Clinical Aspects of Methylation

By Dino Celeda, PhD

Dr. Dino Celeda holds a PhD in Biology from the Ruprecht Karls Universitaet, Heidelberg, Germany. He specialized in human genetics, completed training, and held positions at many renowned institutions. He is author and co-author of numerous international and national publications in the field of human genetics. Dr. Celeda is currently enrolled in the position of scientific officer for Cell Science Systems. Contact Dr. Celeda at Dceleda@cellsciencesystems.com.

For an organism to live, it has to make new cells as quickly as cells die. In order to achieve this, the body must make millions of cells each and every minute, relying on the synthesis of deoxyribonucleic acid (DNA), the hereditary material in humans and most all other organisms, and ribonucleic acid (RNA), a polymeric molecule associated with various biological roles in coding, decoding, regulation, and expression of genes. Mutations in the methylation pathway can thwart the body’s ability to make the building blocks needed for DNA and RNA synthesis. There are cells that are particularly susceptible, and these include cells in bone marrow, cells that make up neural tissues, lymphocytes, and erythrocytes. The nervous system has the highest concentration of RNA in the body, so it requires the most methylation.

What can go amiss in the methylation cycle? There are three basic areas. First, there can be a reduction in gene expression as caused by environmental chemicals, prescription and/or recreational drugs, or infections. Second, polymorphisms (several variations in gene sequence for a specific protein) can occur, which can diminish the quantity or effectiveness of an enzyme in the methylation cycle. Lastly, there can be a deficiency in nutrients needed by these enzymes.

Among many other functions, the methylation cycle provides components for the synthesis of coenzyme Q10 (CoQ10), especially S-adenosylmethionine (SAMe), which must be at sufficient levels for this process to take place. CoQ10 is especially important in cardiology, where it helps reduce blood pressure, aids in angina cardiomyopathy, and helps prevent chronic heart failure. Indeed, studies have shown that elevated homocysteine levels indicate an increased risk for heart disease. There is also a genetic risk for cardiovascular disease involved with the mutation known as MTHFR C677T in the methylation cycle.

Neurotransmitters are also affected by methylation. For example, folic acid is converted to its soluble form by methylenetetrahydrofolate (MTHF) reductase, which then crosses the blood-brain barrier and enables the synthesis of three important neurotransmitters: epinephrine, norepinephrine, and dopamine. When a patient has a deficit in the methylation cycle, there is...
less MTHF available, thereby reducing the synthesis of these neurotransmitters. This may result in sleep disturbances, anxiety, depression, and behavioral issues—only a few examples of the importance of proper function of the methylation cycle.

Tens of thousands of chemicals have entered the environment, some in extremely large quantities over the past several decades. The chemical manufacturing industry estimated that approximately 27 trillion pounds of chemicals were produced in or imported into the United States per year in the early part of this decade, the equivalent of nearly 250 pounds per person; not including fuels, pesticides, pharmaceuticals, or food products. Our health is adversely affected by bisphenol A (BPA) and other chemicals, such as artificial colorings, sweeteners, preservatives, and additives that are in our foods and beverages.

In order to rid the body of toxins, methylation is needed to conjugate methyl groups to the toxins. Glutathione is an essential factor in this process and a deficiency in the methylation cycle will reduce its availability. Glutathione helps in detoxifying xenobiotics, including heavy metals. It is the most important antioxidant produced by cells; it assists in maintaining the active form of other antioxidants, such as vitamin C.

What happens when a person is not methylating effectively and efficiently? That person is more susceptible to:

- accumulate heavy metals found in foods and the environment;
- develop neurological and/or behavioral problems;
- develop cardiovascular diseases;
- develop blood clots that can lead to stroke and thrombosis;
- be at an increased risk for cancer;
- be at an increased risk for chronic illnesses, including autoimmune disorders;
- have a weakened immune system and be more likely to have infections.

The importance in knowing a person’s methylation cycle status, which can be determined through blood or salivary genetic testing, cannot be overemphasized. It is an essential component of health, and although genes cannot be changed, deficiencies can be easily corrected, all without the use or need of prescription drugs. Methylation status can be determined through blood or salivary genetic testing.

### Additional References

Mind Body Happy Hour

Reviewed by Deborah Reyes, who received her Dietetics and Nutrition master’s degree from Florida International University, is an active DIFM member, and recently completed her ISPP dietetic internship. She is a Certified Yoga Teacher at the Hammocks Beach Resort in Palm Coast, FL. Contact Deborah at deborah_reyes@live.com.

Over 200 members from the Dietitians in Integrative Medicine (DIFM) Dietetic Practice Group (DPG) of the Academy of Nutrition and Dietetics (the Academy) attended the Mind Body Happy Hour at the Omni Hotel during the Food & Nutrition Conference & Expo™ (FNCE®) in Nashville, TN. This unique event aimed to relax, rejuvenate, and reignite members’ mental and physical well-being, while allowing them to connect with other members. The DIFM Executive Committee was available to talk to members, answer questions, and let prospective members know about the great DPG membership benefits. Members were able to learn more about DIFM, vendors and organizations, and simply “reset” from the education overload at the end of the day. Exhibitors present included:

- Metagenics (www.metagenics.com)
  - Offering therapeutic lifestyle programs, medical foods, and nutraceuticals.
- The Nutritional Genius Program (www.nutritionalgenius.com/)
  - Offering health reports based on genetics and food sensitivities to treat and prevent disease.
- Arizona Center for Integrative Medicine (www.azcim.org)
  - Encouraging healthier patients and communities by preparing well-trained integrative health care teams.
  - More information about curriculum and program retreats, complete program eligibility requirements, integrative health coaching and more can be found on their website.
- Author Ashley Koff, RD (http://www.ashleykoffapproved.com/)
  - Internationally-renowned Registered Dietitian, award-winning nutrition expert, consultant, speaker, and health advocate. Ashley Koff, RD, seeks to improve the quality of nutrition choices available and consumed. A qualitarian, Koff believes that better quality nutrition choices are key to optimal health.
- Gaia Professional Solutions (www.gaiaprofessional.com)
  - Purity. Integrity. Potency. Gaia Herbs has established itself as a leading grower and producer of Certified Organic (COG) medicinal herbs and herbal products.
- Gaia Professional Solutions (www.gaiaprofessional.com)
  - Purity. Integrity. Potency. Gaia Herbs has established itself as a leading grower and producer of Certified Organic (COG) medicinal herbs and herbal products.

In addition to these great exhibitors, DIFM facilitators Monique Richard, MS, RDN, LDN, AAAI Certified Yoga Instructor; Kathie Swift, MS, RDN, LDN, FAND, EBQ, Certified Qigong Practitioner; Alicia Trocker, MS, RDN, UZIT (Urban Zen Integrative Therapist) provided 15 minute segments each, allowing members to participate and learn about each of these modalities:

- Mindfulness
- Aromatherapy and slow pace breathing: Members practiced pranayama or yogi breathing, incorporating the practice of six breaths per minute. Benefits of slow pace breathing include lowering blood pressure, anxiety, motion sickness, nausea, perception of pain, and improved sleep.
- Tapping: Members learned the position of energy channels where they can access energy by incorporating tapping sequences set up for different conditions. Practicing the Emotional Freedom Technique helps reprogram the mind and eliminate internal stressors an individual can experience caused by negative emotions (fear, phobia, PTSD, cravings, etc).
- Yoga: No yoga mat or special attire was needed! Members enjoyed gentle mind, body and spirit pampering, compliments of DIFM.

This wonderful event concluded with plenty of giveaways including books, prizes, and awards to DIFM members who have excelled in the area of Integrative and Functional Medicine. The Lifetime Achievement Award was presented to Diana Noland, MPH, RD, CCN, LD; Excellence in Practice Award recipient Susan Linke, MBA, MS, RD, LD, CLT, CGP; and Excellence in Service Award presented to Deb Ford, RDN, CCN. Members can find more information about the DIFM holistic approach to wellness at http://integrativerd.org/.
Mind Body Happy Hour Panel

Reviewed by Cristen B. Whitaker, who is a senior dietetic student currently studying at California State University, Fresno. She is excelling in her clinical studies, and hopes to practice medical nutrition therapy in hospitals as well as work with the community as a grocery store dietitian. Cristen is very driven and cannot wait to start her career as a Registered Dietitian Nutritionist. Contact Cristen at cristen2224@gmail.com.

Immediately following the Mind Body Happy Hour on Monday, October 5, 2015, a special panel was held for students interested in integrative nutrition. Among the nine panelists present were Kelly Morrow, MS, RDN, Monique Richard, MS, RDN, LDN, Jessica Redmond, MS, RD, CScD, Eliza Mellion, and Ashley Koff, RD. Approximately 15 students sat anxiously waiting to ask questions as Olivia Wagner made an introduction to the panel.

The session lasted about 30 minutes, and seven questions were asked and answered. Most of these questions were student related, concerning specific paths into the world of integrative nutrition, whether or not a master’s degree in health and wellness exists, and how to find a mentor.

Each panelist encouraged the students to incorporate integrative nutrition in their future practices by staying current on the science. Students should not shy away from traditional clinical job opportunities, but rather include integrative nutrition into their learning experience. The best way to achieve this is to find a mentor who practices integrative nutrition, which is a process achievable by participating in job shadowing opportunities, or by sending an email to info@IntegrativeRD.org to be matched. Panelists warned students to not go into private practice right out of their internships, because the skills accumulated through traditional jobs for registered dietitian nutritionists are invaluable. Monique Richard, MS, RDN, LDN, stressed that the more one knows, the better off the clients will be, which is a health professional’s main focus.

Students interested in integrative nutrition should consider becoming a student member of the Dietitians in Integrative and Functional Medicine by visiting http://integrativerd.org/join/. Once a member, stay current with everything the group has to offer by joining the new Facebook group for students in integrative nutrition: https://www.facebook.com/groups/StudentsofDIFM/.

Poster Abstract: Integrative Medicine: Is there a gap between pre- and post-professional education and RDN practice interests?

Reviewed by Jessica Garay Redmond, MS, RD. Jessica is a PhD candidate at Syracuse University. Her research focuses on fetal programming. She is also an adjunct instructor, teaching various nutrition courses. Contact Jessica at jess.g.redmond@gmail.com.

DIFM, in partnership with the Dietetics Practice Based Research Network, conducted an online survey about Integrative Medicine (IM) in 2014. The survey was sent to members of the Academy of Nutrition and Dietetics and was available for a three-week period. There were 5164 respondents, 1152 of whom were Dietetic Educators and 1363 who had less education, (classified as “New Practitioners”).

Most respondents (77%) were not practicing in the area of IM. However, 72% were interested in obtaining Continuing Professional Education Units (CPEUs) in topics related to IM, and 87% were interested in CPEUs that focused on disease-specific use of dietary supplements. Over half of respondents (57%) agreed or strongly agreed that a specialty certification in IM should be offered by the Commission on Dietetic Registration.

Nearly half (48.9%) of New Practitioners strongly agreed that IM is important but only 7% strongly agreed that they had received adequate education or training in this area. If education or training was provided, it was typically introductory in nature, particularly for dietary supplements, herbs, functional foods, amino acids, and digestive enzymes. Vitamins/minerals, probiotics, and fatty acids were the topics taught beyond an introductory level, with some sort of practical application included.

The responses from Dietetic Educators indicated that approximately two-thirds (66%) of respondents agreed or strongly agreed that IM is an important topic. However, only 18.1% agreed or strongly agreed that adequate time was being spent on education related to IM topics in their program. Very few respondents indicated teaching introductory IM topics or providing practical applications related to IM topics.

In summary, there is strong interest in IM among RDNs. Due to the current lack of IM education in most dietetics programs, there is an opportunity for post-professional IM CPEUs. Specific topics of interest include dietary supplements and a focus on practical applications. For more information about this survey, see the recent JAND article: http://www.andjrnl.org/article/S2212-2672(15)01264-2/abstract; and the complete abstract of the above study: http://www.andjrnl.org/article/S2212-2672(15)00802-3/abstract.
Nutrition Focused Physical Exam: Identifying Malnutrition with Hands-On Training

Speakers: Erica Raymond, RD, CNSC and Jodi Wolff, MS, RDN, LD, FAND

Reviewed by Robin B. Dahm, RDN, LDN, a freelance editor of continuing-education self-study nutrition modules. She is a member of the DIFM DPG, Vegetarian Nutrition DPG, and Healthy Aging DPG. Robin is the editor in chief of the Healthy Aging DPG’s newsletter, The Spectrum. Contact Robin at dahmRD@gmail.com.

Registered dietitian nutritionists (RDNs) have a number of tools for assessing malnutrition, including the nutrition-focused physical exam (NFPE). Although NFPE use is within the RDN scope of practice and encouraged by the Academy of Nutrition and Dietetics, certain barriers have prevented a larger number of RDNs from embracing it as part of a comprehensive nutrition assessment. This review of the 2016 FNCE® presentation entitled Nutrition Focused Physical Exam: Identifying Malnutrition with Hands-On Training explores how NFPE can help RDNs address the high prevalence of under- and late-diagnosed malnutrition in the health care setting, thereby improving patient outcomes.

What Is NFPE?

