



MOLECULAR FITNESS: THE CONNEXIN CONNECTION TO OPTIMAL HEALTH DARRELL TANELIAN, M.D., PH.D.

WHY THIS BOOK?

From the time I was a curious youth interested in science, as I progressed through medical and scientific education, and then during my career as a physician, scientist and professor there have been many revelations or truths regarding health and illness that have surfaced and subsided. However, out of those many revelations, five have stood the test of time and continue to become truer than ever: 1) Health is determined by nutrition and lifestyle. 2) "Modern medicine" at best does little to prevent illness or increase longevity, and may overall contribute more to illness than wellness. 3) On an individual basis and collectively as a society we can no longer afford the cost of the illness. 4) Health and wellness involve personal responsibility and commitment. And 5) the greatest freedom we can gain is by being personally healthy, having a healthy family, and above all by staying healthy throughout our lives. In the next few pages I will expand on these five truths.

Health is determined by nutrition and lifestyle

How did I come to realize this truth? Chance determined much of my discovery.

As a child I used to dream of Spaghetti O's, hot dogs, and all forms of processed foods and soft drinks I saw advertised on TV. But my immigrant grandparents who raised me did not know about these types of modern American foods; they provided me with a diet of wholesome, homegrown, natural foods. As time went on, I became interested in science and medicine, and went on to Stanford University where I studied marine biology, obtained a degree in neurobiology, and an MD and Ph.D. My training and practice of medicine exposed me to all of the diseases of modern man, whereas my scientific training showed me how the cellular and molecular basis of life is related to disease.

During this period of time, I experienced a melding of my past with what I saw happening in my patients each and every day at the hospital. I soon realized how most people's lives, especially those hospitalized, were in conflict with my upbringing. Until now, I never looked at my grandparents with a physician's eye. However, when I considered that they had never gone to the doctor until the last year of their lives, yet lived to be near 100 without any diseases and retained perfect mental acuity; it became obvious that my grandparents had done something right. They were doing something right even though they didn't have any formal education or training as to what those right things were.

Why was I seeing so many patients, friends and colleagues, and at younger and younger ages, developing cancer, heart disease, diabetes, Alzheimer's disease, arthritis, osteoporosis, ocular disease and obesity – the **Diseases of Modern Man**? Why are all of these diseases propagating around the world? Could it be the proliferation of our processed American diet? Clearly, the world's gene pool has not changed so radically within the last few generations to explain this phenomenon.



The more I thought about it, I remembered things like my grandfather eating an onion every day. You may say, “so what” – Well interestingly, an onion just happens to contain one of the most beneficial set of biomolecules of any fruit or vegetable. We always grew our own fresh fruits and vegetables, and in contrast to the typical American, never consumed soft drinks. From this point on, I started to seriously examine the nutritional value of foods.

The first thing that struck me was to look at nutrition through the ages. For billions of years, multicellular organisms progressed to animals and to humans on this Earth with basically only one diet to choose from: a natural unprocessed diet consisting of fruits, vegetables, nuts and grasses. It dawned on me that multicellular mammalian organisms must have had a molecular composition similar to these basic foods because that was all there was to consume! Indeed, when one looks at free-range wild animal composition, their basic biochemical makeup is a reflection of the fruits, nuts, grasses and vegetables they eat. Similarly, a man’s composition is a reflection of the animals, fruits and vegetables that he eats. So we have to ask ourselves the question – Did nutrition direct the evolution of our biochemistry and has straying from that natural diet led to disease?

My grandparents were living proof of the powers of a natural lifestyle.

You may say this is an isolated case of wishful thinking, but epidemiological studies over the past 30 years have validated my own observation that there is a link between diet and disease. As the American processed food diet has been exported and adopted around the world, so has the incidence and prevalence of the eight diseases of modern man followed.

"Modern medicine" at best does little to prevent illness or increase longevity, but overall may contribute more to illness than wellness

The ancient Greek philosopher and physician, Hippocrates, who lived to 115 in the 4th century B.C., set forth the tenets of modern medicine in what has become known as the Hippocratic Oath and the Hippocratic Method. One of the translations, which has remained preeminent to this day is that “He (the physician) must leave alone what he cannot help. As to disease, make a habit of two things: to help or at least not to harm.”

What has happened to transform this original guiding principal of medicine into today’s ever increasing escalation of illness as a whole and the creation of medically generated illness, termed “iatrogenic illness”?

Iatrogenic illness results from the side effects of medical prescriptions, medical and surgical procedures, neonatal medicine and nosocomial (hospital acquired) infections and makes up a significant percentage of medical illness and expenditures. Looking at the National Library of Medicine Database from 1966 to 2005 there have been 17,865 studies and/or articles published on the topic of iatrogenic illness, with the number doubling in the decade of the 1990’s versus the 1970’s.

