**Institute of Food Technologists**
525 W. Van Buren Street., Suite 1000
Chicago, IL 60607-3830 USA

**+1.312.782.8424**
+1.312.782.8348 Fax
**ift.org**

May 7, 2015

The Honorable Sylvia Mathews Burwell
Secretary of Health and Human Services
200 Independence Avenue, SW
Washington, DC 20201

The Honorable Thomas J. Vilsack
Secretary of Agriculture
1400 Independence Ave, SW
Washington, DC 20250

Re: Comments on the 2015 Dietary Guidelines Advisory Committee (DGAC) Report

Dear Secretaries Burwell and Vilsack:

The Institute of Food Technologists (IFT) appreciates the opportunity to provide comments on the 2015 DGAC Report. Founded in 1939, the Institute of Food Technologists is committed to advancing the science of food. Our non-profit scientific society—more than 17,000 members from more than 95 countries—brings together food scientists, technologists and related professionals from academia, government, and industry. IFT commends the members of the DGAC for:

- their call to action to bring individuals and organizations, private business, and communities to work together to achieve a "culture of health" where healthy lifestyle choices are easy, accessible, and affordable
- identifying multiple healthy dietary patterns that epitomize a healthy diet, supporting food-based dietary recommendations to obtain needed nutrients, and recognizing that all food groups can be a part of healthy dietary patterns to help meet individual's dietary needs, personal preferences and cultural traditions.

IFT underscores the importance of ensuring that the recommendations regarding food and nutrient intake are supported by the preponderance of credible scientific evidence. IFT urges that the 2015 Dietary Guidelines be practical, actionable and achievable. Food scientists and technologists are partners with a shared commitment to developing healthy foods based on the *Dietary Guidelines for Americans* (DGA). Food science and technology enhances our ability to deliver nutrients via foods that are consistent with the diverse lifestyles, cultures, and consumer food choices. Thus, the integration and collaboration of food science and technology and nutrition is critical to improve the availability and nutritive quality of foods. The challenge and goal for food science and technology and nutrition is to develop innovative solutions to provide safe food, expand nutrition security, address under- and over-nutrition, and reduce and/or prevent diet-related disease risks. The DGAC Report highlights many opportunities for food scientists and technologists to support a dynamic and rapidly changing food environment. For example, the DGAC encourages the food industry to continue to reformulate and make changes to improve the nutritional profile of certain foods, and to market these improved products to consumers (DHHS/USDA 2015).

Food science and technology will continue to play an integral role in making more healthy food choices available to consumers. These choices are integral to helping consumers follow the recommended

dietary patterns to achieve a "culture of health." Increasing concerns related to the role of nutrition in health and growing interest in the food supply are important determinants of consumer's food choices. In addition to these determinants, the recommendation for food-based approach will further encourage the development of health-focused foods and functional foods by challenging food scientists for innovations and championing novel solutions to address nutritional concerns. For the past few decades, food scientists and technologists have been responding to the dietary guidance by providing innovative healthful foods and beverages to address the nutritional challenges identified in the 2010 and previous *Dietary Guidelines for Americans*.

**Summary**

Food provides nutrition only when consumed. Consumers' taste preferences play a key role in the food choices they make. Other factors that affect food choices include cost, convenience, and availability. Through the application of food science and technology, all consumers including those of lower socioeconomic status can have access to safe, nutritious and affordable foods that improve their health outcomes (Slavin 2015). Foods and beverages should be valued on the complete nutritional package they provide in addition to the frequency and amounts consumed, not simply on the disparagement of one or two food components or the degree of processing. Food formulation is just one tool to assist Americans develop and comply with healthier dietary patterns. Consumer education is needed to encourage individuals to change existing lifestyles, and to be inspired to make better informed food choices based on the nutrient content of foods and not on the level of processing. Simple, straightforward and flexible messages based on the best available scientific evidence are likely to be most impactful (Slavin 2015).