NFPE practitioners use hands-on and visual assessment to identify patient malnutrition. They palpate specific muscles and visually inspect the eyes, mouth, and other regions to detect fluid accumulation as well as loss of muscle mass and subcutaneous fat. “NFPE gives RDNs the opportunity to identify nutrition-related issues that might have otherwise gone unrecognized,” explains Erica Raymond, RD, CNSC, “and in fact we’ll be able to recognize those issues earlier on.”

NFPE:

- Focuses on malnutrition, which is especially important now that prealbumin and albumin are no longer considered malnutrition indicators;
- Validates other information gathered during the nutrition assessment, such as BMI;
- Helps RDNs monitor nutritional interventions already in place for a patient.

“If we’re not doing a nutrition focused physical exam,” says Jodi Wolff, MS, RDN, LD, FAND, “we’re not doing a complete nutrition assessment.”

High Malnutrition Incidence

In 2014 Raymond surveyed over 1,000 RDNs about NFPE in the workplace and malnutrition in their patient populations. Results indicate that 57% use the 2012 malnutrition consensus paper jointly created by the Academy and the American Society for Parenteral and Enteral Nutrition (ASPEN). Per the malnutrition criteria listed in the consensus paper, respondents stated that they identify three or four people with severe or moderate malnutrition each week—a sizable number.

Barriers to NFPE

Many RDNs are not performing NFPE—even those utilizing the consensus paper, which includes NFPE-based metrics for determining patient malnutrition. The top two barriers to NFPE usage are:

- Too little or inadequate training/education;
- Not comfortable using NFPE techniques.

These two issues are interconnected—if training/education barriers can be adequately overcome, RDN comfort should increase. A good number of the RDN respondents have received NFPE-related training from traditional sources (webinars, conferences/seminars, etc.). An important finding: A high percentage of these respondents have received NFPE training from RDN peers.

NFPE Workshops: Experience, Confidence, and CPEUs

Reflective of these survey results, the Academy has developed a 10 Continuing Professional Education Unit (CPEU) NFPE hands-on training program. The one-day training is divided into three components:

- Pre-workshop: trainees read assigned NFPE articles and use a simulator.
- Workshop: detailed documentation and coding is covered, including PES (Problem, Etiology, Signs and Symptoms) Statements. Trainees attend lectures, hands-on demonstrations (including a full physical exam performed by one trainer on another trainer), and supervised hands-on practice sessions on a trainer as well as on each other. The training continues at a preidentified medical facility, where participants practice on 16 to 20 patients while being supervised.
- Post-workshop: trainees receive support through the NFPE portal, weekly call-ins, peer training, and WebEx.

RDNs successfully completing the program are encouraged to train their RDN peers at the workplace. Those RDNs receiving workplace NFPE training earn 8 free CPEUs.

Summary

RDNs completing the NFPE training will have performed supervised, hands-on, head-to-toe exams on actual patients...
Table 1.

<table>
<thead>
<tr>
<th>ABCDs of Nutrition Assessment</th>
<th>Food Is</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropometrics</td>
<td>Energy</td>
</tr>
<tr>
<td>Body composition evaluation, vital signs, functional tests</td>
<td>Sustainable nourishment for the body as well as soulful vibration to uplift the spirit.</td>
</tr>
<tr>
<td>Biochemical &amp; Labs</td>
<td>Information</td>
</tr>
<tr>
<td>Assessing PFCMVP: Protein, fat, carbohydrate, mineral, vitamin, phytonutrient</td>
<td>We are not our genes. We are the expression of our genes.</td>
</tr>
<tr>
<td>Clinical Indicators</td>
<td>Connection</td>
</tr>
<tr>
<td>Nutrition oriented physical exam</td>
<td>We are what we eat, thus we are what the animal eats and experiences.</td>
</tr>
<tr>
<td>Diet and Lifestyle assessment</td>
<td>Medicine</td>
</tr>
<tr>
<td>Diet evaluation, eating style, eating environment, relationships, quality of life, emotional stress, sleep and relaxation</td>
<td>Food has the ability to heal.</td>
</tr>
</tbody>
</table>
Interrogating Host Microbiota Dynamics in Diet, the Metabolome and Disease

Speakers: Gary Wu, MD and Charlene Compher, PhD, RD, CNSC, LDN, FADA, FASPEN

Reviewed by Mary Purdy, MS, RDN, Adjunct Professor, Bastyr University, Arivale Coach, and DIFM Communications Chair 2015-2017. Contact Mary at MaryPurdyRD@gmail.com.

This presentation focused on the way that diet integrates with microbiota and how this may affect disease. Dr. Wu provided a thorough explanation of the microbiome, which has a genome that is 150-fold greater than humans. These gut bacteria, who use our food as a substrate, play many roles in our body including making vitamins, enzymes and molecules, as well as regulating inflammation and immune function. In fact, he said, the fiber we consume is digested by microbiota creating short chain fatty acids (SCFAs), which increase receptors that help immune function and reduce intestinal inflammation. Additionally, this can have an impact on weight gain. When SCFAs enter the blood stream, they induce leptin, the hormone that allows you to feel full, and also decreases transit time, allowing the bacteria to “pull” more calories from the food being digested. A study in mice One explanation offered as to why many humans have an altered microbiome is termed the “Hygiene Hypothesis,” which essentially stipulates that being born into an overly sanitized environment results in an abnormal microbiome that can increase inflammation and put one at increased risk for autoimmunity and potentially obesity. He referred to a study which looked at how mice treated with antibiotics became obese due to a change in their microbiota. He also noted that obese humans tend to have altered gut flora. Dysbiosis, which involves a decrease in what he terms “microbiome richness” is driven by inflammation. What might interfere with this bacterial richness? Dr. Wu referred to studies on the adverse effects of milk, choline, artificial sweeteners, and emulsifiers. He also spoke about what could increase bacterial richness. Plant-based diets and energy-restricted diets were both high on the list. In fact, vegans and omnivores have quite a different makeup of bacteria in the gut and even within one day of altering the diet, a change in microbiome diversity could be seen. Also mentioned was the effectiveness of fecal transplants and the addition of prebiotics and probiotics in the diet as well as a variety of dietary interventions. There was no doubt that this is an emerging field and one where we will continue to understand the various and specific roles that each of the species in our gut plays. Stay tuned.

<table>
<thead>
<tr>
<th>Cardiometabolic Food Plan</th>
<th>The Detox Food Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified Mediterranean approach</td>
<td>Reduces food triggers</td>
</tr>
<tr>
<td>Low glycemic index and glycemic load</td>
<td>Supports liver function</td>
</tr>
<tr>
<td>Regular eating times</td>
<td>Promotes clean and organic foods</td>
</tr>
<tr>
<td>High in fiber</td>
<td>Provides targeted antioxidants</td>
</tr>
<tr>
<td>Low in simple sugars</td>
<td>Balances hormone metabolism</td>
</tr>
<tr>
<td>Balance quality fats</td>
<td>High in phytounitrogen density</td>
</tr>
<tr>
<td>Condition-specific phytonutrients: dietary nitrates and nitrites</td>
<td>Encourages healthy elimination of toxins</td>
</tr>
<tr>
<td>Targeted calories</td>
<td>Not calorie specific</td>
</tr>
</tbody>
</table>

Generally speaking, both are high in phytonutrients and antioxidants, incorporate a wide variety of fruits and vegetables to emphasize “all colors of the rainbow,” are rich in nutrient dense carbohydrates from starchy vegetables and legumes, focus on organic sources of clean protein, and emphasize plant-based fats from raw oils, avocados, nuts and seeds, and olives.
Hypertension and Vascular Function: A Role for Functional Foods and Bioactive Components in Medical Nutrition Therapy

Speakers: Douglas R. Seals, PhD and Penny Kris-Etherton, PhD, RD

Reviewed by Cassie Kerr, who received her master’s degree in nutrition at the University of Illinois at Chicago. Cassie is a Corporate Dietitian for a major food distributor where she interprets and translates trends and regulations to actionable goals to optimize value-added services for customers. Contact Cassie at cassiekerr18@gmail.com.

Seals and Kris-Etherton presented a compilation of research identifying numerous functional foods, their compounds, and the mechanisms by which they improve hypertension and vascular function.

Aging Contributes to Cardiovascular Disease

Greater than 90% of cardiovascular disease (CVD) occurs in middle-aged and older adults and this percentage is projected to increase due to the aging baby boomer population. Aging contributes to CVD through the development of dysfunction of arteries, which includes two major issues: an increase of arterial stiffness and endothelial dysfunction.

Arterial Stiffness

A decrease in elastin and the cross-linkage of collagen molecules are two arterial wall structural modifications that occur with age and cause arteries to stiffen. This then increases systolic blood pressure, which contributes to CVD.

Endothelial Dysfunction

Endothelial dysfunction occurs at the innermost layer of arteries. Nitric oxide is the gaseous signaling molecule that maintains homeostasis in the vascular endothelium. Aging arteries release less nitric oxide, which leads to a continuous cycle of oxidative stress and inflammation.

Interested in finding out your heart age? Go on the CDC website and type your information into the heart age predictor: http://www.cdc.gov/vitalsigns/cardiovasculardisease/heartage.html.

Lifestyle Prevention Strategies

Aerobic exercise, such as brisk walking (40-45 minutes 6 days per week), is a powerful strategy for prevention of CVD. It has a protective effect on arteries and increases resistance to the adverse factors involved in aging arteries.

Dietary interventions, such as restricted energy intake, can help prevent the production of collagen and increase elastin. However, caloric restriction is not always practical, especially in normal weight older adults susceptible to age-related sarcopenia. Though more research is needed, intermittent fasting may be an alternative to chronic calorict restriction and has shown to enhance nitric oxide bioavailability, among other signaling benefits.

It is no surprise that diet composition is crucial. Increased fruit and vegetable intake (DASH/Mediterranean diet) improves endothelial function while dietary sodium restriction reverses vascular endothelial dysfunction in those with elevated systolic blood pressure.

Functional foods that show improvements in blood pressure include fermented dairy products such as yogurt, black and green tea, cocoa/chocolate (6.3 grams per day), nuts and seeds (56 grams of walnuts per day), virgin olive oil (60 milliliters per day), and long-chain omega-3 fatty acids (>2 grams of EPA/DHA per day). The mechanism by which nutrition affects blood pressure is thought to be through increased nitric oxide production.

Nutraceutical Strategies

Healthy lifestyle strategies are impactful but adherence is often poor. Another approach is to mimic the benefits of a healthy lifestyle through supplementation of compounds found in food.

Curcumin found in turmeric is anti-inflammatory, decreases arterial stiffness, and improves endothelial function.

Nitrate/Nitrite supplementation in the diet for just a few weeks boosts nitric oxide and shows reversal of vascular endothelial dysfunction and artery stiffness with aging.

Trehalose, a disaccharide found in mushrooms and honey, is an autophagy enhancer that improves arterial stiffness.

Spermidine is another autophagy inducer that has a life span-prolonging effect and is found in grapefruit.

Resveratrol, a molecule found in the skin of red grapes and wine, activates sirtuin enzymes in the cell, mimics the slow-aging effects of a calorie-restricted diet, and improves endothelial function.

Nicotinamide adenine dinucleotide (NAD+) also induces the sirtuin system; supplements can be used to boost bioavailability of NAD+ in the body.

Nicotinamide Mononucleotide (NNM) supplementation reduces fibrogen-producing collagen in mice, which normalizes aortic stiffness.

Aging leads to vascular dysfunction, which leads to CVD. However, there are holistic approaches to prevent the natural aging process like exercising and choosing the right functional...
FODMAPS: Navigating the Novel Diet in the Pediatric Populations

Speakers: Bruno Chumpitazi, MD and Kristi King, MPH, RDN, CNSC, LD

Reviewed by Melanie Jewell, a student in the Master of Clinical Nutrition program at UT Southwestern Medical Center in Dallas, Texas. Contact Melanie at Melanie.Jewell@UTSouthwestern.edu.

The FODMAP acronym stands for Fermentable (bacterial metabolism) Oligosaccharides (i.e. fructans and galactans), Disaccharides (i.e. lactose), Monosaccharides (i.e. glucose), and Polyols (sugar alcohols, i.e. sorbitol). A diet low in FODMAP carbohydrates has been gaining attention as a potential intervention for irritable bowel syndrome (IBS). In the 2015 FNCE session, “FODMAPS: Navigating the Novel Diet in the Pediatric Populations,” Bruno Chumpitazi, MD, outlined the theory and evidence behind the low-FODMAP diet, and Kristi King, MPH, RDN, CNSC, LD, discussed the practical application of the low-FODMAP diet within the pediatric IBS community.

Dr. Chumpitazi began the session by discussing the theory behind the use of a low-FODMAP diet. In general, it is hypothesized that FODMAPs share several characteristics that may play a role in IBS. First, FODMAP carbohydrates are poorly absorbed. This malabsorption can be seen with lactose, fructans/galactans (contain bonds that are only broken by bacteria once they enter the colon), and sugar alcohols (sorbitol, xylitol, mannitol). The next common characteristic of FODMAPs is that they are osmotically active, which can cause increased water content in the small bowel. This osmotic load may lead to distention, pain, gas, and diarrhea in IBS sufferers. Finally, FODMAPs are highly fermentable by gut bacteria. For those with IBS, gas production as measured by a breath hydrogen test is much higher after consumption of fermentable carbohydrates, with fructans and fructose having the greatest impact.

