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Thank you for subscribing to this newsletter from the Personalized Lifestyle Medicine Institute. Enjoy and share this information, which is for educational purposes only and is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Always consult with a qualified healthcare professional when you are in need of advice regarding a medical condition.

In this issue: Nourishing Mood; Personalizing Food Choices; SNiPpets: Women and Iron; Fiber Consumption and Cancer Risk; The Sixth Annual Thought Leaders Consortium—Celebrate Our Award Winners!

Nourishing Mood

Though depression is a complex condition that calls for professional evaluation, it is also known that nutrition can potentially play a significant role in mood and emotional resilience. Recent research has shown that magnesium may make a considerable contribution to mood. In this study of adults, daily supplementation with 248 milligrams of magnesium significantly improved measures related to depression and anxiety. Notably, this effect was seen in both women and men within 2 weeks, regardless of baseline symptom severity, whether or not antidepressant medications were used, and without serious side effects. A majority of study participants stated that they would take magnesium to aid mood even after the study finished.

The metabolic background on magnesium is that it is necessary for normal energy metabolism and synthesis of neurotransmitters for use in the brain and digestive tract, and it also affects blood pressure and muscular and cardiovascular function. Mood disorders may potentially be a symptom of insufficient or deficient magnesium intake; while a generally recommendable daily intake of magnesium is around 400 milligrams, most people get about 300 milligrams from their diet, and it is one of the more commonly deficient nutrients. Because the incidence of depression is on the rise, magnesium sufficiency may be an increasingly important consideration for long-term mental and physical well-being.

Personalize This: Which Foods Strongly Affect Your Future Health?

Blood glucose levels are increasing throughout the
world, and a primary result is greater spread of chronic inflammatory and cardiometabolic illnesses, yet the same meal has a different blood glucose effect in different people. The degree to which blood sugar rises and falls after meals has significant influence over long-term cardiometabolic health and biological aging, and is affected by the body’s overall energy economy: how it uses (or stores and may or may not later access) food energy. Each individual’s metabolism, including his/her metabolic rate, is based upon factors like physical activity, genetic makeup, epigenetic repatterning in response to life’s events, caloric intake, the presence or absence of particular gut microbes, and nutrient quality and balance in the diet.

In the past, many foods have been tested to determine their glycemic index (the degree to which a food can increase blood sugar) in groups of people, yet enormous variation in individual responses within these groups is frequently noted, and a food’s published ‘Glycemic Index’ is an average of many such measures. Each person’s glycemic response is unique, and even foods rich in simple carbohydrates or fats can have very different effects in different people. It is difficult to predict how foods will affect a given individual’s blood sugar levels, and therefore challenging to devise an ideal dietary approach for an individual.

Recent advances in artificial intelligence may be able to crack the individual code for glycemic response, however. This recent science article in *Cell* describes a method involving gathering basic medical data on a person (things like medical history, height, weight, blood and microbiome testing) and tracking one’s glucose response to diet (a study diet as well as one’s usual diet) for a period of time. After gathering enough data, the algorithm can predict not only one’s glycemic response to meals, but also how one’s diet impacts the gut microbiome and, in turn, how the microbiome affects body function and metabolism. From this information, a highly personalized eating plan may be designed and further updated as diet, health, and lifestyle change over time. Interestingly, the article also highlights the effects of certain gut microbes on glycemic response—certain to be a fruitful avenue of future research.

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**SNiPPets**

How significant to health are particular single nucleotide polymorphisms, also known as SNPs? SNiPPets is a ongoing exploration of this topic. This column is produced by Jeffrey Bland, PhD and the Personalized Lifestyle Medicine Institute.

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**In Women With These Gene Variants, Less Iron May Be More**

Antioxidant defense within the body comprises a cooperative interplay among stress-sensing metabolic pathways, corralling of antioxidant resources, and tissue delivery of the best protection the body can offer based upon genetics, epigenetics, nutritional intakes, and environmental exposures. Iron is an essential nutrient in which many women are deficient, but in absolute or (in susceptible individuals) relative excess it can be a pro-oxidant in breast tissue, especially during a woman’s postmenopausal years.

