Dear All,
Gene research as regards health will be seen more and more in the news as time goes on. It is important that we all have a good understanding of this arena in order to place MT in the proper context. Please see the recent article below by Mark Hymen, MD, and then please review a previous post of mine on the subject.
Thank you.
Very best, Bill

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Why Your Genes Don't Determine Your Health

http://www.huffingtonpost.com/dr-mark-hyman/human-genome_b_803069.html

The decoding of the human genome at the dawn of the millennium carried the hope and promise of the beginning of the end of human suffering. However, after more than a decade of intense exploration of the human genome the burden of human disease and suffering has only increased across the globe. Heart disease, cancer, anddiabetes as well as allergic and autoimmune disorders have all continued to skyrocket. Hope has given way to disappointment as scientists have recognized that, other than in single gene disorders likes Down's syndrome, your genes don't determine your fate.

In November of this year a review on genomics, Type 2 diabetes and obesity in the *New England Journal of Medicine* (i) sadly reported on how little correlation exists between obesity, diabetes and your genes. There are associated patterns that confer small risks, but the authors lament the lack of stronger connections between genetic makeup and the biggest disease epidemic of our time (obesity and diabetes) with refrains such as "modest effect size," "relatively few successes," "remains far from clear," "poorly captured by existing biologic knowledge."

The story of your health is much more complex than genetic programming. It is ultimately determined by the dynamic interplay of the environment washing over genes creating the "you" of this moment. The good news is that this has been the year of discoveries about "omics"--epigenomics, exposomics, nutrigenomics and microbiomics and toxigenomics--that do, in fact, hold the key to unlocking our health and disease mysteries.

The Epigenome: Bypassing Darwin and Evolution

More important than our collection of genes, it now appears, is how those genes are controlled by both internal and external factors--our thoughts, stress, social connections, what we eat, our level of physical and mental activity, and our exposure to microbes and environmental toxins. These factors are switches that turn genes on and off and determine which proteins are expressed. The expressed proteins, in turn, trigger signals of disease or health.

What's even more striking is that if your DNA is tagged by an environmental factor, such as a pesticide, the impact this environmental factor has on your genes can be passed down through generations. The "epigenome" become inheritable. That means if your grandmother ate too much sugar, or smoked, or was exposed to mercury from too much sushi, the genetic modifications she incurred from this exposure could affect you. Her epigenome would carry an increased risk of disease that could be passed down from generation to generation. Interestingly, the Darwinian and Lamarckian worldviews are intersecting in 2010.

The Exposome: Environmental Influences on Health and Disease

In October 2010 *Science* magazine(ii) published an important paper that reviewed the notion of the "exposome"--the idea that the environment in which your genes live is more important than your genes themselves. What this suggests is that applying genomics to treat disease is misguided because 70-90 percent of your disease risk is related to your environment exposures and the resultant alterations in molecules that wash over your genes.

The question then is how do we measure and change our "exposome"--or the totality of the impact of the environment on your genes. We must address not just one factor but the whole collection of interacting factors that determine health and disease--toxins, food, microbes, internal chemicals including all the biologically active molecules that control inflammation, oxidative stress, gut flora, and other natural processes.

Emerging biomarkers and analytic techniques will soon allow us to map our exposome from a drop of blood, and measure change over time. Using novel treatments that help identify and remove known external toxins (like pesticides and mercury) and strategies that change the internal environment including diet, nutrients, probiotics, and detoxification would help you change your "exposome" and lower your overall disease risk.

Once this new paradigm of understanding how a lifetime of interacting exposures interacts with your genes to determine your chronic disease risk, once the gene-environment interactions are mapped more carefully, then the promise of the genomic revolution can be fully realized.

Nutrigenome: Eating Your Way to Better Genes

The most important thing you do to control your genes every day is eat well. Food; and the combination and quality of macronutrients (protein, fat, carbohydrate), micronutrients (vitamins and minerals), fiber, and phytonutrients (plant-based bioactive compounds); all wash over your DNA every day turning on or off, up or down signals from your genes. This field, called*nutrigenomics*,(iii) offers a powerful way for you to control your destiny.