The *Dietary Guidelines for Americans* is the cornerstone for all Federal nutrition education and program activities; therefore, its reach and impact are extensive. The 2015 DGAC was missing the sustained counsel of a seasoned food scientist and technologists who could have tempered the deliberations of the nutrition science into recommendations that are achievable using food science and technology. During the development of the Dietary Guidelines and their subsequent implementation in various federal, state and local food and nutrition policies and programs, input from food scientists and technologists is critical to ensure that the guidelines are practical, realistic, and achievable. IFT and its members are key partners to provide expertise in food science and technology for the development and implementation of the 2015 DGA on the basis of the recommendations in the 2015 DGAC Report. These food professionals can and will provide valuable insights into agricultural practices, ingredient functions, food manufacturing capabilities, and the potential to advance on delivery of dietary needs of Americans. Their efforts continue to address innovations related to nutritional challenges, food security, food waste, food safety, sensory appeal, consumer acceptance, and food manufacturing including technological limitations and cost constraints. With members in academia, industry and government, IFT welcomes and urges the opportunity to participate in a strategic public/private dialogue on the development of a collaborative effort to identify practical solutions to implement the 2015 Dietary Guidelines. Public/private collaboration to investigate ways to positively impact eating behaviors, including research activities aimed at assessing food choice behavior and impacts on health outcomes (such as obesity and overweight) are needed. Collaboration between government, academia, nonprofit and other research organizations will allow for efficient use of limited resources with a united goal of getting more consumers to meet the Dietary Guidelines. An integrated approach to health is our mandate, this requires clearly defined food and diet inputs, and public health and nutrition outcome metrics. Only through multidisciplinary collaborations between food scientists and technologists, dietitians, nutritionists, medical professionals, and those in many other sectors and disciplines will we achieve dietary guidance that is practical, realistic, and actionable. Engaging food scientists and technologists is critical for the development and availability of more nutrient-dense and affordable food choices.

**Food Processing and the Role of Food Science and Technology in Delivering Healthy Foods and Nutrition**

It is important to recognize that fresh and locally grown foods alone cannot meet the nutritional requirements of the growing and diverse population or the particular needs at each life-stage of the population; hence, food processing is crucial. Through the application of food science and technology, food processing helps transform raw food materials and ingredients into a variety of safe, nutritious,

palatable, accessible, and affordable foods that are available year around, thus contributing to both food and nutrition security. While processing can reduce content of some nutrients, in certain cases, processing techniques can increase long term retention and even bioavailability of some micronutrients. When leveraged this can make some processed foods healthier choices compared to their raw counterparts. For example, processing of fresh tomatoes improves the bioavailability of lycopene; and processed foods, such as canned and frozen fruits and vegetables, are often a better value than the fresh or raw foods because of longer shelf-life, affordability and availability as well as higher nutrient retention due to the inactivation of spoilage microorganisms and enzymatic processes (IFT 2010; Weaver and others 2014).

The primary purpose of food processing is to deliver safe food. However, to meet the food and nutrition needs of the growing population, increasing concerns related to health and wellness, and efforts to reduce and/or prevent the risk of diet-related diseases, the role of food processing has evolved to serve many other critically important purposes (IFT 2010; Weaver and others 2014). These purposes include:

- enhance nutritional quality of food
- provide an efficient nutrient delivery system
- improve health and wellness
- meet consumer needs for convenient, safe, healthy, nutritious, diverse, tasty and affordable foods
- improve food safety and quality (remove potential toxic substances and anti-nutrients, prevent growth of pathogens, control spoilage microorganisms)
- improve digestibility, bioavailability, and palatability of foods
- increase shelf-life of foods
- reduce post-harvest losses and waste
- improve transportability and storage of foods
- produce foods more sustainably

Innovations in food science and processing technologies have led to diversity of food choices in the marketplace today, and may encourage healthier eating patterns, in addition to meeting consumers' needs of taste, affordability, accessibility and cultural preferences. For example, flavored milk increased intake of nutrients such as calcium, protein and other nutrients in children without adversely affecting body weight; convenient finger foods, such as baby carrots (a good source of β-carotene) increased consumption of vegetables; mushrooms treated with UV B light increases vitamin D content; convenient foods designed for toddlers (for example, yogurt with vegetables and fruits in pouches) made from a variety of fruits, vegetables, whole grains, and dairy help advance healthy eating habits early in life; portion-controlled packaging helps control the portion size, and thus, calorie intake (IFT 2010; Lewis and Burton-Freeman 2010).