After covering this background on FODMAPs, Dr. Chumpitazi went on to explain the evidence for using a low-FODMAP diet. A randomized crossover trial was conducted in children aged 7-18 years with ROME III IBS. Thirty-three children completed the study and subjects experienced significantly less bloating and nausea on the low-FODMAP diet as compared to a typical American diet. A trend toward decreased abdominal discomfort was also noted. For study participants who did not respond to the low-FODMAP diet, Dr. Chumpitazi noted differences in gut bacteria patterns based on baseline stool samples, and theorized that the impact of the diet may be based on each individual’s microbiome. Dr. Chumpitazi also reiterated the point that a low-FODMAP diet is neither helpful nor indicated for healthy people without IBS, as this is a question he receives regularly.

The remainder of the session was led by Kristi King, MPH, RDN, CNSC, LD, who discussed strategies for implementing a low-FODMAP diet in the pediatric IBS population. She reminded the audience that FODMAPs do not cause GI disorders, but that a low-FODMAP diet provides an opportunity to minimize symptoms. She also enforced the point that low-FODMAP does not mean no-FODMAP. Registered dietitian nutritionists (RDNs) play a critical role in working with families to implement the low-FODMAP diet in a way that minimizes symptoms while still meeting nutrition needs. RDNs need to be aware of the potential limitations of a strict elimination diet in the pediatric population, which may include weight loss, food aversions, and increased risks for nutrient deficiencies and eating disorders.

King recommended RDNs begin with a full dietary recall accompanied by a symptom history to assess FODMAP intake so that the diet can be customized accordingly. Immediate elimination of key foods (such as beans in a vegetarian family) is overwhelming and not recommended; instead, partial restriction may be needed as families ease into a low-FODMAP trial. In many cases, just focusing on the elimination of high-fructose corn syrup can be a great starting point for parents. When re-introducing foods after a 6-8 week low-FODMAP trial, King recommends one FODMAP food per week, tracking symptoms and reducing serving sizes as needed. Most importantly, RDNs need to help families focus on the foods they can have and not just the foods to be avoided.

FODMAPS: Emerging Science and Implications for Practice

Speakers: Jane Muir, PhD, APD and Patsy Catsos, MS, RDN, LD

Reviewed by Katie Davis, an RDN and a recent graduate of Bradley University’s Dietetic Internship program. She received a BS in Zoology and a BS in Nutrition from Miami University. Contact Katie at katied9958@gmail.com.

In this session, speakers Muir, of Monash University and Catsos, of GI Nutrition Inc. addressed the clinical management of Irritable Bowel Syndrome (IBS) using the FODMAP approach. FODMAP is an acronym referring to a range of short-chain carbohydrates that are widely
distributed in foods. It stands for Fermentable Oligosaccharides, Disaccharides, Monosaccharides, And Polyols. FODMAPs are commonly associated with IBS, which is a disorder characterized by gastrointestinal symptoms including abdominal pain/discomfort, constipation, diarrhea, bloating, and gas. FODMAPs play a role in triggering IBS symptoms due to their osmotic effect and fermentation within the intestinal tract, which can cause an increase in intestinal water content and rapid gas production. This can lead to gut distention and altered gut motility, ultimately triggering symptoms characteristic of IBS.

There is peer reviewed evidence from the literature that a low FODMAP diet reduces gastrointestinal symptoms associated with IBS in 75 percent of cases. The low FODMAP diet is recommended to try for only two to six weeks followed by re-introduction of foods. This diet should only be used with appropriate patients, not healthy non-symptomatic individuals. At this time, there are no biomarkers to determine who will benefit from a low FODMAP diet, so it is important to know who may benefit. Individuals who may benefit include those with:

- symptoms and/or diagnosis of IBS, irritable bowel disease (IBD), or celiac disease,
- a failure to respond to standard IBS treatment,
- a diet high in FODMAPs,
- a history of symptoms when consuming FODMAPs,
- a willingness and ability to adhere to the diet without endangering mental or physical health.

It is important to note some limitations of the low FODMAP diet. It can lead to:

- reduction in natural prebiotic intake,
- restriction of grains and cereals, which may lead to low intake of dietary fiber, folate, and thiamine,
- restriction of dairy foods, which may lead to reduced intake of calcium and vitamin D, and
- an increase in the risk of triggering an eating disorder such as orthorexia.

Catsos offered some useful ideas from her past experiences using the low FODMAP diet with patients including:

1. Comparing FODMAP allowances to a budget when working with patients helps with patient understanding and compliance to the diet.
2. Medications or other medical conditions such as anxiety require modification of the FODMAP approach and ongoing nutrition management.
3. It is important to provide resources and education beyond just a list of foods. These could include basic recipes, label reading tips, product suggestions, custom sample menus, and tips for dining out.
4. It is also important to remember that FODMAPS are not everything, but the process of going through the diet can be helpful at revealing other triggers of IBS symptoms.

Learn more about the The Monash University Low FODMAP diet:
http://www.med.monash.edu/cecs/gastro/fodmap/
http://www.med.monash.edu/cecs/gastro/fodmap/iphone-app.html
http://www.med.monash.edu/cecs/gastro/fodmap/iphone-app.html

Polycystic Ovary Syndrome: Updates, Dietary Strategies and Lifestyle Treatment

Speakers: Mark Perloe, MD and Angela Grassi, MS, RDN, LDN

Session reviewed by Monique Richard MS, RDN, LDN. Monique is the current Chair of the Dietitians in Integrative and Functional Medicine Dietetic Practice Group, an Integrative Clinical Dietitian, yoga instructor and owner of Nutrition-In-Sight. Contact Monique at mmr2v@mtmail.mtsu.edu.

Polycystic Ovary Syndrome (PCOS) is a multifactorial syndrome, often under-diagnosed and under-treated. There is no PCOS gene that predisposes one to this, but it is a metabolic disorder with life-long implications and management associated with insulin resistance.

A diagnosis can be made for PCOS by identifying two out of the three criteria, which include:
- elevated male hormones
- cysts on the ovaries
- irregular periods

Insulin resistance and obesity may be commonly associated with PCOS but are not necessary criteria to establish a diagnosis. Other common symptoms may include increased hair growth, acne, lipid abnormalities, sleep apnea, mood disorder, infertility, acanthosis nigricans (darkening of the skin), skin tags, and weight gain. Insulin resistance has been found to be a root factor in increasing hormone production, possibly leading to hypoglycemia and cyclic dysfunction in the metabolic homeostatic process. Challenges may include:
- history of yo-yo dieting (from not understanding the root causes of weight management issues)
- rapid weight gain
- intense cravings
- impaired levels of ghrelin and leptin
• increased hunger
• hypoglycemia
• dermatological concerns

The primary goals for PCOS, along with enhancing quality of life and addressing these symptoms, are to reduce the risk of developing type 2 diabetes, lower risk for cardiovascular disease, improve fertility, and reduce factors associated with excess weight (if applicable).

Specific nutritional interventions recommended for the registered dietitian nutritionist (RDN) and the evidence of benefits for addressing PCOS include:

• Anti-inflammatory, antioxidant rich diets such as the Mediterranean or DASH diets lower inflammatory markers and promote weight loss
• Poly- and mono-unsaturated fatty acids in walnuts and almonds may increase insulin sensitivity and produce a benefit in lipid levels
• Fish oil may benefit hormone levels and fertility factors
• Reduced carbohydrates; most studies still used 50% of calories from carbohydrates with emphasis on low glycemic choices, high fiber and whole grain choices
• Limited saturated fat
• Green tea; some studies have shown reduced testosterone levels

Additional alternative interventions that have been shown to be beneficial include:

• Myo-inositol and D-chiro-inositol supplementation (40:1), 3-4 g/day—relatives of B-vitamins (naturally found in carbohydrates like fruit, buckwheat) help regulate hormone activity and improve insulin resistance.
• Vitamin D, 400 IU, (possibly combined with 1000 mg calcium) may have insulin sensitizing properties; may be beneficial to triglycerides and testosterone levels
• N-acetyl cysteine (NAC), 1.6-3 gm a day, amino acid derivative of L-cysteine, helps with insulin resistance, lowers cholesterol, offers immune support
• Yoga has been seen to improve stress management and regulate androgen production
• Strength training
• Weight loss and management with a sustainable approach
• Adequate sleep

Dietary adjustments related to insulin sensitizing agents such as metformin and education on the prevention of hypoglycemic episodes associated with PCOS by the RDN may also be appropriate. It may be beneficial for the RDN to coordinate care with the patient’s healthcare team including the endocrinologist, ob/gyn, or primary care physician for the most effective interventional approaches for the individual. There is currently a movement to suggest a name change as the ovaries are connected in the symptomatic outcomes, but have not been directly associated with the root cause of the symptoms. Reproductive metabolic syndrome is the suggested name change, as these symptoms and the metabolic cascade is being identified more and more in males and may open up more research opportunities for exploration as it affects more of the population than previously recognized.


Nutrition Interventions in Autism: Gastrointestinal and Sensory Concerns

Speakers: Patricia Novak, MPH, RD, Sharon Lemons, MS, RDN, CSP, LD, FAND

Reviewed by Cary Kreutzer, EdD, MPH, RD, who directs the Master’s Degree Coordinated Program in Nutrition, Healthspan and Longevity, at the University of Southern California, Davis School of Gerontology in Los Angeles, and is a Clinical Professor in the Davis School and Keck School of Medicine at USC. She has over 30 years of experience as an RD working with children and adults with special health care needs and developmental disabilities. Contact Cary at kreutzer@usc.edu.

Ms. Novak is a pediatric dietitian with 30-years of experience working with children with special health care needs, including children with Autism Spectrum Disorders (ASD). She has also worked with interdisciplinary teams that have prepared her to address sensory issues with feeding in children with ASD. Ms. Lemons is a registered dietitian and a parent of a child with autism and was able to reflect on her first-hand experience with her own child. The objective of the presentation was to prepare registered dietitian nutritionists (RDNs) to assess children with ASD and recognize nutrition and feeding challenges as well as other co-morbid medical conditions that impact nutrition and feeding along with other members of the interdisciplinary team. Ms. Novak began the presentation discussing nutrition assessment categories critical to RDNs working with children who have ASD. Assessment categories include feeding skills, gastrointestinal (GI) issues (present in 23-91% of children with ASD), patient communication as related to eating and food

Winter 2016 Volume 18, Issue 3 78 www.integrativeRD.org
preferences, and rigid food rituals or behaviors. In addition, RDNs need to assess traditional areas of assessment including anthropometric measures, dietary intake, biochemical data, clinical presentation, patient history, sleep patterns, chewing/swallowing, stomach and elimination patterns, bowel movements (texture, frequency, discomfort) using the Bristol stool scale, medications/supplements, as well as CAM. Ms. Novak suggests that once assessment data are collected they must be “systematically dismantled” to seek and define underlying nutrition issues and unmet nutrient, behavior, GI and feeding needs. Food allergies (present in 15% of children with ASD), special diets, and parent choices about food and diet modification are commonly seen when working with families who have children with ASD and require teasing out what is real and what is parent belief.

Ms. Lemons advises that family is key in prioritizing what is possible for intervention. For children with behavioral issues, Cognitive Brain Training (CBT) may be needed to affect change, for example, having a bowel movement or trying a new food texture for the child who has anxiety. Ms. Lemons stated that children with ASD may have hypo or hyper sensory stimuli that can influence mealtime and eating. Examples of influences that have the potential to have a profound effect on eating include anxiety, textures, smells, sounds (e.g., fizzy, crunchy, snap), temperature, energy-level, oral motor skills, background noise, seat stability, holding food in the mouth, etc. Ms. Lemons shared that children with ASD are not good predictors of what is going to happen next and need to be introduced (touch, smell, sight) to prepare for what is to come. Her other suggestions for eating included linking preferred foods with similar foods (also called food chaining), taste-testing to help child build trust, and allowing the child to spit out the food if not ready to eat.

Both presenters stressed the importance of the RDN as part of the interdisciplinary team, with the parent as well, to assure the nutrition needs of the child are addressed along with the medical, behavioral, psychosocial and educational interventions.

The ‘Weight’ is Over: The Role of the Dietitian in Behavioral Approaches to Improve Health Outcomes

Speakers: Rebecca Krukowski, PhD, and Catherine Champagne, PhD, RDN, LDN, FADA, FAND

Reviewed by Lori Drummond.
Contact Lori at DRUMMOL@ccf.org.

During this session sponsored by the Research Dietetics Practice Group (RDPG), registered dietitian nutritionists (RDNs) were provided with essential tools to assist clients and patients in their weight loss endeavors. Dr. Rebecca Krukowski, PhD, Assistant Professor at the Center for Population Sciences at the University of Tennessee Health Science Center presented the topic of Behavioral Treatment in Obesity. Her focus is on developing, translating and implementing evidence-based behavioral management interventions for weight management. She explained the theoretical approaches that behavioral health professionals employ to guide patients to improved health outcomes. Dr. Krukowski pointed out that there is no strong evidence that any particular theory-based intervention predicts better weight loss; it is best to incorporate a variety of theories. The idea is to increase skills of the clinician versus just focusing on knowledge.

Practical applications included identifying components of behavioral weight loss interventions and describing the empirical evidence that supports these strategies. She further described clinical studies that demonstrate the importance of the dietitian's counseling skills to outcomes. She also suggested ways dietitians can incorporate and apply such skills and concepts to their daily practice. For example, the RDN must evaluate the patient's readiness by asking questions such as, “What makes you want to lose weight now?” with emphasis on the time ‘now.’ Another question that can be asked is “What else is going on in your life?“ because people live busy lives and weight loss planning and implementation takes a portion of a person's day.

The clinician must begin to apply the motivational interviewing spirit needed for success. Motivational interviewing is known to illicit more positive responses from clients because it provides them with the opportunity to be the decision maker. The technique involves asking open-ended questions, providing reflective-listening, offering information about weight loss that a client may not know, and eliciting change talk. Change talk is a way to get someone to talk about why, how and what they will change. Participants also learned that self-monitoring and early weight loss are early indicators of success. Dr. Krukowski described specific research studies that incorporated this evidence and made it easier to connect the dots between the research and its clinical applications.

The second speaker was Catherine Champagne, PhD, RDN, LDN, FADA, FAND of Pennington Biomedical Research Center, Baton Rouge, LA. She reviewed aspects of clinical trials that focused on lifestyle change: Look AHEAD, PREMIER, and Weight Loss Maintenance.

She shared her vast experience in research grounded in behavioral theory and...
discussed how these skills can be used in a broader range of dietetics practice to encourage healthy lifestyle changes. The Look AHEAD trial demonstrated that those who were in the study arm implementing intensive lifestyle interventions had broad benefits including lowered BMI, CVD risk factors, and lower A1c scores despite reduction in medications. Trial participants increased rates of partial diabetes remission, decreased urinary incontinence in women, and improved sleep apnea, depressive symptoms and quality of life. The study produced a mean weight loss of 7.9% at one year but could not maintain that over several years.

She described the PREMIER and Weight Loss Maintenance Studies that evolved from the DASH and DASH-Sodium Studies. She shared many strategies for success that came from the Weight Loss Maintenance Study. She suggested tools to help the RDN succeed, such as ongoing training in motivational interviewing and similar techniques, skills that enable clients to maintain their weight loss, and methods to improve client adherence by helping them overcome obstacles.

Collaboration and Engagement: Making the 2015 Dietary Guidelines Actionable for Americans

Speakers: Robert Murray, MD, FAAP, Marian L. Neuhouser, PhD, RD, Alice H. Lichtenstein, DSc, Yvonne Bronner, ScD

Reviewed by Adriane Welcker, a Clinical Nutrition Support dietitian for Trilogy Health Services in South Central Indiana. She completed her BS in Dietetics and Biology at Purdue and her dietetic internship at Louisiana Tech. She is completing her MS in Dietetics. Adriane enjoys spending time outdoors—running, skiing and scuba diving. Contact Adriane at arwelcker@gmail.com.

This session was presented by a panel of former Dietary Guidelines Advisory Committee (DGAC) members who discuss their perspectives of how the Dietary Guidelines have evolved and how, as leaders in nutrition, RDNs can look ahead to the future and help make the 2015 guidelines actionable. The session began with a four question survey with multiple choice answers of the audience:

- If you could only choose one, what dietary advice would help most Americans improve their diets?
- What role do you believe is most important for how the food industry translates nutrition recommendations into consumer products and messages?
- Based on your practice and experience, which statement do you believe will have the greatest impact in facilitating and supporting individual behavior change?
- Which statement best reflects your perspective on implementing a potential guideline limit of 10% of calories from added sugars?

The speakers for this session effectively translated the 2015 Dietary Guidelines into a more practical application for the average American. Rather than focusing on the nutrient content of foods, the general quality of foods was highlighted. For example, individuals should focus on their food intake pattern rather than intake of specific nutrients. By building food patterns based on a variety of nutrient-rich foods, individuals will usually meet their nutritional needs. Eighty-one percent of attendees felt that food intake patterns are more important than managing individual nutrients. Most of the conversation seemed to gravitate back to the promotion of whole foods. Recommending supplements or fortified products to our clients of normal nutritional status often translates into promoting an easy fix and deemphasizes the importance of whole foods. A focus on nutrients does not ultimately lead to a better diet, especially in those with limited nutrition education. The promotion of whole foods and a generally healthy diet is not only more relatable to the average American, but can also be easily harmonized across a variety of clinical and community settings.

A large struggle that RDNs must continue to face as nutrition professionals is the food industry. Seventy-one percent of those present indicated that the food industry should follow the lead of the public health sector in translating nutrition information into customer products and messages. Within the food industry, the speaker noted, there is a general lack of appreciation for the profession of dietetics. The industry is driven by fad diets and books giving rise to consumer demand. Aspects of the food industry are often based on no scientific evidence and confuse the consumer. For example, cereals and granola bars are normally considered healthy foods by the consumer because they have such large amounts of nutrients, yet excess amounts of nutrients may actually be harmful for our bodies. In addition, products with wheat, barley, and rye are not unhealthy: there is no evidence base, but only marketing, to support the misconception that gluten-free products are healthier for the consumer because they have such large amounts of nutrients, yet excess amounts of nutrients may actually be harmful for our bodies. In addition, products with wheat, barley, and rye are not unhealthy: there is no evidence base, but only marketing, to support the misconception that gluten-free products are healthier for the consumer because they have such large amounts of nutrients, yet excess amounts of nutrients may actually be harmful for our bodies. In addition, products with wheat, barley, and rye are not unhealthy: there is no evidence base, but only marketing, to support the misconception that gluten-free products are healthier for the consumer because they have such large amounts of nutrients, yet excess amounts of nutrients may actually be harmful for our bodies. In addition, products with wheat, barley, and rye are not unhealthy: there is no evidence base, but only marketing, to support the misconception that gluten-free products are healthier for the consumer because they have such large amounts of nutrients, yet excess amounts of nutrients may actually be harmful for our bodies. In addition, products with wheat, barley, and rye are not unhealthy:
Seventy-five percent of attendees thought that the best ways to support individual behavior changes were food environments that facilitate access to healthy and affordable foods and respect culture, especially in low-income populations. In our culture, people with busy lifestyles need healthy, safe, affordable, convenient products. For example, if water is more expensive than soda at a sporting event and there is no water fountain, the most affordable and convenient option is soda. However, if a more reasonably priced supply of the healthy product—water, is made available, this will lead to more consumption. In working with clients, it is important to review their diet quality in a variety of locations (i.e. work, home, etc.). Educating clients on high-quality food choices in obesogenic settings is vital. The last topic highlighted during the session was the new Dietary Guideline limiting calories from added sugars to 10%. Forty-eight percent of RDNs in attendance were concerned about unintended consequences of the guideline and thought healthy diet patterns would be a better focus. Forty-six percent of RDNs in attendance felt the benefits of the guideline would exceed unintended consequences and supported the addition.

**The Promise of Functional Foods: Translation from Crops to Community for Disease Prevention and Treatment**

**Speakers:** Yael Vodovotz, PhD and Colleen Spees, PhD, MEd, RDN, LD, FAND

**Speakers’ information**

http://cancer.osu.edu/research-and-education/find-a-researcher/search-researcher-directory/yalervodovotz

http://medicine.osu.edu/hrs/md/faculty/colleen-spees-phd-med-

rdn-fand/pages/index.aspx

Reviewed by Kathleen Benson, RDN, LD. Kathleen recently finished her internship and is now a clinical dietitian working in a hospital setting. She has goals of private practice and specializing in sports nutrition and food sensitivities. Contact Kathleen at KatBensonRDN@gmail.com.

Presenters Yael Vodovotz, PhD and Colleen Spees, PhD, MEd, RDN, LD, FAND led the presentation titled, The Promise of Functional Foods: Translation from Crops to Community for Disease Prevention and Treatment with nothing to disclose.

Functional foods can be defined as foods that provide health benefits beyond macronutrients, for example salmon with omega-3 fatty acids. There is a growing market for functional food as an increasing number of people shift from single nutrients to whole foods and try to incorporate them into their daily diet to promote health. It is estimated that the functional food market is growing at a rate of 10% per year. Because of this, Vodovotz emphasized the role of acknowledging collaboration with food producers with the focus of making nutritious food that most people will eat rather than ones that a majority will not eat. Some examples of this include whole wheat bread and dark chocolate that tastes like milk chocolate.

Vodovotz gave examples of study designs, delivery mechanisms, processing, and sensory evaluations. She provided us with her personal example of research in isoflavone absorption and the effects on prostate cancer with production of different bread designs made with wheat, soy, and almonds.

The speakers reported that a question often asked is along the lines of “why functional foods and not natural?” They explained that sometimes it might not be physically possible to get the required amount of nutrients in natural food due to differences in geographical areas and populations. They also gave the example that sometimes processing certain foods can lead to greater bioavailability of nutrients. For example, Vodovotz explained that nutrients found in plain tomato sauce can be absorbed better than the nutrients in whole tomatoes.

Spees reported that blackberries have naturally occurring bioactive compounds including anthocyanins and many vitamins in levels that are dependent on soil. She introduced a current trial focused on differing raspberry polyphenol releases in varying confections with regards to prevalence in the market, shelf life, and convenience in different forms (i.e. glassy-hard to rubbery-gummy type confections).

**Implications for Dietitians**

Formulating functional foods using whole foods requires specific and intentional steps to assure bioactive stability, quality, palatability, sensory acceptance, and desired quantity of bioavailable nutrients in a lab setting. Challenges that can come with the development and production can include tolerance and acceptance of those foods in addition to policies, labeling, and commercialization. Spees recommended those who want to pursue functional food development find the right experts with whom to collaborate and innovate, and use the right tools for research (i.e. data collection and analysis) while gathering information.
Mindfulness-Based Eating

Katherine Stephens-Bogard MS, RDN, CDE, RYT is a diabetes educator and Registered Yoga Teacher with The Washington Health System in Washington, PA. Contact Katherine at kstephensbogard@whs.org or 724-250-6298 (office phone).

I am grateful to the DIFM leadership for awarding me the 2015 Professional Stipend Award to offset a portion of the expense for this invaluable training. The following review fulfills a requirement for receipt of the award.

“Find a comfortable seat, sitting with a relaxed but straight spine…Allow your hands to rest comfortably in your lap…Close your eyes…Focus your mind on the feeling of your breath. Take two or three deep diaphragmatic—belly—breaths [short pause]. Repeat these two or three breaths [short pause], noticing a sense of calm and relaxation [short pause]. Now let your breath find its own natural rhythm…”

This meditation excerpted from the Mindfulness-Based Eating Awareness Training (MB-EAT) guided meditations manual was how the MB-EAT training for professionals began. Hosted at The Kripalu Center for Yoga and Health, the MB-EAT professional training was taught by its developer and principle investigator, Dr. Jean Kristeller, PhD, and one of her assistants, Andrea Lieberstein, MPH, RDN, RYT. The MB-EAT program is a scientifically validated and evidenced-based weight management intervention. With National Institutes of Health (NIH) funding, Dr. Kristeller and colleagues validated MB-EAT for overweight/obesity and Binge Eating Disorder (BED).

With respect to the latter, both published and unpublished data showed statistically and clinically significant decreases in frequency of binges (from 15/month to < 6/month at 4 months), self-reported decreases in size of binges, improvement in disinhibition (healthy restraint), and weight loss. Dr. Kristeller noted and shared that clinically and statistically significant weight loss occurred in the overweight/obese cohorts participating in MB-EAT.

MB-EAT is a structured 12-week program facilitated by trained and qualified practitioners (RDNs, RNs, MDs/DOs, social workers/counselors, and behaviorists). Using evidenced-based weight management tools (i.e. food diaries, journaling, exercise and activity, calorie reduction) in concert with the modality of mindfulness meditation, the MB-EAT program heightens awareness of conditioned responses to food, eating and emotions with the overall goal of improving health via weight management and psychosocial well-being. The foundational framework upon which MB-EAT was developed is mindfulness—moment by moment non-judgmental awareness to the present experience—using meditation and self-regulation within a multi-domain model. Essentially, the first step of mindfulness meditation heightens awareness of the reactive conditioned response. Cognition of this conditioned response enables disengagement of the automatic reactivity to a specific experience, the second stage. Disengagement occurs in six domains of functioning: cognitive, physical, emotional, behavioral, relational (self & others), and spiritual. Disengagement emerges into the third stage of integrated self-care and self-actualization. Relative to the six domains, the goals of the MB-EAT program are:

• Cognitive: reconnect to internal (i.e. hunger, satiety, fullness) and external (i.e. food availability, time of day, socialization) reasons for eating; refrain from eating or stopping eating (i.e. hunger, satiety, fullness); increase fundamental knowledge of food and nutrition.
• Physical/Physiological: identify hunger and satiety signals, taste, texture, and smell of food, and experience relaxation (i.e. lowered heart rate, deeper breathing).
• Emotional: decrease anxiety and all-or-none thinking, increase enjoyment of food and reconnect to savoring food.
• Behavioral: reduce frequency of deleterious eating behaviors (i.e. binging, overeating or self-sabotage); increase activity and exercise, establish a regular mindfulness meditation practice and employ its components moment by moment.
• Relational: accept and forgive oneself and others.
• Spiritual: recreate balance between physical and psychological needs for not only food, but also for love, connection, and purpose.

