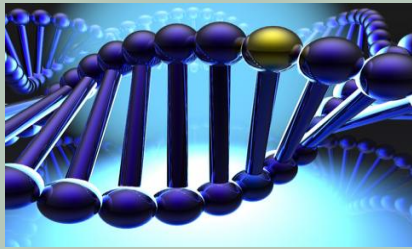


Nutrition Tidbits



Nutrigenomics Definitions

Nutrigenomics – also called “nutritional genomics, combines good nutrition, genomics and medicine to examine how nutrients and other dietary constituents act on common genetic variation to promote health or cause disease at the molecular level.

Genes: Basic units of heredity that encode for protein.

Mutation: Changes in DNA that occur in less than 1% of the population. It may also refer to changes that promote disease or cause genetic disorder.

Single nucleotide polymorphisms (SNPs): DNA sequence variations that occur when a single nucleotide (A,T,C or G) in the genome sequence is altered.

U.S. Human Genome Project: A 1990 project coordinated by the Department of Energy and the National Institutes of Health.

Registered Dietitian (RD) or Nutritionist?

A Registered Dietitian (RD) is a nationally recognized professional credential, which is conferred by the American Dietetic Association (ADA). At a minimum, an RD holds a bachelor's degree in nutrition, nutrition sciences, and/or dietetics. In addition to food science and meal planning courses, a dietetics curriculum includes nutrition through life's cycle, clinical dietetics, medical-nutrition therapy, education methodology, human development and anatomy, physiology, biochemistry, microbiology, and social science. All Registered Dietitians are nutritionists. However, the title “nutritionist “ does not represent a nationally recognized professional credential. In fact, in those states and U.S. territories without nutrition or dietetic licensure laws, the term may be completely unregulated. Anyone in these states may call himself/herself a nutritionist, despite the presence or absence of relevant academic preparation, training, and/or continuing education in human nutrition. Therefore, not all nutritionists are registered dietitians. Bottom line: seek a Registered Dietitian for your nutrition guidance!

Nutrigenomics – The Latest in Nutrition

Donna Israel, PhD, RD, LPC, FADA

More than 2,000 years ago, Hippocrates wrote: “Leave your drugs in the chemist's pot if you can heal the patient with food.” Completing the map of the human genome sequence in the year 2000 made possible the onset of plotting the effect of how different nutrients influence an individual's response on the molecular level. Simultaneously, we can now look at how genes interact with each other which fine-tunes how an individual's genes influence digestion, absorption, transportation, metabolism and excretion of nutrients.

Will the future of nutrition intervention be based on turning up the volume on smart diets (nutrigenomics) and turning down the volume on smart drugs (the past Western approach)? Nutrigenomics is the study of preventing and treating human diseases and preventing unwanted conditions by customizing prescription diets to an individual's genetic response to nutrients.

Research Status

“Eat right for your genotype” may be a decade down the road. Testing and analysis of metabolic pathways to understand the best approach for the individual patient, called *metabolomics*, is another in a series of the newspeak words of nutrigenomics. Research has already established first steps like folate metabolism or “SNP” (pronounced “snip”) which is a single nucleotide polymorphism. SNPs are relatively simple since they relate to the metabolism of a single nutrient and will clue health professionals, in this case, as to who really needs high doses of folate supplementation to prevent neural tube defects. Many researchers believe that the applications will carry over to heart disease. However, chronic diseases, like heart disease, are much more complex interactions and the etiology of individual conditions multi-factorial. When researchers are able to work out these complex pathways, we will have (continued on page 2)



Angela Lemond, RD, CSP, LD
Nutrition Therapist & Editor
Professional Nutrition Therapists

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much more successful tools than than family history.

Nutrigenomics views food as more than a source of energy, but rather as complex dietary components, some having bioactive, therapeutic or chemopreventive properties. Nutrigenomics gives us a key to molecular understanding for how food and its components affect human health by altering the expression and/or structure of genes. The fundamental precepts of nutrigenomics can be summarized in the following five tenets:

1. Poor diet can be a serious risk factor for a number of diseases.
2. Common dietary chemicals can alter, either directly or indirectly, the expression or structure of genes.
3. The degree to which diet influences the balance between disease and health can depend on an individual's genetic makeup.
4. Some diet-regulated genes (and their normal, common variants) may play a role in the onset, incidence, progression, and/or severity of chronic diseases.
5. Dietary intervention based on knowledge of nutritional requirements, nutritional status, and genotype (i.e. "personalized nutrition") can be used to prevent, mitigate or treat chronic disease.

Professional Nutrition Therapists (PNT) is venturing into the world of nutrigenomics in 2009. To find out more information on how you can be evaluated on your genetic profile, contact us at 972-238-1811



American Dietetic Association

National Nutrition Month
March 2009



Come Celebrate With Us...

Kroger Food Store
9140 Forest Lane
Dallas, TX 75243

Saturday, March 14, 2009
10:00 a.m. – 2:00 p.m.

“Ask The Dietitian” Booth

Free nutritional screenings

Register for FREE prizes!

Dietitians in Nutrigenomics

Not only will dietitians, who have attained expertise in genomes, be called on for nutrition education and guidance, they are likely to play a role in the food product development specific to genetic profiles and to advise genetic testing for patients. Recommendations based on the testing results will be offered to the patient to provide realistic and proven ways of improving short- and long-term health, preventing illness, and improving quality of life. A few components of the "systems biology" being explored are:

1. Detoxification-genes can determine how well the body cleanses itself of harmful toxins.
2. Antioxidants-genes can determine levels of antioxidants that control how well the body neutralizes free radicals (destructive molecules involved in aging and a variety of diseases).
3. Inflammation-genes can determine how well the body fights damaging inflammatory factors.
4. Insulin sensitivity-genes can increase the risk of type 2 diabetes

The patient is instructed on the resulting report with general information about how the patient's genes work together with the food eaten, and specific recommendations over what should be eaten.