*Food Processing: Flexibility in Healthy Dietary Patterns*

All foods post-harvest are processed and prepared to be safe and edible. In many cases, foods must be processed and prepared to provide the nutrients they contain (IFT 2010). Foods should be selected based on their nutrient composition and the frequency and amount consumed rather than the processing level (Eicher-Miller and others 2012). In fact, there is no universally accepted, science-based definition of "processed." Studies have examined nutrient contribution from processed foods in the American diet. A recent study by Dwyer and others (2012) showed that processed fruits and vegetables (for example, canned, dried, and frozen) made important nutrient contributions (for example, fiber, folate, potassium, and vitamins A and C) to the diet, and also contributed to intakes of sodium and added sugar. Another study by Eicher-Miller and others (2012) found that all processing levels contributed to daily dietary nutrient intakes; no levels contributed solely to nutrients to encourage or solely to food components to reduce. The authors suggests that "processing level was a minor determinant of individual foods' nutrient contribution to the diet and, therefore, should not be a primary factor when selecting a balanced diet" (Eicher-Miller and others 2012). "Diets are more likely to meet food guidance recommendations if nutrient dense foods, either processed or not, are selected" (Weaver and others 2014).

The 2010 Dietary Guidelines and the 2015 DGAC Report state that an important factor in dietary recommendations is embracing personal dietary preferences. Food science and technology is an effective tool to develop products specific to ethnic and religious preferences, cultural and philosophical beliefs (for example, vegan, organic, and whole foods) and specific foods for those who may be lactose or gluten intolerant, for example (Weaver and others 2014).

Food scientists are exploring ways to address obesity using digestion-resistant starches, improving the palatability and acceptability of nutrient dense foods, and enhancing satiety. Novel sources of dietary fiber that enhance or modulate gut health, utilization of alternative salt structures to reduce sodium intake, providing fresh but stable high-quality affordable foods all year round by using novel processing techniques (for example, non-thermal processing, and high-pressure processing), and developing foods specific to various age-groups, growth and developmental stages, and to promote health and wellness are examples of current, and emerging food processing technology innovations that are/or will benefit the consumers (Weaver and others 2014).

IFT applauds the 2015 DGAC's note that specific food components, such as sodium, saturated fat, and added sugars are not intended to be reduced in isolation (DHHS/USDA 2015). IFT agrees that an emphasis should be placed on replacement of more calorie-dense foods with more nutrient-dense foods in making shifts in food intake towards healthier eating patterns. Through product reformulation, fortification, enrichment, and other innovative processing technologies, food scientists and technologists can help address many nutritional challenges as noted in the previous Dietary Guidelines and the 2015 DGAC Report. Importantly, food scientists have decreased sodium, *trans* fatty acids, saturated fat and sugars in the food supply. Equally important, these food professionals have modified and created an array of food technologies that address many of the shortfall nutrients, such as calcium, dietary fiber, and magnesium, noted in the 2010 DGA and 2015 DGAC Report. The earnest efforts to reduce certain food components and increase the nutrients of public health concern are parallel in significance and point to the importance of measuring the value of food products by the total package of nutritional attributes they provide – not just on the basis of the amount of one food component or nutrient. Focusing on one nutrient or food component unrealistically diminishes the full package of nutritional value that foods provide, regardless of the degree to which they are processed.

*Food components to reduce: sodium, saturated fat and added sugars*
Food reformulation is a valuable tool to provide nutrient-dense foods, but it is also a challenging endeavor for food scientists and technologists. Many factors such as food safety and preservation, stability, functionality, cost, statutory requirements (for example, standards of identity), palatability, and affordability of foods must be considered. For example, in addition to providing flavor and taste, sodium serves many technical functions in food such as inhibiting growth and survival of undesirable microorganisms, increasing shelf-life, and providing texture. Therefore, large scale reductions are not readily achieved without sacrificing other critical functionalities of salt/sodium in foods. Food scientists and technologists have worked diligently to reduce the sodium content in various products for decades. Importantly, many food companies have made and continue to make progress in developing and delivering foods with low salt/sodium content that meet consumers desires and acceptance (Mohamedshah and Ruff 2014). Despite the success, regulatory, functional and technological challenges persist as food scientists strive to balance the multiple functions of sodium and consumer's demands of palatable foods. Additional research and development efforts are needed.