Today, the risk of dying from a medically induced condition is far greater than the risk of dying from an airline accident, train accident, automobile accident, work place injury, serving in the military, a nuclear accident, a terrorist attack, an earthquake, hurricane, or any other natural disaster; yet we keep asking for more.



Personally and as a society we can no longer afford the cost of illness

What about the cost? Look at the rise in healthcare spending since 1960, when the total cost for everyone in the U.S. was \$25.2 billion per year, or 1.1% of the Real Gross Domestic Product. By 2003, the cost rose to \$1.67 trillion, or 15.3% of the GDP – an almost 15-fold increase in the impact on our economy. And it is projected to hit \$2.75 trillion by 2010 and 4 trillion dollars by 2015. We all know how much health insurance and prescription drugs cost these days. The per capita healthcare expenditure is expected to be \$6,546 for 2005. Corporate healthcare expenses now exceed corporate profits. The average American now spends more on healthcare than taxes.

A recent Harvard study showed that 50 percent of all personal bankruptcies in the United States are a result of illness and associated healthcare costs in middle class, insured people. Furthermore, 29 million Americans are in “medical debt”, paying bills to healthcare providers or incurring large credit card debt or loans against homes related to medical costs. We are mortgaging our children’s futures to pay for new drugs, elaborate tests and high-tech operations that wouldn’t be needed nearly as often if we would correct our diet and lifestyle.

Stop! Where is this money coming from? It’s coming from you, from your children’s future, from schools and education, from recreation, from your community, from our nation’s roads and other infrastructure. So why does no one seemingly care?

Illness directly employed 13,818,000 health care workers in 2004 and indirectly employs about another 40,000,000 individuals; these occupations are projected to grow at above average growth rates in the future. All told, illness employs about 35% of our national work force. According to the 2005 Statistical Abstract of the United States, many of the fastest growing and highest growth rate occupations are in Healthcare jobs, from 2004 to 2014 these jobs are projected to increase by 27.3 percent.

Illness is our nation’s number one employer and is projected to grow greatly in the future. This may sound great, but can we afford to have an entire society engaged in the perpetuation of illness – what will this leave our children and portend for the future of our nation.

The greatest freedom we can gain is by personally, and as a family, being healthy and remaining healthy throughout our lives

What better way to take away FREEDOM than through illness? Nothing places more fear and terror in the hearts of men and women than a diagnosis of a chronic or lethal illness – it is virtually paralyzing and incapacitating. So what does this have to do with our lives?

Before man was dependent on the medical-industrial complex, he was free to roam the earth, explore uncharted territories and escape or fight tyrannical rulers. Today, is this possible? The answer is no for most people in developed nations. In the U.S. it is safe to say that the majority of people are chronically ill, becoming chronically ill, and on chronic medications for illnesses induced and/or perpetuated by poor nutrition, environmental toxins, lack of exercise, societal and job stress, and the elimination of natural selection from human reproduction and survival. Therefore, people today basically work and stay where they are in order to have access to medical care, medications, and health insurance. People today are terrified to be without health insurance and medical care.



Having established a medically dependent society, it becomes easy to exploit the populous. Just look at prescription drugs – actually it is hard not to. Is there any proof that more prescriptions, or any, will make the elderly any better off? No, in fact there is evidence to the contrary – more prescription drugs lead to more iatrogenic illness – at an increased cost for society of about 1 dollar for every 1 dollar of prescription expenditure.

Health and wellness involve personal responsibility and commitment

Assuming personal responsibility and commitment towards one's own health may be the most difficult hurdle we all have to overcome in order to regain our health. For decades now, we have been schooled that we are not responsible for our own illnesses, but rather are victims of our genes. Genes are not the explanation for the vast majority of illnesses, and the sooner one discards this scapegoat, the sooner one can reclaim their health.

I will say right up front that to restore one's health through proper nutrition and diet involves a paradigm shift for most Americans. One of the most common statements friends and patients make to me is, "I don't want to live my life not eating the foods I so enjoy – I would rather die". Well, if you continue eating the American diet, you will die prematurely from one of the diseases of modern man, and along the way I assure you it will be difficult to have a truly free and pleasurable life.

We are so brainwashed and our sense of taste and smell so adulterated that frankly we only know three flavors: salt, sugar and saturated fat. We believe that these three flavors comprise good food. We have essentially been placed into a world of sensory deprivation when it comes to taste and smell. The plethora of real foods in this world contains thousands, if not millions of subtle tastes and smells.

If you are willing to accept responsibility for your health and well-being and make a commitment to yourself and your family, there are untold pleasures and rewards that await you.