, functional medicine) approach in which the most fundamental tenet is: Personalization is key. As Dr Bland so aptly puts it, "Medicine for the average is of little interest for chronic illness."

In this new terrain, we have been Heinlein-esque "strangers in a strange [and, given the staggering profusion of xenobiotics, ever stranger] land," but we are starting to deeply grok that lifestyle, diet, and environmental factors modulate an individual's genetic expression to produce patterns of either health or disease. And most significantly, patterns that produce disease can be altered to those that optimize health. As Dr Bland explains,

Disease is a delusion, one that has been shattered by the still-emerging science of genomics. Breakthrough discoveries over the last decade of the twentieth century and the first decade-plus of the twenty-first have demonstrated that your heart disease is not the same as mine, that everyone with type 2 diabetes is not just like everyone else with type 2 diabetes, that the people with rheumatoid arthritis or Alzheimer's disease are not all similar to others with the same diagnosis. Rather, these so-called diseases are dysfunctions of each individual's physiological functioning; they are due to varied causes, and they demand treatment approaches as different from one another as are the individuals.

What is required is a new model of care capable of personalizing treatment to the individual's unique genetics, environment, diet, and lifestyle: functional medicine. Bland goes on to explain what functional medicine is and how it can be used to leverage cutting-edge science to prevent or truly heal the chronic diseases that plague us in the 21st century. And that's just in Part 1 of this 3-part epic.

Part 2 puts the functional medicine model to work, educating the reader about the activities (and key interactions) of the 7 core physiological processes that define how we function: (1) assimilation and elimination, (2) detoxification, (3) defense, (4) cellular communications, (5) cellular transport, (6) energy, and (7) structure. A full chapter is devoted to each. Each chapter opens with a self-assessment questionnaire that is used in Part 3 to help identify process imbalances and reshape dysfunctional patterns. Part 2 provides the reader with the information needed to identify personal imbalances in function and to develop his or her unique roadmap to a long lifetime of wellness. Dr Bland does not "dumb down" the biochemistry; he makes it not only accessible, but entertaining, relating anecdotes, often his personal remembrances, of lectures by and discussions with the researchers responsible for a stellar array of key discoveries.

Part 3 is where the proverbial "tire meets the road." Having helped the reader identify key functional imbalances, Dr Bland offers in-depth guidance in the development of a truly personalized health promotion program—"with the help of your chosen health care

practitioner." Diet, lifestyle/exercise, environment, pharmaceuticals, supplements, and imbalances in each of the core systems are addressed. Specific, practical, do-able recommendations are offered.

Just think how much more effectively you could use your time counseling and developing a treatment plan if your patient had read *The Disease Delusion* and filled out the self-assessment questionnaires before his or her appointment. And this is a book for clinicians as well; new insights into not only the development and practice of 21st-century functional medicine, but your own optimal health are certain to be found. Following are just a few neuron-invigorating insights; virtually every page contains at least one.

- "Conventional wisdom has long held that our health is 70 percent heredity and 30 percent everything else. The breakthrough discovery at the heart of the functional medicine revolution—our genes are not our fate—flips that ratio on its head."
- "Before 1940, the incidence of breast cancer developing in women with the BRCA mutation was 24 percent. By 2013, the incidence was greater than 85 percent. What changed? Not the gene, but the environment influencing the gene's expression: diet, exercise and other lifestyle behaviors."
- "The vast majority of drugs—more than 90 percent—only work in 30 to 50 percent of the people." – Allen Roses, MD, onetime global vice president of genetics at GlaxoSmithKline, 2003.
- "... the specific biological target a drug blocks because it is related to a disease in one part of the body may be important for normal functioning elsewhere (e.g., the Cox-2 inhibitors. Inhibition of COX-2 in blood vessels leads to a decrease in their production prostacyclin, which helps prevent platelet aggregation and vasoconstriction, so its inhibition promotes excess clot formation and increased blood pressure. Even long-term or overuse of NSAIDS, such as ibuprofen, can result in gastric bleeding, heart attack and stroke.)"
- "... grapefruit juice ... can profoundly affect the metabolism of some widely prescribed drugs. It increases the blood levels in women taking certain birth control pills and alters the effect of those pills ..."
- "The total number of genes in the human genome is approximately 25,000—fewer than are found in a number of plants. The genome of the pinot grape, for example, has nearly 30,000 genes—making us seem perhaps less complex than the wines we drink."

What the human genome project and following scientific detective work has made clear is that although the human genome has fewer genes than expected, it has the largest amount of what was originally called “junk DNA” of any organism, plant, or animal on the planet. Junk DNA takes up more than half the real estate in the human genome. What we used to think of as junk actually contains the information that controls the expression of our genes. These are the “promoter regions” of the human genome. They control the translation of our genotype into our phenotype, and they are influenced by factors such as environment, lifestyle, and diet.

Although it may seem comforting to receive a diagnosis from a specialist—you have arthritis, or you have depression—that is only a starting point for understanding the shared mechanisms that underlie that manifestation of illness. In functional medicine, such a diagnosis is but the first step toward finding out how to manage the condition effectively. Solving a health problem comes not from naming it but from understanding the physiological disturbances that have resulted in the changed function we refer to as disease.

Functional medicine takes a systems approach to the body—why, because the body contains a network of organ systems—immune, nervous, endocrine, cardiovascular, etc—but here the important word is *network*; all these systems are linked. An event in one system can affect something else in another system. An anti-inflammatory that diminishes pain in your musculoskeletal system may at the same time be causing serious harm in your gastrointestinal system, so although your arthritis may feel better, you’ve suddenly got a miserably painful ulcer. Or take the case of statins, which are known to lower the risk of heart attack and stroke but have also been shown to increase the risk of dementia and diabetes. Why? Because although they affect the cardiovascular system, they also affect the nervous and endocrine systems; the effect in one case is benign and in the other case adverse.

It stands to reason that we should look at the body’s systems in relation to one another.

- “... ill health in the bone is influenced by inflammatory signals from other parts of the body—just like angry fat and arthritis. Indeed, there is a strong connection between osteoporosis, rheumatoid arthritis, and heart disease. If you have one ... you are likely to have the others—for the simple reason that they all share common disturbances of the core physiological processes.”
- “... the gut has its own nervous system. Dubbed ‘the second brain,’ a term first coined by Columbia University research gastroenterologist Michael Gerson, this enteric nervous system consists of billions of neurons and is filled with the same kinds of neurotransmitters found in the brain in our

skulls. The second brain secretes messengers that communicate back and forth between the gut and the brain. ... One of the best known of these messenger substances is the hormone serotonin. ... It may calm the brain, but the majority of the serotonin produced in the body comes from the gut, so that meddling with serotonin may also mean meddling with the gut ... that’s exactly what happens with the class of pharmaceutical antidepressants known as selective serotonin reuptake inhibitors, SSRIs. ... It has now been found that excessive serotonin activity is associated with increased risk of bone loss. Does this mean that SSRIs are interacting with gastrointestinal function? Yes ...”

- “Surface receptors on specialized cells called L cells in the small intestine are identical to the bitter taste receptors on the tongue. Our digestive system also “tastes” our food when a specific taste sensation—e.g., bitter—alters the gene expression of the L cell and its function. When L cells are exposed to a bitter-tasting substance, they secrete glucagon-like peptide 1 into the bloodstream. An integrin hormone ... GLP-1 signaling stimulates the action of insulin.”
- “BPA binds to receptors on cells that the body’s natural hormones use to regulate physiological function. In doing so, BPA displaces the natural hormones ... and thereby sends different messages to the cells. Moreover, because many of these endocrine-disrupting chemicals are very active, it takes only a very small exposure to create significant changes in health. This is toxicology on a very basic molecular level, and it is changing the way we think about what is toxic and at what level.”
- “... increasing the dietary intake of soy, kale, cranberry, and green tea as well as of the spices turmeric and rosemary can help eliminate BPA from our bodies. All these foods are known to contain specific substances that increase a particular component of the detoxification process called glucuronidation ...”

Regarding cancer-protective effects of glucosinolate-derived sulforaphane from cruciferous vegetables: Paul Talalay, MD, the Abel Distinguished Professor of Pharmacology at the Johns Hopkins School of Medicine,

- “... attributes the protective power of sulforaphane to its ability to improve the detoxification of potential cancer-causing substances. The improvement is in the way the sulforaphane talks to genes. Different substances give the genome different messages that turn on the detoxification processes in different and very selective ways. Some

food substances affect the CYP450 enzymes; others influence specific conjugation steps. Sulforaphane, says Dr Talalay, does both ...”

- “... Another trick for increasing the elimination of toxins is to consume 1,000 milligrams of potassium citrate in water after each meal; potassium citrate is an alkaline salt, so it too [in addition to an alkaline ash diet] improves the body’s acid-alkaline balance.”
- “Against [heavy metals], diet is again a factor. Toxic minerals are detoxified not by the CYP450 and conjugase enzyme systems, but rather by a system comprising a family of proteins called metallothioneins. ... What stimulates the manufacture of the metallothioneins is pretty much the same set of dietary factors that increase the detoxification of the persistent chemicals. ... We think this shared mode of stimulation is probably due to the fact that both these functions—the genes that control detoxification and those that control the manufacture of metallothionein—sit very close to one another in the genome.”
- “The human immune system is a double-edged sword. If it is insufficiently active, we get sick; if it is overly active, we may suffer collateral damage. ... How do you regulate a double-edged sword? By having the ability to turn it both ways.

Our genes, of course, are the regulators, and that is exactly what they are able to do—modulate the immune system selectively from one edge to the other. The genes assigned to immune system response are on chromosome 6. This chromosome has approximately 2,000 genes out of the total 25,000 in the human code of life; 140 of the 2,000 genes on chromosome 6 constitute what is termed the major histocompatibility complex, the MHC. The MHC genes control the way the white blood cells interact with the various foreign substances or invaders. As they receive, transcribe and translate the messages they receive from events and factors in the external environment, the MHC genes shift from one sword edge to another ...

And here’s something I find absolutely fascinating and very, very pertinent. Located on the same chromosome 6 are the genes for such autoimmune diseases as rheumatoid arthritis, SLE, celiac disease, ankylosing spondylitis ... and the autoimmune disease known as Hashimoto’s thyroiditis. ... Is it a coincidence that the genes for these diseases are colocalized with the genes that control the function of the immune defense system that triggers these diseases—and that have turned the dial so that one edge of the sword has gone wildly hyperactive? I think not.”

As Roger Williams, PhD, noted in a famous paper in the *Lancet* in 1950, the RDAs are essentially useless because the nutrient needs of individuals differ far more substantively from person to person than the RDAs take into account. As Williams so aptly put it, in a seminar Dr Bland attended, “Nutrition is for real people; statistical humans are of little interest.”

- “Our institute research team has participated in clinical research on vitamin D with Michael Holick, PhD, MD, one of the world’s leaders in vitamin D. Holick did his doctoral work at the University of Wisconsin under Hector DeLuca, PhD, who discovered vitamin D in 1968, and the two men collaborated in creating the diagnosis for vitamin D status using 25-hydroxyvitamin D3 in 1973. ... According to Holick ... the explosion of genetic information now available makes it clear that there are considerable genetic differences among individuals in the way they manufacture and metabolize vitamin D in their bodies—which also means there are considerable differences among individuals in how much vitamin D they need.”
- “The whole relay-race process of signal transduction is very carefully controlled within the cell because maintaining a balance of inflammation is so important for health. Each kinase-runner in the race is controlled by a specific gene, and each of these genes is unique to the individual.”
- “... in severe diseases like cancer, the cause may be that a gene for a specific kinase has become damaged or has mutated. That single change to one single kinase in the regulatory network is then capable of changing the physiology of the cell from normal to cancerous.
- As I write this, addressing that change has become the breakthrough thrust of cancer research and cancer treatment. The technology is straightforward: A genetic analysis of the genome of the cancer cell can diagnose the presence of a rogue kinase. A specific kinase-inhibiting drug can then be administered, tailored to that rogue kinase in that patient.”
- “... cholesterol is very important to the proper functioning of the body—when it is available in the right form in the right place. ... LDL is found in neurosteroids that are critical in regulating brain function and mood, so too low a level of LDL is not healthy for the brain. Studies show a correlation of very low cholesterol levels with depression and even with suicidal thoughts and behaviors. ... Deficiencies of LDL can also mean insufficient protection by the fat-soluble vitamins A, D, E, and K, which means deficiency in needed nutrients, and

away the system goes—like a dog chasing its tail in a loop of increasing health risks.”

- “Obesity is not solely a matter of excess calories. It is a consequence of too many of the wrong type of calories in the presence of an accumulation of environmental POPs.”
- “Obesogens poison brown fat activity. ... One consequence is simply that an individual will become increasingly sensitive to cold. Another is obesity. ... Certain ingredients in food also diminish brown adipocyte activity. One of the most powerful ... is high-fructose corn sweeteners ...”
- “One of the most exciting new discoveries in this field is the 2008 discovery of beige fat by a professor of cell biology at Harvard, Bruce Spiegelman, PhD. Spiegelman found the beige adipocytes ... could be coaxed into becoming heat-producing, active adipocytes through exercise and changes in diet.”

- “... some forms of exercise are more effective in stimulating mitochondrial biogenesis than others—specifically, cross-training between aerobic cardiovascular conditioning and anaerobic strength conditioning. ... It is fascinating to compare the microscope images of the muscle tissue of people who do this kind of cross-training regularly with people who are sedentary ...”

Conclusion

Anyone fortunate enough to have heard Dr Bland speak will know these quotes are the tip of the proverbial iceberg of insights delivered by *The Disease Delusion*. Finally, we have the luxury of being able to reflect then return to the fire hose flow of information, so we can fully absorb all this paradigm-transforming book has to offer.

References

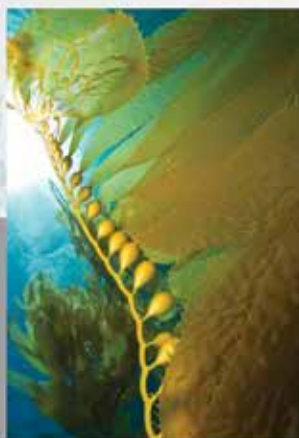
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