Beyond contributing to taste, fats and oils provide color, texture, moisture and stability to food products as well as nutritional value. In many cases, fats and oils are essential to deliver the foods to consumers with the characteristics they expect. Using emerging technologies, food scientists and technologists have responded to the dietary guidance and consumers' concerns regarding saturated and *trans* fatty acids intake, while also meeting consumers' expectations of quality and taste by creating new fats/oils (such as oils high in monounsaturated fatty acids (for example, oleic acid), and omega-3 fatty acids). Despite the success in reducing these *trans* fatty acids in the majority of food products, challenges still exist. A single approach is not suitable for all food matrices or categories or for all foods within the same category. Constraints to fat substitutions remain, including cost and time, and an inability in some cases to mimic the structural and organoleptic characteristics of saturated fatty acids (Mohamedshah and Ruff 2014).

The commitment to such reductions require resources to reformulate and/or create new food products including R&D technical support, to successfully reformulate food products to improve public health and provide Americans with food alternatives that meet the recommendations as outlined in the 2015 DGAC Report.

Besides imparting sweetness, sugars also function as preservatives, stabilizers, texture modifiers, substrates for fermentation, flavoring and coloring agents, and bulking or flowing ingredients. Using alternative approaches (for example, breaking sugars like lactose down into building-block components that enhance sweetness naturally, augmenting sugar by combining it with or replacing it with low-calorie and non-caloric sweeteners), food scientists have successfully reformulated foods with reduced sugar content. Some of those foods include breakfast cereals, soft drinks, dairy foods, and bakery products. For example, from 2005-2011, sugar content in ready-to-eat breakfast cereals decreased by 7.6% (Thomas and others 2013). However, the type of sugar used in formulating foods is determined by processing and preservation requirements and stability criteria for safety, and functional impacts on texture and flavor. Therefore, reducing the amount of sugar in foods or replacing them partially or completely with low-calorie or non-caloric sweeteners can significantly affect the quality of the final food product. Developments in the application of flavor chemistry look promising to reduce the need for some caloric sweeteners in processed foods (Mohamedshah and Ruff 2014).

*Shortfall nutrients/food groups*

The 2010 DGA and the 2015 DGAC Report identify fiber as nutrient of public health concern (USDA/DHHS 2010; DHHS/USDA 2015). Dietary fiber is present in many food groups such as whole grains, fruits and vegetables, yet a majority of the U.S. population has low intakes of these key food groups as indicated in the 2015 DGAC Report. Emphasizing adequate fiber intake from all sources (naturally-occurring and added vs. naturally occurring only) in the 2015 Dietary Guidelines will lead to innovative ways to add fiber to grain-based (whole and enriched grain) and other foods. For example, analysis of ready-to-eat cereal from 2005 to 2011 showed a significant increase in fiber content (13.4%), due to fortification of breakfast cereals (Thomas and others 2013). Adding dietary fiber to existing grain-based foods may be a reasonable approach to providing more dietary fiber in the American diet, without increasing energy intake (Nicklas and others 2011; Clemens and others 2012; IFT 2013). Further, by providing specific recommendations based on the type of fiber (for example, viscous and fermentable) and associated health benefits, food scientists will endeavor to formulate foods and beverages with health benefits for today's consumers. New technologies such as smaller molecular weight fibers, and fibers with enhanced solubility broaden the scope of foods to which fibers can be added (Niba 2012). However, sensory appeal (taste, texture, color, and moisture content) particularly with whole grain foods remain an important barrier to consumer acceptance that food scientists continue to address as they develop/reformulate food products (IFT 2013).