The MB-EAT program is systematically organized to teach and most importantly to practice mindfulness in each domain week by week. Each session’s activities, meditations, homework (i.e. skills practice, food/mood journal, activity tracking), and didactic material (i.e. label reading and 500 calorie challenge, food composition and health, exercise versus non-exercise activity thermogenesis lectures) are intended to increase one’s ability to self-regulate eating and activity in an individual with community support. The complexity of the didactic material, the exploration of emotional issues, and the meditations increase week to week. For example, in the beginning the meditations are general—as excerpted in this article’s introduction—allowing participants to awaken bodily awareness in a neutral way (to the breath); gradually these increase in duration as well as intensity, allowing participants to feel hunger and subsequently satiety.
and even (over)fullness—using a non-caloric beverage—water. Likewise, participants are led through progressively more challenging mindful eating experiences with various types of food—raisins, chocolate, cheese and crackers, salty chips, personal trigger foods, and eventually a restaurant and buffet meal!

The MB-EAT professional training was experiential and intensive, designed to teach potential MB-EAT facilitators the rationale behind and components of the program. Of the 35 hours spent in session over the five-day training program, less than ten percent was devoted to definitions and terminology, review and evaluation of the research, or program administration (i.e. marketing, recruiting, logistics). Rather, the majority of the professional training was a condensed version of the participant MB-EAT program with specific teacher-trainee aspects—diad and triad meditation teachbacks, and question/answer periods. A typical day was as follows:

7:00 a.m.-9:00 a.m. - Silent breakfast

9:00 a.m.-12 noon - Morning Session: General Mindfulness Meditation, discussion of EEM, presentations of goals/objectives of morning session; this was followed by another guided meditation, a moving meditation (i.e. yoga, walking or labyrinth), and a specific MB-EAT eating experience meditation (EEM), which was intended to be ‘practiced’ during Kripalu’s traditional silent breakfast.

12 noon-1:30 p.m. - Lunch Break

1:30 p.m.-5:00 p.m. - Afternoon Session: Similar outline as morning session, but with greater emphasis on diad/triad teachbacks of either the meditations or the material. The composition of the diads/triads changed from session to session, allowing each attendee to work with professionals across disciplines, as well as to experience different voice intonation and cadence of the standardized meditations.

5:00 p.m.-7:00 p.m. - Dinner Break

7:00 p.m.-9:30 p.m. - Evening Session; Question and Answer and evening mediation—these meditations were sometimes but not always from the MB-EAT curriculum. Occasionally, the professional attendees were treated to Yoga Nidra, a candlelight gazing meditation designed to facilitate deep relaxation and sleep!

Though not a component of the MB-EAT program itself, during the teacher-trainee intensive, the attendees were invited to participate in a silent retreat—24-hours of disconnection from all electronics as well as speech—that’s right, no talking to anyone for 24 hours! The intent was to not only practice the EEMs, but equally to enrich one’s own connection to self-compassion and internal wisdom.

MB-EAT professional trainees were provided with a CD and printed scripts of the various guided meditations and PDF files of the program documents. At the time of the training, July 2015, the program manual was not yet published due to pending completion of the data analysis and final peer-reviewed publication of the NIH funded trials. Dr. Kristeller indicated the targeted publication date for the manual is early 2016.

Though the nutrition and exercise information presented and included in the MB-EAT professional training was basic and undoubtedly familiar to RDNs, it was useful to experience the program applied in the context of mindfulness. Similarly, it was valuable to interact with non-nutrition professionals and learn their perspective on the information; it was a mindful reminder that what is fundamental to an RDN is perhaps not so to another allied health professional. Likewise, it was valuable to learn in the applied sense psychotherapy and behavior management terms and principles as they relate to behavior change and mindfulness. The only drawback I identified was the relative ambiguity regarding who was or was not qualified to teach the MB-EAT program upon training completion. A prerequisite for attendees wishing to teach the program was an established (6 or more months of mindfulness mediation) practice; no other specifics (i.e. license as a health care provider or experience in teaching other mindfulness based programs) are required, creating some confusion and frustration. In all fairness, however, this may be due, in part, as acknowledged by Dr. Kristeller, that there is a national push to not merely train but certify facilitators via training, testing, credentialing and ongoing continuing education.

Nonetheless, the training was personally and professionally rewarding. To date, I have not yet taught the program in its entirety, but I regularly use the meditations, particularly the EEMs, as a component of individual medical nutrition therapy with clients with BED, other eating disorders, and obesity. In addition, I have included components within the stress management and coping lecture of the American Diabetes Association Diabetes Self-Management Education curriculum.

Reference

Upcoming Conferences and Educational Opportunities


May 19-22, Plant Based Prevention of Disease conference. Raleigh, NC. The third annual P-POD Conference brings together an unprecedented 30 expert speakers – with many decades of combined experience – to discuss the latest research on dietary change for preventing disease, via lectures and panel discussions. Presenters include Caldwell B Esselstyn Jr., MD of the Cleveland Clinic Wellness Institute, Robert Ostfeld, MD of the Montefiore Einstein Cardiac Wellness Program and Kana Wu, MD PhD of the Harvard T. H. Chan School of Public Health.

Up to 25 hours of continuing education credits are available for RDNs and DTRs. P-POD is committed to affordable registration costs, and student discounts are available. Early bird rates end March 23.

For more information, please see www.preventionofdisease.org or contact us at info@p-pod.org.


Electronic Mailing List (EML) Recent Topics Review:

Supplements for children discussed, including those to help with constipation in autistic children. Specific brands mentioned of: probiotics, senna, magnesium citrate and bisglycinate (a non-constipating iron supplement). A trial of a dairy-free diet was also recommended. Another thread discussed partially and extensively hydrolyzed infant formulas for babies sensitive to regular formulas. Product suggestions made for a mom with a third degree tear from birthing: HBV protein, arginine and topical vitamin E, lidocaine and arnica gel.


Several suggestions were made for mindfulness retreats for a patient with a history of emotional trauma and eating disorder and may be found through searching the DIFM electronic mailing list (EML) archives. Members looking to avoid carrageenan in foods will benefit from a discussion of non-dairy milks produced without the thickener added; also noted is that carrageenan is potentially inflammatory if gut health is compromised and that the European Commission’s Scientific Committee on Food concluded it is not advisable to use in infant formula.

Essential oils was a hot topic and several resources were recommended: National Association for Holistic Aromatherapy’s website: http://www.naha.org/, the comprehensive book, Aromatherapy for Health Professionals, 4th ed. by Shirley & Len Price, and Arizona Center for Integrative Medicine’s online course: Aromatherapy & Health: An Introduction (approved for 4 CPEUs): http://integrativemedicine.arizona.edu/online_courses/aromatherapy.html.

A discussion of a 55 yo male with low testosterone and history of testicular cancer who is looking to increase his testosterone level without injections. Many replies suggested the patient’s cholesterol-lowering medication (a statin) were contributing to low testosterone; other suggestions included supplementing with diindolylmethane and increasing exercise, especially resistance training.

Reviews, Resources and Research

The Future of Nutrition Research

A panel symposium was held at the University of California, Davis in honor of the 10th anniversary of the Kosuna Distinguished Lecture in Nutrition. Panelists were asked to forecast nutrition research in 2020. Among the topics mentioned as the “hottest” areas were: global food security; our microbiome/microflora, including what effects change in microflora and in turn...

Silymarin Supplementation Improves Antioxidant Indices and Decreases CRP Levels in Type-2 Diabetes Mellitus Patients

Forty type-2 diabetes mellitus (T2DM) patients aged 25-50 yr old participated in this 45-day randomized, triple-blind, placebo-controlled trial. A triple-blind trial is a double-blind study in which the statisticians analyzing the study data are also blinded. Subjects received either 140 mg, thrice daily of dried extracts of silymarin (the active component of the milk thistle plant) or the equivalent amount of placebo tablets. At the study’s end, the treatment group had increased superoxide dismutase (SOD), glutathione peroxidase (GPX) activity and total antioxidant capacity (TAC), as well as a significant reduction in hs-CRP levels compared to subjects taking the placebo. In addition, malondialdehyde (MDA) concentration, a toxic by-product of oxidative damage by free radicals, significantly decreased in the treatment group compared to baseline, though this difference was not significant between groups. These results indicate that silymarin supplementation modulates oxidative stress and inflammatory biomarkers in T2DM patients. Since it is thought that oxidative stress and systemic inflammation contribute to the pathogenesis and complications associated with type-2 diabetes, silymarin may be beneficial in the management of diabetes. Further studies with larger sample sizes and longer intervention periods are needed as well as studies looking at silymarin’s effects on other inflammatory markers. Koujan SE, Gargari BP, Mobasseri M, Valizadeh H, Asghari-Jafarabadi M. Effects of Silybum marianum (L.) Gaertn. (silymarin) extract supplementation on antioxidant status and hs-CRP in patients with type 2 diabetes mellitus: A randomized, triple-blind, placebo-controlled clinical trial. Phytomedicine. 2015;290-296. http://www.ncbi.nlm.nih.gov/pubmed/25765835. Summarized by: Julie Niewiadomski.

Nutrigenetic-targeted Diet and Weight Loss

In a prospective, randomized controlled trial, 51 overweight or obese U.S. veterans participated in an 8-week weight management program and were assessed until week 24. Participants were randomly assigned to one of three interventions: Mediterranean diet supplemented with extra-virgin olive oil (subjects were provided with 1 liter/week), a Mediterranean diet supplemented with mixed nuts (subjects were provided with 30 grams per day: 15 g walnuts, 7.5 g hazelnuts, and 7.5 g almonds), or a control diet (subjects received advice on following a low-fat diet). Participants were between 60-80 years old and determined to be at high risk for cardiovascular disease. The exact consumption of the extra-virgin olive oil and nuts were not measured, however, all participants completed quarterly screening questionnaires to assess diet adherence. After nearly five years, breast cancer incidence (for those without a prior history) were 1.1 (per 1000 person-years) for the Mediterranean diet with extra-virgin olive oil group, 1.8 for the Mediterranean diet with nuts group, and 2.9 for the control group. The authors state their findings suggest a Mediterranean diet supplemented with extra-virgin olive oil has a positive effect on primary prevention of breast cancer, but this finding needs to be confirmed in additional studies. Limitations of this study include that it was a secondary analysis of a previous study.

Olive oil, the Mediterranean Diet and Cardio-metabolic, Immunological and Cancer Risks

A total of 4282 female participants of the prospective cohort PREDIMED study were randomly assigned to one of three interventions: Mediterranean diet supplemented with extra-virgin olive oil (subjects were provided with 1 liter/week), a Mediterranean diet supplemented with mixed nuts (subjects were provided with 30 grams per day: 15 g walnuts, 7.5 g hazelnuts, and 7.5 g almonds), or a control diet (subjects received advice on following a low-fat diet). Participants were between 60-80 years old and determined to be at high risk for cardiovascular disease. The exact consumption of the extra-virgin olive oil and nuts were not measured, however, all participants completed quarterly screening questionnaires to assess diet adherence. After nearly five years, breast cancer incidence (for those without a prior history) were 1.1 (per 1000 person-years) for the Mediterranean diet with extra-virgin olive oil group, 1.8 for the Mediterranean diet with nuts group, and 2.9 for the control group. The authors state their findings suggest a Mediterranean diet supplemented with extra-virgin olive oil has a positive effect on primary prevention of breast cancer, but this finding needs to be confirmed in additional studies. Limitations of this study include that it was a secondary analysis of a previous study.


In a separate single-blind, randomized controlled trial, 41 overweight or obese participants aged 65 or older replaced substitutable dietary oils (cooking oils, spreads, salad dressings) with extra-virgin olive oil or a mixture of corn, soybean oil and butter (control group) for three months. The oils were provided as a liquid in a bottle or spread and subjects used them *ad libitum*. At baseline, all participants had been consumers of the typical American diet, with a fatty acid ratio of 1:2:2 of polyunsaturated fatty acids, saturated fatty acids, and monounsaturated fatty acids. Both groups consumed a similar amount of the study oils and no other macronutrients differed (including total fat, carbohydrate, protein, fiber and calories). After three months, the olive oil group had significantly reduced systolic blood pressure, nearly significantly (P < 0.06) increased plasma HDL cholesterol and significantly increased T cell proliferation (in response to anti-CD3/anti-CD28) when compared to the control group. No other differences were found, including no changes in lipid profile or pro-inflammatory cytokine production. These results suggest using extra virgin olive oil in place of oils in a typical American diet has cardiovascular and immunological benefits for obese and overweight adults. Limitations include a small sample size and that it was impossible to determine the amounts of study oils ingested by the participants; the ad lib use of study oils may have included cooking for other family members. Rozati M, Barnett J, Wu D, et al. Cardio-metabolic and immunological impacts of extra virgin olive oil consumption in overweight and obese older adults: a randomized controlled trial. *Nutr Metab (Lond).* 2015;12:28. doi:10.1186/s12986-015-0022-5. eCollection 2015. http://www.nutritionandmetabolism.com/content/12/1/28/#ins1

**myCircadianClock**

Researchers from the Salk Institute are using a cellphone app to track and study the circadian pattern of eating in free-living healthy adults. Findings to date show the majority of participants have highly variable eating patterns and eat for 15 hr or longer each day. In a pilot intervention, a small subset of overweight participants limited their eating to a 10-12 hr window daily. They received no additional nutrition instruction regarding quantity or types of foods. After 16 weeks, body weight was reduced by an average of 7 lbs and self-assessment of sleep satisfaction, hunger at bedtime and energy level all showed significant improvement. These participants maintained weight loss after 36 weeks. The myCircadianClock study is ongoing and the app is free for users who are willing to contribute their data to this study. Download the app “myCircadianClock” from the iOS App Store or Google Play, or visit: http://mycircadianclock.mycircadianclock.org/. Gill S, Panda S. A Smartphone App Reveals Erratic Diurnal Eating Patterns in Humans that Can Be Modulated for Health Benefits. *Cell Metab.* 2015;22(5):789-798. doi:10.1016/j.cmet.2015.09.005.