Researchers have found, for example, that depending on your genes, you may respond better to different diets--some do better with more fat and protein and less carbs, others may not. One of the most important discoveries of the decade is how food--whether it is plant-based, nutrient-rich, phytonutrients-rich food, or processed, high sugar, nutrient-depleted food--changes your gene expression in real time over the course of weeks to months. Dr. Dean Ornish showed how this works in his seminal prostate cancer research.(iv) He was able to beneficially affect over 500 cancer-controlling genes simply by having his patients eat a plant-based, whole foods diet.

Microbiome: The Most Important DNA in Your Body Is Not Your Own

The human body hosts 100 trillion microorganisms. The DNA of the bugs living in and on you, outnumber your own DNA by 100 times. This is called the microbiome. (v) Our bodies are simply a host environment for bacteria. They use us for their own purposes. The molecules produced by the DNA of these bacteria have significant impact on our health. This is called "metaproteomics."

This microbiome, particularly the ecosystem of nearly 500 bugs that live in your gut, have been linked to everything from obesity, to cancer, to autoimmune and allergic disorders and even heart disease and diabetes. Our modern lifestyle and diet and the overuse of antibiotics has changed the population of bacteria living in our guts and it has made us sick. (vi) Which bugs we grow in our intestine determine whether we will be fat or thin, inflamed or healthy. The critical discovery of this microbiome and its implications for influencing many of the diseases of the 21st century will

provide novel treatments involving changing our diets and the use of pre-and probiotics to shift the gut ecosystem into a health-promoting balance. We are only as healthy as our gut bacteria.

What the Future Holds

The giddy back-slapping decoding of the human genome, has given way to a more sober view of the limits of genomics and the remarkable understanding of what we all knew intuitively--that how we live, the quality of our relationships, the food we eat, how we use our bodies, and the environment that washes over us and determines much more than our genes ever will. The next decade will better characterize how the environment affects gene expression--the genome-exposome interactions--and our health, and provide us better ways to measure and improve those interactions and help us create the best expression of ourselves.

References

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Genetic research related to nutrition is a topic that we will hear more and more about in the future and therefore it is critical for all CMTAs to thoroughly understand it in relation to our (correct) system and philosophy of Metabolic Typing®. Here are two very important things to understand:

1. The scientific research in this field will NOT disprove but WILL validate the principles of MT that we have been espousing for the last 30 years, and
2. The information revealed from genetic research will NEVER preclude the need for MT or CMTAs. If anything, as knowledge unfolds from gene research, the demand for CMTAs will increase!

Yes, gene research can reveal what foods are adverse for one's metabolism and which are OK (from a reactive standpoint). But here is what gene research CAN'T do and what MT CAN do and why CMTAs will become increasingly important:

- ID the Dominant energy-producing system (Dominance Factor) in one's metabolism relative to effects of foods and nutrients (Autonomic or Oxidative)
- Determine – and explain -- how foods and nutrients will behave in the body – stimulating or inhibiting
- Determine – and explain -- how foods and nutrients will behave in the body – acidifying or alkalinizing

- Indicate the proper *kinds* of proteins for the MT
- Indicate the proper *kinds* of fats for the MT
- Indicate the proper *kinds* of carbs for the MT
- Indicate the proper macronutrient *ratios* for each meal and snack (based upon MT, extent of MT imbalance, and circadian rhythm requirements)
- Distinguish between Genetic Type vs. Functional Type requirements for foods
- Distinguish between Genetic Type vs. Functional Type requirements for nutrients
- Recommend *which* nutrients are needed to address FHC Functional Type Imbalances
- Recommend which *forms* (acid vs. alkaline) of nutrients are needed to address FHC Functional Type Imbalances
- Recognize, evaluate and (successfully) address the FHC Imbalances in each individual:
    - Autonomic
    - Oxidative
    - Steroidal Hormone Balance
    - Neurotransmitter Balance
    - Catabolic(Aerobic)/Anabolic(Anaerobic) Balance
    - Endocrine Type
    - Electrolyte Stress/Insufficiency
    - 6 Acid/Alkaline Imbalances
    - Blood Type
    - Prostaglandin Balance
    - Constitutional Type
- Recognize, evaluate and (successfully) address the Blocking Factors/Stressors
    - Blocking Factors (can) directly adversely impact our genes
- Recognize, evaluate and (successfully) address the significance of Heavy Metals in metabolism
- Recognize, evaluate and (successfully) address the need for optimal Digestion, Hydration, Elimination and Detoxification
- Recognize, evaluate and (successfully) address the fact that the body is structured via a hierarchical organization where:
    - Nutrients behave differently on different levels
    - Any nutrient can have opposite effects (in different MTs)
    - Any disease can arise from opposite biochemical imbalances (in different MTs)
    - Nutrient levels necessarily need to be understood in terms of being a:
        i. Quantitative Excess
        ii. Qualitative Insufficiency
        iii. Qualitative Excessive Utilization
        iv. Quantitative Deficiency
        v. Problem vs. Defense (against a problem)
- In short, **gene research will NEVER but MT will ALWAYS be able to take anyone from wherever they are on the disease-health spectrum and systematically and verifiably *optimize genetic potential* and develop optimal health**.

Metabolic Typing® has the ability to (over time) change the course of medicine and health care as we know it. In this evolutionary process, gene research will prove to be MT's greatest ally and CMTAs' greatest friend!

As the genetic research unfolds, we'll find that 1) it will validate – not negate -- our philosophy, and 2) will complement – not replace -- our Metabolic Typing programs (philosophy, applications, and protocols).

We have always stated that there are as many Metabolic Types as there are individuals (we are as unique on a biochemical level as we are in our fingerprints), and yet, there are a limited number of "patterns" – the Metabolic Types – within which individuals fall.

Think of it this way: Our Metabolic Typing analyses define the metabolic/biochemical patterns and all that goes with it in terms of diet, supplementation, macronutrient ratio balancing, circadian requirements, etc. We have also always stated that even within each MT category metabolic individuality yet exists, i.e., that all Fast Oxidizers, for example, are not the same. Specifically, we teach that differences exist both in the extent/strength of the fast oxidative imbalance as well as the circadian requirements. Genetic testing takes further steps to fill in the details of metabolic individuality unique to each person within each Metabolic Type category. But in so doing, genetic testing negates neither the philosophical nor the clinical application realities of Metabolic Typing®.

A parallel situation is MT's vs. food allergies. MT defines the kinds of foods and nutrients needed by metabolisms of that MT classification. The fact that a given Fast Oxidizer, e.g, is allergic to beef is a separate consideration and does not negate the fact that as a Fast Oxidizer, a diet low in carbs and high in fat and protein is necessary for health. The food allergy testing only complements the profile by discerning that beef is one particular kind of protein that is not right for that particular individual.

A comparison of MT to DNA testing can be viewed in terms of broad strokes (MT) vs. details (DNA test results). Neither approach negates the other. And, it would be erroneous to suggest that one approach could wholly substitute for the other. In analogous terms, think of the experience of using Google Maps: From a certain distance from the Earth, you see a continent along with its unique geography and contours, forests, mountains, deserts, lakes, rivers, etc. – like seeing the patterns that define a Metabolic Type®. But moving a lot closer, you see the micro details that comprise or that are "within" the macro view. It's the same view but from different viewpoints and perspectives. Importantly, the information that can be seen from one can't be observed from the other. In other words, you can't describe the continental view and acquire its information and knowledge from the microcosmic viewpoint, and *vice versa*.

Bottom line: DNA testing will never negate the need for MT and its protocols and clinical applications. What it can do is further refine the MT protocols and applications. For example, the Fast Oxidizer food list will always apply and should always be provided to all FO's, but those who have the DNA test would (possibly) leave out certain food(s) within that list. All else – Functional vs. Genetic Type considerations, the need for retesting, changes in the ANS and Oxidation Rate and their relationship to foods and nutrients, fine-tuning macronutrient ratios, customizing Anabolic(anaerobic)/Catabolic (aerobic) foods and nutrients in sport performance -- all aspects of our philosophy – will find only validation and enhancement as the science unfolds.

Think of Metabolic Typing® as "the model" – ***the unified field theory of metabolism, nutrition, health and disease***. DNA testing fits "within" that model as a "component" of it that has an important role to play but is not in any way a replacement of the model.

You may also wish to review 3 articles relating to the subject posted on the MT web site:
http://www.metabolictyping.info/docs/_genetic1.html
http://www.metabolictyping.info/docs/_native1.html
http://www.metabolictyping.info/docs/_native2.html