Consistent with previous reports and Dietary Guidelines, the 2015 DGAC identified whole grains as a shortfall food group among other food groups in the American diet. It is important to recognize that without processing, especially milling, the nutritional qualities of whole grains would not be available. Barriers to increasing the consumption of whole grains include consumer taste preference, the inability to identify whole grain foods, difficulty in substituting whole grains for existing ingredients in meal patterns, price, availability, and convenience (Marquart and others 2013). Mirroring this, food scientists and technologists face many challenges such as bitter taste and coarse texture in formulating whole grain foods as compared to those formulated with refined grains. Technology to create whole grain foods exists; however, cost and shelf stability constraints have contributed to limit its use and application to a wider range of foods. Further, challenges regarding the amount of whole grains that can be realistically added to foods remain; however, through food processing the availability of diverse whole grain foods (for example, pasta, bread, cereal, crackers, wraps, and pizza crust) has increased significantly. Novel food technologies that are cost-effective, and can mask the undesirable sensory characteristics while maintaining the nutritional profile of whole grains are needed (Marquart and others 2013).

*Enrichment and fortification*

The 2015 DGAC Report (DHHS/USDA 2015) identifies three dietary patterns which include nutrient-dense foods – the Healthy U.S. Pattern, the Healthy Mediterranean Pattern, and the Healthy Vegetarian

Pattern – which epitomize the Report recommendations regarding what and how much to eat to reduce the risk of diet-related chronic diseases. Food processing techniques such as enrichment and fortification can be used to add essential nutrients to foods that are lost during processing (for example, enrichment of grain foods with B vitamins) or to add nutrients at a higher level than are naturally-occurring in the food (fortification), thus, helping Americans meet their nutrient needs through nutrient-dense foods. Foods are fortified to ensure adequate nutrient intake to reduce and/or prevent risk of certain diseases such as rickets (vitamin D deficiency), neural tube defects (folate deficiency), and goiter (iodine deficiency) (IFT 2010; Weaver and others 2014). Without enrichment and fortification, large percentages of the population would have inadequate intakes of thiamin, folate, iron, and vitamins A and D (Fulgoni and others 2011). Further, "in some cases, fortification can provide a food-based means for increasing intake of particular nutrients or providing nutrients in highly bioavailable forms," as noted in the 2010 DGA (USDA/DHHS 2010). Using innovative technology, food scientists have fortified foods with nutrients and/or bioactive components to improve wellbeing; often referred to as functional foods. Examples include: orange juice fortified with calcium for bone health; margarine fortified with plant stanols and sterols for heart health; and addition of probiotics or prebiotics to improve gut health (IFT 2010; IFT 2013; Weaver and others 2014). However, as for traditional foods, the success of functional foods is also dependent on taste, affordability and acceptance by the consumers. Fortification of foods is a positive means to enhance the nutrient contribution of many foods widely available to Americans generally and subpopulations specifically (such as economically disadvantaged, pregnant women, and older adults) to meet critical health and dietary needs.

**Food Production: Achieving Sustainable Healthy Dietary Patterns Requires an Evidence-Based Plan**

While it is important that the discussion on food production (from farm to fork) also address its impact on the environment (for example, energy, land, and water), scientific evidence on the relationship between healthy dietary patterns, health, and sustainability is still emerging. Given the complexity of this relationship, and inconsistency of the existing evidence (Macdiarmid and others 2012; Vieux and others 2012; Vieux and others 2013) on the impact of healthy vs. unhealthy foods on the environment, it is necessary to exercise caution when making policy recommendations about the sustainability of the dietary patterns and/or food groups for the 2015 Dietary Guidelines. The inconsistency between the health outcomes and the environmental impact is evident in the 2015 DGAC's recommendations, where low fat dairy, lean meats and fish (part of two healthy dietary patterns) have positive health outcomes but were reported to have a negative impact on the environment. The 2015 DGAC notes "…that no food groups need to be eliminated completely to improve sustainability outcomes over the current status." Thus, in light of the conflicting views of the 2015 DGAC, it seems appropriate to address this matter in the 2020 Dietary Guidelines, "as further research is conducted and best practices are evaluated…," that will help "…inform both supply-side participants and consumers on how best to shift behaviors locally, nationally, and globally to support sustainable diets," as reported in the DGAC Report (DHHS/USDA 2015).