Genetic variation (called “polymorphisms”) in genes coding for metabolic detoxification function that influence postmenopausal breast cancer risk have been identified, and these pathways are sensitive to the amount of iron received from the diet (including supplements).
These gene alleles include:

- A single-nucleotide polymorphism (SNP) of the Nrf gene, substituting T for C at the rs1806649 locus
- An NQO1 gene SNP substituting T for C at the rs1800566 locus
- An NOS3 gene SNP substituting T for G at the rs1799983 locus
- A repeat-length polymorphism of the HO-1 gene at the rs3074372 locus in which longer GT repeats (LL or LM genotypes) occur rather than medium or shorter GT repeats (MM, MS, or SS genotypes)

Women with HO-1 gene LL or LM genotypes at the rs3074372 locus who take supplemental iron showed a 1.5-fold risk for postmenopausal breast cancer. Women having any combination of 3 or more of the above gene variants also showed a 1.5-fold increased breast cancer risk after menopause, and this risk increased to more than 2-fold if these women have high iron intakes. These women and their families may wish to discuss personalized dietary and supplemental strategies for supporting detoxification function and reducing oxidative stress with a Functional Medicine practitioner.

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**Food is Information—and Fiber Helps Hack Cancer Code**

There are numerous sources and types of dietary fiber, but a new analysis of human research confirms that greater consumption of fiber helps put the metabolic brakes on cancers affecting the digestive tract and breasts. (The recent news that breast cancer is more common among men exposed to toxins during and after the 9-11 attacks reminds us all that this condition can also happen in men.) Digestive tract locations showing significant protection with higher fiber intake included the colon and rectum, pancreas, esophagus, and stomach. In the past, it has been challenging to demonstrate clear effects of fiber on the occurrence of cancer, and one reason has been that dietary fiber exists in many forms that are often studied separately: isolated from food, integral within food, modified from food, or even manufactured from non-traditional food sources. In earlier historical times, humans consumed well over 100 grams of fiber daily, but now, the majority of people fall far short of the mere 28 grams of fiber now recommended on a daily basis. Though this inclusive study does not examine the manifold ways fiber “talks” to latent and existing cancers, it confirms that this body conversation takes place and that, gram by gram and day by day, fiber helps convince tissues to remain normal.

In this wide-ranging classic FMU talk, Dr. Jeffrey Bland discusses how dietary fiber (and other phytonutrients) help counter biological aging as well as advances in Big Data, genetic testing, personalizing nutrition, and cancer prevention.

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**The Personalized Lifestyle Medicine Institute’s 2018 Achievement Awards**

The Personalized Lifestyle Medicine Institute recognizes individuals who share knowledge, expertise, wisdom, research, and tools that contribute to personalization of wellness care, understanding of the root causes of dysfunction and disease, greater awareness of how genes interact with environment and lifestyle, and better ultimate quality of life and health for all people.

At the Thought Leaders Consortium in
October, more than 300 individuals from 13 countries gathered together for weekend of education, dialogue, and fun at the beautiful Westin La Paloma Resort & Spa in Tucson.

In 2018, PLMI appreciates and recognizes:

- Kara Fitzgerald, ND as PLMI’s 2018 Emerging Leadership Award winner, for extensive educational outreach and translating methylomics into safer and more effective clinical application
- Aristo Vojdani, PhD as PLMI’s 2018 Lifetime Achievement Award winner, for decades of providing reliable, cutting-edge clinical laboratory services that transform personalized care
- Michael Fenech, PhD as PLMI’s 2018 Distinguished Service and Leadership Award winner, for countless contributions to understanding, testing, and enhancing genomic health and nutrigenomics

Use this [LINK](#) to learn more about these individuals as well as our entire 2018 faculty. Information about our 2019 Thought Leaders Consortium in Seattle, Washington will be shared in an upcoming newsletter. Consider joining us for this unique annual event!

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