**Supplements and Assessing Potential Herb-Drug Interactions**

Although herbal supplements and pharmaceutical drugs are not subject to the same regulatory process, more attention is being paid to the safety of herbal supplements and to herb-drug interactions (HDIs). Assessing potential HDIs is difficult for several reasons, including that the majority of studies investigating them use simple in vitro metabolic systems, the results of which are too variable to assist in determining clinical risk. This article makes the case that a systematic method of HDI assessment is needed and, “there is an opportunity in the scientific community to lead the way in establishing a framework” for doing so. Key components of framework should include history of safe use, literature data, incorporation of analytical characterization and dose performance. Roe A. Assessing Potential Herb-Drug Interactions in the Use of Herbal Dietary Supplements: Need for a Common Framework Approach. *HerbalGram: Volume 12, Issue 6, June 2015. http://cms.herbgram.org/heg/volume12/06June/HerbDrugInteractions.html?ts=1453948756&signature=40daaa012818f1342c5c6105f8bc959d

**HOT Nutritional Genomics Research Publications**


Epigenetics in clinical practice: Characterizing patient and provider experiences with MTHFR polymorphisms and methylfolate. *J Nutrigenet Nutrigenomics.* 2015;8(3):137-50. doi:10.1159/000440700. Epub 2015 Oct 21. (PubMed ID: 26484755) Awareness and use of genetic testing for diagnosis of MTHFR gene variants is becoming more common, and is favorably received by many patients. However, the need for proper communication and follow-up with patients is described, and additional research is encouraged.

Nutritional modulation of gene

Diets high in carbohydrate may not be appropriate for rs328 G carriers with the metabolic syndrome. Asia Pac J Clin Nutr. 2015;24(3):546-54. doi:10.6133/apjcn.2015.24.3.17. (PubMed ID: 26420199) Among the Chinese subjects in this study who were carrying two copies of the C allele (the “common” allele) of the rs328 variant of the LPL gene, a higher-carbohydrate diet was associated with lower fasting glucose levels; however, this was not true for those subjects carrying one or two copies of the less-common G allele.

Interaction between FOXO1A-209 genotype and tea drinking is significantly associated with reduced mortality at advanced ages. Rejuvenation Res. 2015 Sep 28. [Epub ahead of print] (PubMed ID: 26414954) For the Chinese subjects in this study, as association between the beneficial effects of drinking green tea on mortality were found to be considerably more pronounced among those who carry two copies of the A allele of the rs2755209 variant of the FOXO1A gene (also known as FOXO1). For those with Asian ancestry, the A allele is the less-common or “minor” allele, but is more common among those of European ancestry.

Molecular targeted intervention for pancreatic cancer. Cancers (Basel). 2015;7(3):1499-542. doi:10.3390/cancers7030850. (PubMed ID: 26266422) Table 1 within this extensive review lists 28 different substances and associated genes which are relevant to pancreatic cancer. Dietary strategies for the prevention or treatment of pancreatic cancer are discussed, with mention of various phytochemicals and pharmaceutical agents.

Cholesterol ester transfer protein polymorphism rs5882 is associated with triglyceride-lowering in response to plant sterol consumption. Appl Physiol Nutr Metab. 2015;40(8):846-9. doi:10.1139/apnm-2015-0039. (PubMed ID: 26244602) Significant reduction of serum triglycerides was associated with use of plant sterols among those who carry two copies of the minor G allele of the rs5882 variant (also known as the 1264A-G variant) of the CETP gene. No significant reduction was found among those who carry one or two copies of the A allele.


Nutrigenetics of cholesterol metabolism: observational and dietary intervention studies in the postgenomic era. Nutr Rev. 2015;73(8):523-43. doi:10.1093/nutrit/nvu016. Epub 2015 Jun 27. (PubMed ID: 26117841) Tables 1 and 2 provide a listing of reports and specific gene variants that were found to be relevant to cholesterol metabolism. Discussion of selected items is also provided, which supports the usefulness of nutrigenetics research.


Inheritance: How Our Genes Change Our Lives—and Our Lives Change Our Genes
Sharon Moalem, MD, PhD
Softcover: $15.99
ISBN: 978-1455549436

Reviewed by Kelly Morrow, MS, RDN, Associate Professor of Nutrition at Bastyr University and the Nutrition Clinic Coordinator at the Bastyr Center for Natural Health. She is also Chair-elect for Dietitians in Integrative and Functional Medicine. Kelly can be reached at kmorrow@bastyr.edu.

Every day we are changing our genetic expression based on what we eat, what we are exposed to in the environment and how we feel. Even more interesting is the fact that some of these expressions or “tags” are passed on to successive generations. In this way, we are all writing genetic history that will potentially be expressed for multiple generations. Whatever we have lived through—war, peace, feast, famine, heath or disease—it is all reflected in our genetic expression.

For example, some researchers have studied the offspring of women who were pregnant in New York City during 9/11 and also children who have a history of being bullied. They found that traumatic experiences either in utero and/or in life cause an alteration in a gene that reduces the production of serotonin, increasing susceptibility to depression.

It turns out that some genes are not easily modifiable; genes that control eye, skin and hair color, for example, and genes for some inheritable syndromes. Dr. Moalem is a self-proclaimed medical anthropologist, a physician who studies rare genetic diseases and identifies the ways in which genes are modifiable and not. Inheritance is an ideal book for those who are new to this concept.

We now know that our genes are not our destiny; their expression is malleable and fluid in a way that Dr. Moalem describes as “flexible inheritance.” We are able to accept or reject our genetic inheritance based on the way we choose to live. Genetic testing is now easy and relatively affordable and can help identify ways in which dietary and lifestyle changes can have a profound impact on health. It is possible to find out which types of foods match your genetic inheritance—how you metabolize caffeine and whether your blood pressure will be affected, whether you tolerate lactose, how much fat you can tolerate without developing heart disease—to name a few.

Genetic testing is not always necessary though; this book gives examples about how to identify genetic aberrations using a careful interview and a physical/visual exam. We all are able to identify visual differences if we look closely. The spacing, color and shape of the eyes and lashes can give information about whether a person may be more at risk for a heritable anemia, learning disabilities or edema (among other conditions). A person with a lot of wrinkles on the face can potentially be more at risk for a collagen disorder and osteoporosis.

Dr. Moalem has an accessible writing style. Inheritance is filled with patient stories, and (sometimes humorous) personal anecdotes that help bring the genetic information to life. Even though the book is written for the lay audience, it is at a sufficiently high level to keep an RDN’s interest. However, the book is weighted more heavily on how to identify—rather than to treat—genetic aberrations, leaving the reader wishing for more information about specific diet and lifestyle recommendations. Even so, most would find it an informative read. Dr. Moalem has developed an encyclopedic understanding of the interconnectedness between one’s outward appearance and symptoms and their genetic expression. In one passage, he describes his wife’s embarrassment and frustration about attending social events with him because he is constantly sizing people up and looking at them in ways that are not always discrete.

If you enjoy this book, Dr. Moalem’s previous book, Survival of the Sickest, about how some chronic diseases actually helped our ancestors survive, may also be of interest.

Eat Right for Your Sight
Jennifer Trainer Thompson Johanna M. Seldon, MD, ScM
Softcover: $24.95
ISBN 978-1-61519-249-6

Reviewed by Sarah Harding Laidlaw, MS, RDN, CDE The Integrative RDN editor. Contact Sarah at peaknut70@gmail.com

New to exhibiting at FNCE® this year was the American Macular Degeneration Foundation (AMDF) that introduced their new book, Eat Right for Your Sight: Simple, Tasty Recipes that Help Reduce the Risk of Vision Loss from Macular Degeneration. More a cookbook than a text on macular degeneration or eye sight, it does provide some basic information about the disease and steps that can be taken to reduce vision loss as one ages.

The book opens with a forward by Chip Goehring, President, Board of Trustees of the AMDF, who told of his diagnosis of macular degeneration at age 39. A successful practicing attorney, he quit his practice and founded the AMDF. The cookbook is a culmination of his invitation to a team of food professionals to come to his home in rural western Massachusetts to create recipes and meals from seasonal...
ingredients. The cookbook focuses on the science behind the ingredients known for vision and overall health.

There is a brief description about what age related macular degeneration (AMD) is and the difference between the two types—dry and wet. This is followed by a rather detailed description of what foods are beneficial for eye health. A handy and easy to use table lists the major nutrients, their food sources, and the USDA Dietary Reference Intake and Recommended Dietary Allowance for Ocular health. There is a list of foods to keep in the pantry so that making the recipes is less daunting. More information on eye health and AMD is presented in the author introduction by Dr. Seddon, Director of Ophthalmic Epidemiology and Genetic Service at Tufts University, and the Getting Started section by author Jennifer Trainer Thompson.

Each recipe includes a nutritional profile and information about the key nutrients in the recipe; many include an appealing picture of the finished recipe. Contributors to the cookbook include many well-known restaurateurs and chefs, as well as Lake Austin Spa Resort and Andrew Weil, MD.

Recipes include Chicken with Mushrooms and Thyme (a favorite among reviewers), Salmon with Peppered Balsamic Strawberries, a Roasted Butternut Squash and Cranberry Salad, and Chocolate Beet Cupcakes. The book is in large print with a blue introductory paragraph; recipes are in black print, a benefit for those with limited vision. All things considered, this is an excellent resource for the RDN’s library—for their families and clients alike. And, the principles apply not only to AMD, but to a healthy diet as well.

**Yoga and Diabetes**
Annie B. Kay, MS, RDN, RYT
Lisa B. Nelson, MD

Softcover, spiral bound: $19.95

Reviewed by Sarah Harding Laidlaw, MS, RDN, CDE editor of The Integrative RDN. Contact Sarah at peaknut70@gmail.com.

DIFM member Annie B. Kay, lead nutritionist at the Kripalu Center for Yoga and Health, has written a practical guide for persons with diabetes who are interested in incorporating yoga into their daily lives. The book illustrates how yoga can improve diabetes through the mind-body practices associated with it—physical movement, yoga breathing, deep relaxation, and meditation. As these are adopted, it seems natural that overall wellness improves with a healthier diet and physical activity, resulting in improved blood pressure, cholesterol and glucose levels.

A brief history of yoga is presented in the second chapter: The Practice of Yoga. The eight limbs of yoga are listed with a word or two describing a way of living in balance. For example, the first limb, Yamas, represents restraints that include non-harming, truth, non-stealing, self-restraint and non-hoarding. This chapter encourages readers to find a dedicated space for yoga where they will not be distracted, designate a regular time, and go at their own pace to avoid injury. Practice begins with breathing and focusing inward to promote calmness and relaxation. The physical aspect that includes postures is introduced here; it is later revisited in a detailed section that addresses special considerations for persons with diabetes such as hypoglycemia and medications. A table recommending modifications to accommodate diabetic complications such as retinopathy or peripheral neuropathy is useful.

Chapter three presents the yoga postures. Illustrated with pictures of individuals and detailed instructions on how to achieve the postures is helpful for those who are unfamiliar with the postures. Props to support comfortable alignment and prevent injury are suggested and used in the illustrations.

Chapter four weaves the postures into programs for the beginner as well as the advanced student. Included is a sidebar that describes the difference between stretch and strain and how to avoid overstretching or straining. Programs are short, 10 minutes and gentle, moderate or vigorous. Longer programs up to 45 minutes with varying difficulty are also offered. Modification for health conditions including pregnancy are suggested, again in varying lengths of time, but gentle in nature.

The book concludes with information on mindfulness, mindfulness meditations, eating mindfully, and navigating change including goal setting, developing affirmations, visualization, and embodying affirmations. There is a concise table of common self-limiting thoughts and how to reframe them, as well as a sample mindful plan for beginning a yoga practice.

This guide, although written for persons with diabetes, is one that any person can use to introduce themselves to the practice of yoga. It is a sensible approach for those who are new to the practice, are novices, or who have been away from yoga for a period of time. This guide can confidently be recommended as a resource for the RDN’s professional as well as personal library.

---

**DIETITIANS IN INTEGRATIVE AND FUNCTIONAL MEDICINE**

A dietetic practice group of the Academy of Nutrition and Dietetics
The Benefits of Select Herbs and Spices for Glucose Control

Many herbs and spices have medicinal properties. Integrative and functional medicine dietitians are called upon to advise patients on the effect of herbs and spices in both culinary preparations and dietary supplements. This fact sheet reviews the potential benefits of herbs and spices most commonly used for glucose control.

<table>
<thead>
<tr>
<th>Herb or Spice Description</th>
<th>Proposed Mechanism of Action and Potential Effect on Glucose Control</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FENUGREEK</strong>&lt;br&gt;Scientific name: <em>Trigonella foenumgraecum</em></td>
<td>Fenugreek seeds contain 50% dietary fiber, which may slow glucose absorption via slowed GI transit. The seeds also contain a high amount of 4-hydroxyisoleucine, a free amino acid that directly stimulates insulin in the presence of moderate to high glucose concentrations.²&lt;br&gt;&lt;br&gt;Fenugreek seed is possibly effective for diabetes, based on clinical research showing improved blood glucose control with consumption of between 5-50 grams of powdered fenugreek seed with 1-2 meals per day for between 4 days and 24 weeks. Improvements are seen in postprandial and fasting blood glucose levels, glucose tolerance tests, and urinary glucose in persons with type 2 diabetes. Postprandial glucose levels were not affected in a study using a lower dose of 2.5 grams fenugreek seed.²&lt;br&gt;&lt;br&gt;In one study, one gram of fenugreek seed extract daily for two months significantly reduced fasting blood glucose as much as diet modification and exercise in persons with type 2 diabetes. In another trial, fenugreek powder reduced the postprandial blood glucose rise in persons with type 2 diabetes to a level similar to persons without diabetes. A preparation of fenugreek seed powder taken for 10 days cut the 24-hr urine glucose levels of persons with type 1 diabetes in half.²</td>
<td><strong>CULINARY</strong>&lt;br&gt;Dried fenugreek seeds are commonly used in cooking, especially in Indian cuisine. They are a rich source of protein, fiber, and omega 3 fatty acids.¹ The seeds are ground for use as a powder or simply heated in a pan to brown them and extract more flavor. Use these seeds in Indian dishes like curries and similar sauces, and in spice mixtures for pickles.</td>
</tr>
<tr>
<td><strong>TURMERIC</strong>&lt;br&gt;Scientific name: <em>Curcuma longa</em></td>
<td>Curcumin, the major active constituent in turmeric, has anti-inflammatory properties that likely work by inhibiting signaling pathways for prostaglandins, leukotrienes, and other pro-inflammatory cytokines. Turmeric also appears to inhibit the growth of cancer cells, and has some anti-bacterial and anti-viral activity. Overall, there is insufficient evidence to rate the effectiveness of turmeric for glucose control. Still, preliminary evidence suggests that turmeric may also have some protective effect against type 2 diabetes. One study showed that a daily extract of 1500 milligrams of curcumin for 9 months reduced the number of persons with prediabetes who developed type 2 diabetes. Also, animal studies show that curcumin can reduce blood glucose and glycosylated hemoglobin (HbA1C) levels in persons with diabetes.¹</td>
<td><strong>SUPPLEMENT</strong>&lt;br&gt;For diabetes, 10 to 15 grams of fenugreek seed per day, with meals. One gram per day of fenugreek seed extract is used.²</td>
</tr>
</tbody>
</table>

**MODERATE Interaction with Diabetes Medications: Be cautious with this combination.** Because fenugreek may reduce blood glucose levels, it may have an additive effect with diabetes medications and cause hypoglycemia. Blood glucose levels should be monitored closely, and medication dosage may need adjustment.²

**MODERATE Interaction with Diabetes Medications: Be cautious with this combination.** Because turmeric may lower blood glucose levels, it may have an additive effect with diabetes medications and cause hypoglycemia. Blood glucose levels should be monitored closely, and medication dosage may need adjustment.⁴
**CINNAMON**

Scientific name: *Cinnamomum aromaticum*

Cinnamon is the dried inner bark from a variety of evergreen trees native to Southeast Asia. It has a reddish brown color and a sweet, pungent aroma that is also described as woody or earthy.

There are many different types of cinnamon sold as “cinnamon” spice. Cassia cinnamon is the type that may be effective for glucose control.

Cassia cinnamon is studied for its effect on blood glucose and HbA1C levels in persons with diabetes, in part because the polyphenolic compounds in cinnamon modulate the insulin receptor in such a way as to increase insulin sensitivity, and because cinnamon extracts appear to increase glucose uptake and glycogen synthesis. These actions have potential to improve blood glucose control.

However, overall there is contradictory evidence of the effectiveness of cinnamon for treating diabetes. Some studies of cinnamon supplementation in doses of 1-6 grams daily for as little as 40 and as many as 90 days showed significant decreases in HbA1C and fasting glucose, while other clinical trials showed no significant difference in these biomarkers with similar supplementation.

**MODERATE Interaction with Diabetes Medications: Be cautious with this combination.** Because cinnamon may lower blood glucose levels, it may have an additive effect with diabetes medications and cause hypoglycemia. Blood glucose levels should be monitored closely, and medication dosage may need adjustment.

**GINGER**

Scientific name: *Zingiber officinale*

Ginger grows in warm climates, commonly in India and China. Ginger root has been used as a spice and herbal medicine for thousands of years in Asian, Indian, and Arabic traditions. It has a very pungent flavor, thanks to the volatile oils and phenol compounds, which researchers believe are also what gives ginger its medicinal properties.

Ginger root contains a number of bioactive compounds, including gingerol, shogaol, and terpene volatile oils, with a variety of pharmacologic effects. The concentration and activity of these constituents varies with the form of ginger (whether it is fresh or dry, and how old it is).

The anti-inflammatory and anti-nausea effects of ginger are well documented. Preliminary evidence suggests that ginger may also have hypoglycemic effects. In animal studies ginger has been shown to increase insulin release, which may be responsible for the glucose-lowering effects observed in some studies. Ginger is also known to have strong anti-oxidant properties, which may contribute to its overall health benefits. Overall, there is insufficient evidence to rate the effectiveness of ginger for glucose control.

**MINOR Interaction with Diabetes Medications: Be watchful with this combination.** Ginger might increase insulin levels and/or decrease blood glucose levels, and could theoretically have an additive effect with diabetes medications and cause hypoglycemia.

---

**CULINARY**

Cinnamon is used in the US as a ground spice mainly in baked goods and to flavor desserts, and it is also used in Asian spice blends.

**SUPPLEMENT**

For diabetes, 1 to 6 grams (0.2-1.2 teaspoons) of cassia cinnamon daily for up to 4 months have been used. Cinnamaldehyde, a major antioxidant component in cinnamon, is a common ingredient in supplements.

Ginger root can be eaten fresh in sliced or grated form. Fresh grated ginger can easily be made into a tea with boiled water. Powdered ginger spice is used widely in Asian cooking and as an accent in baked goods. Pickled ginger goes well with sushi.

Ginger is sold as a powder or extract for use as a supplement. Dosage varies.

---

September 2015. This fact sheet is intended to serve as a summary of research reviewed on the Natural Medicines Comprehensive Database Website. Please visit the website for primary references.


Chair’s Corner

It’s that time of year when campaign strategies, political debates, and the presidential candidates’ latest sound bites addressing some of the major issues we face as a nation are scattered across media platforms. Whether you stay up to date with the issues, participate in coordinated campaign support programs, or run the other way, government decisions and legislation affect us all.

We have continued to observe the tumultuous path of the Dietary Guidelines for Americans (DGAs), issues regarding licensure and reimbursement for our services, and legislation related to a variety of healthcare issues. Our DC office, Academy members and DIFM are working hard to stay abreast of the issues in order to advocate for positive change, advance our profession and provide services that are beneficial to the individuals in need of nutrition intervention across the country.

Our Policy Advocacy Leader, Olivia Wagner, MS, RDN, LDN and our Executive Committee are regularly and diligently communicating information and finding ways to make it easier to take action on these critically important issues. We need your continuous help and support. Please take a moment to participate when you see ACTION ALERTS in our electronic communications. It only takes a moment to send your congressman a letter or make a phone call, but each and every one truly matters. As the Academy’s Political Action Committee says, “If dietetics is your profession, policy should be your passion.” The more of us who are at the table, the more likely we can make real change happen. Together, anything is possible. DIFM is over 4000 members strong and we take our role in supporting you, the integrative RDN, very seriously. We are continuing to do what we can to actively EXPAND and ENHANCE DIFM by:

• elevating our current member benefits, such as:
  • updating our website to be more user-friendly, comprehensive, and filled with more easily-accessible resources and information
  • including a blog addressing public policy, hot topics, nutrigenomics, supplements, research and more
  • continuing to mail The Integrative RDN newsletter with an expanded digital version available on our website
  • investigating ways to implement integrative and functional medicine in curriculum and practicum competencies
  • developing a speakers’ bureau to engage more members in fulfilling requests for speakers across the country at a variety of conferences and venues
  • exploring topics for a Pre-FNCE® program to further support The Integrative RDN in a dynamic way with an application-oriented focus

This issue of The Integrative RDN is focused on summarizing the Food & Nutrition Conference & Expo™ (FNCE®). If you were unable to join us in Nashville, TN, we hope you can get some useful pearls of wisdom from our session reviews, but also hope you’ll mark the calendar now to join us for our third annual Mind Body Happy Hour in Boston, and stay tuned for updates on Pre-FNCE® possibilities.

DIFM’s own Executive Committee officers Mary Beth Augustine, RDN, CDN, FAND; Stephanie Harris, PhD, RDN, LDN; and Kathie Swift, MS, RDN, LDN presented a poster on the survey results from the research conducted by DIFM and the Dietetics Practice Based Research Network (DPBRN). The results of this project were also published in the September issue of the Journal of the Academy of Nutrition and Dietetics (JAND) titled Integrative Medicine: Education, Perceived Knowledge, Attitudes, and Practice among Academy of Nutrition and Dietetics Members (http://www.andjrnl.org/article/S2212-2672(15)01264-2/abstract).

I invite you to read and share this article to explore the opportunities and role the integrative RDN has in advancing dietetics and further supporting nutrition professionals as the “nutrition experts.” DIFM leaders would like to continue to build on their work with DPBRN, highlighting the benefits and need for further implementation and exploration of integrative and functional medicine, as it is clear there is a growing need and benefit for this area across the dietetics spectrum.

Finally, there’s an interesting paradigm happening in our culture. According to the National Institute of Health’s Office of Dietary Supplements, sales for supplements in 2014 was reported to be approximately $36.7 billion. A variety of statistics on usage have ranged from 30% of the population to the NHANES data from 1999-2000 showing 52% of the population took a supplement in the past month. We also know that the weight loss industry is a multi-billion dollar industry, yet, food insecurity affects 48.1 million people and the census bureau reported 46.7 million people living in poverty in 2014. As RDNs, we have the ability to lend our expertise and advocacy to both ends of the spectrum. We can educate and recommend appropriate supplements that benefit our Integrative and Functional Medical Nutrition Therapy (IFMNT) interventions, scrutinize research and be proponents of rigorously tested, authentically derived supplements. We can also continue being actively involved in policy and legislation for food assistance program changes, collaborating further with food banks and organizations in efforts to improve individuals’ nutritional health status despite their financial limitations. Within our communities we can address the lack of accessibility to healthy foods by supporting local agriculture and coming together to innovate necessary change.

This new year let’s recommit to our efforts at a grassroots level within our own communities, but also as a group on the national level, to promote health and nutrition for all. I am thankful for each and every one of you; you make DIFM what it is. May we continue to be the change we want to see in healthcare. May 2016 bring you renewed passion and energy as well as an abundance of joy and peace.

Cheers, Monique.
Editor’s Notes

Welcome to 2016!

Looking out at the snowy landscape in Colorado reminds me how quickly time passes. Summer seems a long way past and a long way in the future! Winter also reminds me of the end of the year and beginning of the next. On behalf of TheIntegrativeRDN newsletter team, DIFM and myself, we wish you a happy and healthy 2016.

As customary, the winter issue of TheIntegrativeRDN provides members with reviews and highlights from FNCE®. Due to the number of excellent topics related to integrative and functional medicine, the reviews are divided between the print and electronic versions—but don’t despair, all reviews and relevant information are available at the DIFM website, IntegrativeRD.org, under archived newsletters.

Also offered in this issue is an introduction to the importance of methylation. We are planning future articles on this important topic; check the DIFM website, IntegrativeRD.org for updates. Future issues are being planned to include brief reviews of biochemical/metabolic pathways pertinent to nutritional genomics. We hope this review and future ones will be helpful as you navigate through the field.

DIFM is now over 4000 members strong. We encourage you to tell colleagues about the many opportunities for learning available through the DPG. We are looking forward to the release of the Certificate of Training in Integrative and Functional Medicine in the Spring of 2016. Numerous organizations with interest in the field are partnering with DIFM to provide high quality webinars and information that will benefit members and clients alike. And of course, preparation for FNCE® 2016 in Boston is well underway with plans for some new and exciting opportunities—stay tuned.