The matter of achieving safe, nutritious, affordable, accessible, and sustainable dietary patterns requires a comprehensive assessment of the progress across the entire food system. Through use of food processing technologies, food scientists and technologists are able to minimize water usage and food waste by optimizing product yields, extending available shelf-life and preserving nutritional qualities of food products (IFT 2010; Martindale 2010; Hall and Howe 2012). Processing methods such as blanching, freezing, juicing and canning for preservation of perishable fruits and vegetables helps provide a wide variety of convenient and affordable foods with high micronutrient density to consumers (Darmon and others 2005), and helps reduce food waste due to spoilage.

In planning a long-term multi-sector approach to promoting a sustainable dietary pattern that's based on sound scientific evidence, there are steps that can be taken in the near term. Reducing food waste at various points along the food chain, including at post-harvest and processing points is an effective means of reducing environmental impact of food. Conservation efforts that identify sustainable sources of ingredients and improve food production processes continue to receive considerable attention by farmers and food producers in the United States and beyond domestic borders. It is estimated that in the United States, 31% of the food available at the retail and consumer level was wasted in 2010 (Buzby and others

2014). Food scientists and technologists are working towards developing new ways to reduce post-harvest loss, reduce waste due to spoilage, reduce, recycle and/or reuse packaging to minimize waste, and place food production plants in key locations for efficient transportation and distribution of foods, for example (IFT 2010).

In addition to the efforts to address these challenges, there is a need to conduct life cycle assessments of food production systems, and to identify critical points that can be altered to increase sustainability. Research to develop alternative technologies such as non-thermal processing that not only improve food quality and sensory attributes but is also environmentally responsible is needed (IFT 2010). Further research is needed to better understand the relationship between healthy dietary patterns, health outcomes and sustainability so that experts can recommend and establish Dietary Guidelines that are practical and realistic.

**Looking Forward**

IFT urges the Departments of Health and Human Services and Agriculture to engage food scientists and technologists in the development of the 2020 Dietary Guidelines and the guidance planned for the birth to 24 months age segment, as the agencies move beyond 2015 and plan the process for the 2020 Dietary Guidelines. Their practical and scientific contributions will be invaluable and critical to the ultimate successful development and implementation of these guidelines across the industry.

IFT appreciates the opportunity to provide comments for your consideration on the 2015 Dietary Guidelines Advisory Committee Report. IFT looks forward to working together to develop public/private programs and initiatives for successful implementation of the 2015 DGA to provide safe, healthy, nutritious, and affordable food choices and to achieve a "culture of health," and in the development of the 2020 Dietary Guidelines and the guidance for the birth to 24 months age segment. Our members are committed to assisting with the process, and we believe our technological and scientific capabilities must be part of the solution to addressing recommendations for improved food choices and healthy eating for all Americans. Please contact Ms. Farida Mohamedshah, Director, Food Health & Nutrition, if we may provide further assistance. Ms. Mohamedshah may be reached at 202-330-4986 or via email at fmohamedshah@ift.org.

Sincerely,

Mary Ellen Camire, Ph.D., C.F.S.
President, IFT
Professor of Food Science and Human Nutrition
School of Food and Agriculture
University of Maine

**References**

Buzby JC, Wells FH, Hyman J. 2014. The estimated amount, value, and calories of postharvest food losses at the retail and consumer levels in the United States. ERS Publication No. EIB-121. Available from: http://www.ers.usda.gov/media/1282296/eib121.pdf. Accessed 2015 March 17.

Clemens R, Kranz S, Mobley AR, Nicklas TA, Raimondi MP, Rodriguez JC, Slavin JL, Warshaw H. 2012. Filling America's fiber intake gap: Summary of a roundtable to probe realistic solutions with a focus on grain-based foods. J Nutr 142:1390S-1401S.

Darmon N, Darmon M, Maillot M, