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In this issue: TLC Hotel Room Block Expires September 18th; Genetic Identicals are Metabolically Unique; SNiPpets: This SNP Relates to Less Visceral Fat and Inflammation; Can You Bend Backwards? Lower Back Pain is the #1 Contributor to Disability in Developed Countries

The Countdown Has Begun!

Excitement is building…and urgency, too! The Seventh Annual Thought Leaders Consortium is one month out and a very important deadline is approaching: access to our room block at the Hyatt Regency Lake Washington expires September 18th (and all rooms might be reserved ahead of that date). To reserve a room you must first complete your conference registration. It's time to act. Find useful links below.

Questions? Please email Annette Giarde, Operations Manager, via annettegiarde@plminstitute.org

Genetic Identicals are Metabolically Unique

Ongoing twins research recently conducted has proven that even genetic identicals often respond in unique and distinctive ways to nutritional input. Researchers in Boston and in London looked at levels of glucose, insulin, triglycerides, and other blood factors in response to set meals in a total of 1100 healthy unrelated persons and
They found that the glucose response after a meal showed a considerable genetic influence (around 54%), while insulin and triglyceride responses each showed smaller genetic influence (29% and 27%, respectively). Further data analysis will investigate the degree to which gut microbiome composition, environment, and epigenomic factors impact postprandial glycemic and lipemic responses. In terms of gut microbiome, the researchers pointed out that those of twins are almost as uniquely distinctive as those of non-twins; unrelated ‘singletons’ generally share about 35% of the same gut microbes whereas with twins, the figure increases to only 37%.

The time of day during which the meals were consumed may also have introduced significant variability into post-meal responses, consistent with the notion that individuals may ‘prime’ themselves for meals by eating at consistent times and avoiding eating at night. Lifestyle factors such as physical activity level can also considerably affect how rapidly nutrients are released into the bloodstream and utilized, ‘escorted’ by circulating proteins, or prepared for storage.

The large volume of data gathered in this research project is to be used in developing a personalized nutrition app for predicting individuals’ metabolic responses to meals and optimizing food choices.

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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.

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**This SNP Relates to Less Visceral Fat and Inflammation**

While the most common ‘major’ genetic variants coding for the body’s proteins are generally seen as optimizing survival, humans developed under conditions of energy scarcity and have evolved numerous mechanisms for increasing efficiency in the use of resources to promote survival under difficult circumstances. In this light, minor genetic variants typically provide advantage under more specialized or ‘niche’ conditions. In areas where food energy is increasingly plentiful and dependable, minor gene variants may thus, at times, provide cardiometabolic advantage.

The ATG5 gene encodes for a protein that relates to autophagy (cellular programs of life, repair, rejuvenation, and death) and can also affect development and polarization of macrophages (and thus immune balance) as well as aspects of fat cell biology. A recent genome-wide association study (GWAS) has focused upon a location near this gene, finding that, in adolescents and in adults, possessing a major T allele at gene locus rs803522 is associated with greater accumulation of visceral fat and with higher levels of a key serum biomarker of inflammation, C-reactive protein (CRP). This relationship to CRP was found to be especially strong in adults, and the presence of visceral fat appeared to be a significant factor determining CRP level among adults with the major T allele. In contrast, individuals with the minor C allele (a T-to-C switch) showed lower CRP levels and less accumulation of...
visceral fat compared to subcutaneous fat.

Individuals having the major T allele at this genetic locus may wish to discuss dietary and lifestyle strategies for improving body composition and immune balance with a Functional Medicine practitioner.

Can You Bend Backwards?

Life expectancy is increasing in many countries, yet many people also live longer with dysfunction. Most recently, the #1 global contributor to years of disability among those living in developed countries was lower back pain.

We think of muscles as providing strength, but in cooperation with tendons and ligaments, muscles also dictate how flexible and agile we are and how long we can maintain a high level of activity. The muscles of the lower back serve as the principal support of posture yet also enable functions like lifting, running, and other activities that involve the whole body. The postural muscles of the back work almost constantly, teaming up with other structures, including:

1. Other muscle groups that cooperate with the lower back, like those in the arms, legs, abdomen, and upper back
2. Related connective tissues, such as ligaments, tendons, and the discs between vertebra that cushion the spinal column and provide range of motion
3. Blood vessels supplying nutrients and oxygen and removing waste products like lactic acid from muscles
4. Nerves carrying information to and from the back

With good balance among physical, mental, and social aspects of work and play, it is easier to maintain good muscle tone and yet also relax. In contrast, excessive physical or emotional strain can create imbalance in muscles that work together, increasing susceptibility to injury and reducing blood flow to overworked areas. It’s not always easy to identify what causes low back pain, but overloading any team member can lead to damage, whether obvious or subtle. Repeated or incompletely healed microinjuries to any of these structures may activate nerve endings in connective tissues, resulting in a protective response of heightened pain sensitivity and chronic inflammation.

Keeping the Lower Back Comfortable and Functional

- Maintain healthy weight and body composition, and especially limit belly fat
- Train good posture to maintain normal back curves and consider exercises or activities that involve inverting the spine, such as yoga or using gravity boots
- Have a regular stretching routine; for example, Hatha yoga with an emphasis on breathing, gentle sustained muscle release, and poses that extend the back forwards, backwards, and sideways
- Consider regular therapeutic massage, such as neuromuscular therapy or deep tissue work, and consider metabolic detoxification and/or sauna therapy for releasing toxins stored in muscles, fat, and other connective tissues
- Receive sufficient amounts of nutrients like magnesium and B vitamins that support energy production and muscular work, generous amounts of omega-3 fatty acids to support long-term immune balance, and include plenty of phytonutrient-rich plant foods in your diet to maintain healthy redox balance during intense or sustained muscular activity
- Stay physically active, and improve blood flow in tight back muscles with a warm bath followed by a cool shower or by applying alternating hot and cold wet compresses repeatedly
- Spend time in quiet and/or natural settings, and keep good, regular sleeping habits and environment (quiet, dark, cool, and free from electromagnetic fields)
- Consider using apps to improve your posture, movement, breathing, and function of cooperating back muscle groups, such as Healthy Back Workouts, Back Trainer, BackFix, LUMOBack, Backache, iREHAB Back Pain, Pranayama Universal Breathing, Stretch Away Back & Neck Pain, or Down Dog
Hippocrates is said to have recommended “a scented bath and a massage every day” for best enjoyment of health and comfort. The spine is a structural and communications center for the body, in that it bears much of body weight yet also guides virtually every message between brain and body. Hippocrates was wise to encourage daily rejuvenation of all aspects of physical, metabolic, cognitive, and behavioral functions!