As always, I encourage member feedback and participation in the newsletter. The Newsletter Team is working on some changes in format that I think members will find enjoyable and beneficial. Please feel free to contact me at peaknut70@gmail.com with potential topics or if you are interested in contributing to the newsletter in any way. This is YOUR newsletter and our goal is for it to be as useful and informative as it can be.

Until Spring.

Sarah

Dietitians in Integrative and Functional Medicine

a dietetic practice group of the

Academy of Nutrition and Dietetics

In seeking sponsors, DIFM has established product standards for products and services of value to the integrative and functional medicine field. We consider product quality, efficacy, manufacturing, and business practices among other criteria. We encourage all professionals and individuals to choose products aligned with their own specific standards.
SAVE THE DATE…
DIFM SYMPOSIUM at FNCE 2016

DIFM will host a full day conference prior to the opening session at FNCE in Boston. The Symposium will focus on herbal medicine and dietary supplements in the application of specific health conditions, including cardiovascular disease, metabolic syndrome, inflammation, sleep/stress and gut health. Therapeutic application will address dosing, delivery, current research and safety concerns. Along with research to support their usage, there will be discussion regarding functional lab testing, nutritional genomics and nutrition focused physical exam as it pertains to each supplement. The distinguished speakers are, Dr. Mary Bove, ND and Dr. Sheila Dean, DSc, RD, LD, CCN, CDE.

DIFM Member Reception at FNCE:

DIFM will be hosting its’ Third Annual Mind-Body Happy Hour at FNCE. Come join us for a night of relaxing night of mind-body therapies and networking!

The Results Are In and The Winners Are …

DIFM Nominations Committee is pleased to announce our incoming 2016-2017 DIFM Leaders: They are smart, forward thinking, and dedicated to moving our profession forward. Here’s to a great year for DIFM!!

Chair Elect: Mary Purdy MS, RDN
Treasurer: Dana Elia MS, RDN, LDN
Nominating Chair Elect: Stephanie Harris PhD, RD, LD
Nominating Committee Member: Betsy Redmond PhD, MMSc, RDN
HOD Representative: Mary Beth Augustine RDN, CDN, FAND

Thank you,
Alicia
Nominating Chair 2015-2016

Members in the news
Wyoming Achieves Medicaid Recognition of RDNs

The Wyoming Public Policy Panel scored its first big victory on its path toward recognition of RDNs in their state Medicaid program. Georgia Boley, MS, RDN, LD, the Wyoming Academy of Nutrition and Dietetics Reimbursement Representative, presented October 20th to Wyoming’s Labor, Health, and Social Services Legislative Committee a proposed bill allowing licensed dietitians to be recognized as direct health care providers for Wyoming Medicaid. The committee voted to move forward with this bill, and will formally vote on sponsoring it as a committee bill January 10th, 2016. Stay tuned for more information and updates to this legislation.

Presenting-Kathie Madonna Swift, MS, RDN, LDN, FAND

Kathie Madonna Swift, MS, RDN, LDN, FAND will be presenting a session at the Today’s Dietitian conference. The session titled Gut Health: A Holistic Approach and more information about the symposium and Kathie’s presentation can be found at http://www.todaysdietitian.com/SS16/.

CONGRATULATIONS!

On behalf of the DIFM executive committee, please join us in extending our gratitude and congratulations to the DIFM members who have been members of the Academy for 50 years!

Linda Bethel, MS, RDN, LDN, CLT (Florida)
Mary Bryant, MA (Massachusetts)
Doris Sabin, MS (New Jersey)

They have been instrumental in the growth and development of the Academy through their ongoing support and contributions to the profession. Thank you for your continued commitment to taking an integrated and personalized approach to nutrition, health, and healing.

Join us on…
Facebook -

Twitter -
https://twitter.com/integrativerdn

Pinterest -
https://www.pinterest.com/integrativerdn/

Were you recently featured in any media outlets or conferences highlighting integrative practices? Let us know so we can share your successes. Email Mary Purdy, MS, RDN, Communications Chair at MaryPurdyRD@gmail.com.
<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monique M Richard, MS, RDN, LDN ∆</td>
<td>Chair 2015-2016</td>
<td><a href="mailto:mmr2v@mtmail.mtsu.edu">mmr2v@mtmail.mtsu.edu</a></td>
</tr>
<tr>
<td>Kelly Morrow, MS, RDN, CD ∆</td>
<td>Chair Elect 2015-2016</td>
<td><a href="mailto:kmorrow@bastyr.edu">kmorrow@bastyr.edu</a></td>
</tr>
<tr>
<td>Mary Beth Augustine, RDN, CDN, FAND ∆</td>
<td>Past Chair 2014-2015</td>
<td><a href="mailto:PastChairDIFM@gmail.com">PastChairDIFM@gmail.com</a></td>
</tr>
<tr>
<td>Stephanie Harris, PhD, MS, RDN, LD ∆</td>
<td>Treasurer 2014-2016</td>
<td><a href="mailto:DIFMTreasurer@gmail.com">DIFMTreasurer@gmail.com</a></td>
</tr>
<tr>
<td>Jessica Redmond, MS, RD, CSCS ∆</td>
<td>Secretary 2015-2017</td>
<td><a href="mailto:jess.g.redmond@gmail.com">jess.g.redmond@gmail.com</a></td>
</tr>
<tr>
<td>Alicia Trocker, MS, RDN ∆</td>
<td>Nominating Committee Chair 2015-2016</td>
<td><a href="mailto:atmsrd@aol.com">atmsrd@aol.com</a></td>
</tr>
<tr>
<td>Aarti Batavia, MS, RDN, CLT, CFSP, IFMCP</td>
<td>Nominating Committee Chair 2015-2016</td>
<td><a href="mailto:aartibatavia@gmail.com">aartibatavia@gmail.com</a></td>
</tr>
<tr>
<td>Lisa Dorfman, MS, RD, CSSD, LMHC, FAND</td>
<td>Nominating Committee Member 2015-2016</td>
<td><a href="mailto:foodfitnes@aol.com">foodfitnes@aol.com</a></td>
</tr>
<tr>
<td>Mary Purdy, MS, RDN</td>
<td>Communications Chair 2015-2017</td>
<td><a href="mailto:MaryPurdyRD@gmail.com">MaryPurdyRD@gmail.com</a></td>
</tr>
<tr>
<td>Malorie R Blake, MS, RDN, LDN, CNSC</td>
<td>Communications Associate 2015-2016</td>
<td><a href="mailto:mblake822@gmail.com">mblake822@gmail.com</a></td>
</tr>
<tr>
<td>Susan Wyler, MPH, RDN, LDN</td>
<td>Development Chair 2014-2016</td>
<td><a href="mailto:susanwyler@mac.com">susanwyler@mac.com</a></td>
</tr>
<tr>
<td>Clarina Kennedy, RDN</td>
<td>Development Associate 2015-2016</td>
<td><a href="mailto:clarinar@hotmail.com">clarinar@hotmail.com</a></td>
</tr>
<tr>
<td>Kathy Moore, RDN, LD, CCN</td>
<td>DIFM Historian 2015-2016</td>
<td><a href="mailto:moorenutritiondifm@gmail.com">moorenutritiondifm@gmail.com</a></td>
</tr>
<tr>
<td>Denine M. Rogers, RDN, LD, FAND</td>
<td>Diversity Chair 2015-2016</td>
<td><a href="mailto:hepsalivinghealthy@gmail.com">hepsalivinghealthy@gmail.com</a></td>
</tr>
<tr>
<td>Rita Kashi Batheja, MS, RDN, CDN, FAND</td>
<td>Diversity Vice Chair 2015-2016</td>
<td><a href="mailto:krbatheja@gmail.com">krbatheja@gmail.com</a></td>
</tr>
<tr>
<td>Mary Alice Gettings, MS, RDN, LDN, CDE</td>
<td>FNCE 2015 Planning Chair</td>
<td><a href="mailto:diffmma@gmail.com">diffmma@gmail.com</a></td>
</tr>
<tr>
<td>Ann Sukany-Suls, M.Ed, RDN, LD</td>
<td>FNCE 2015 Planning Vice Chair</td>
<td><a href="mailto:ann.suls@gmail.com">ann.suls@gmail.com</a></td>
</tr>
<tr>
<td>Danielle Omar, MS, RDN</td>
<td>Marketing Chair 2015-2017</td>
<td><a href="mailto:danielle@foodconfidence.com">danielle@foodconfidence.com</a></td>
</tr>
<tr>
<td>Dana Elia, MS, RDN, LDN</td>
<td>Member Services Chair 2015-2017</td>
<td><a href="mailto:DIFMMemberServices@gmail.com">DIFMMemberServices@gmail.com</a></td>
</tr>
<tr>
<td>Lesli Bitel-Koskela, MBA, BS, RDN, LD</td>
<td>Mentor/Coaching Chair 2015-2017</td>
<td><a href="mailto:Leslibitelk@gmail.com">Leslibitelk@gmail.com</a></td>
</tr>
<tr>
<td>Laura Tolosi, MS, RDN, CCN</td>
<td>Network Chair 2015-2017</td>
<td><a href="mailto:DIFMnetworkchair@gmail.com">DIFMnetworkchair@gmail.com</a></td>
</tr>
<tr>
<td>Mary Therese Hankinson, MBA, MS, RD, EDAC</td>
<td>Network Associate 2015-2016</td>
<td><a href="mailto:mthank@aol.com">mthank@aol.com</a></td>
</tr>
<tr>
<td>Sarah Harding Laidlaw, MS, RDN, MPA, CDE</td>
<td>Newsletter Editor 2015-2016</td>
<td><a href="mailto:peaknut70@gmail.com">peaknut70@gmail.com</a></td>
</tr>
<tr>
<td>Jacqueline Santora Zimmerman, MS, RDN</td>
<td>Newsletter Editor-Associate 2015-2016</td>
<td><a href="mailto:jacq.zimmerman@gmail.com">jacq.zimmerman@gmail.com</a></td>
</tr>
<tr>
<td>Emily D. Moore, MS, RDN, LDN</td>
<td>Newsletter Copy Editor 2015-2016</td>
<td><a href="mailto:emilydavismoor@gmail.com">emilydavismoor@gmail.com</a></td>
</tr>
<tr>
<td>Shari B Pollack, MPH, RDN</td>
<td>Newsletter CPE Editor/CPE Item Writer 2015-2016</td>
<td><a href="mailto:sbethp@gmail.com">sbethp@gmail.com</a></td>
</tr>
<tr>
<td>Dina Ranade, RDN, LD</td>
<td>Newsletter Resource Reviews Editor 2015-2016</td>
<td><a href="mailto:dranade@comcast.net">dranade@comcast.net</a></td>
</tr>
<tr>
<td>Diana Noland, MPH RD CCN LD</td>
<td>Nutritional Genomics Advisor 2015-2017</td>
<td><a href="mailto:diana@diananoland.com">diana@diananoland.com</a></td>
</tr>
<tr>
<td>Olivia Wagner, MS, RDN, LDN</td>
<td>Policy Advocacy Leader 2015-2017</td>
<td><a href="mailto:oliviawagner28@gmail.com">oliviawagner28@gmail.com</a></td>
</tr>
<tr>
<td>Therese Berry, MS, RDN, LD, CNSC</td>
<td>Professional Advancement Chair 2014-2016</td>
<td><a href="mailto:austint@coramhc.com">austint@coramhc.com</a></td>
</tr>
<tr>
<td>Michelle Loy, MPH, MS, RDN, CSSD</td>
<td>Social Media Chair 2015-2016</td>
<td><a href="mailto:michelle@gowellnessco.com">michelle@gowellnessco.com</a></td>
</tr>
<tr>
<td>Eliza Mellion</td>
<td>Student Member Services Chair 2015-2016</td>
<td><a href="mailto:difmstudentchair@gmail.com">difmstudentchair@gmail.com</a></td>
</tr>
<tr>
<td>Ryan Whitcomb, RD, CDN, CLT</td>
<td>Volunteer Chair 2015-2017</td>
<td><a href="mailto:ryan@gutrxn.com">ryan@gutrxn.com</a></td>
</tr>
<tr>
<td>Amy Jarck</td>
<td>Executive Asst/Website Mgr/ EML Coordinator</td>
<td><a href="mailto:info@integrativeRD.org">info@integrativeRD.org</a></td>
</tr>
</tbody>
</table>
Executive Committee Members

Chair 2015-2016
Monique Richard, MS, RDN, LDN
mmr2v@mtmail.mtsu.edu

Chair Elect 2015-2016
Kelly Morrow, MS, RDN
kmorrow@bastyr.edu

Past Chair 2015-2016
MaryBeth Augustine, RDN, CDN, FAND
DIFMChair@gmail.com

Treasurer 2014-2016
Stephanie Harris, PhD, MS, RDN, LD
DIFMTreasurer@gmail.com

Secretary 2015-2017
Jessica G Redmond, MS, RD, CSCS
jess.g.redmond@gmail.com

For the full Executive Committee list and contact information, please see the online version of the newsletter.

Thank You to our SPONSORS!

• Gaia Herbs Professional Solutions
• Institute For Functional Medicine
• Metagenics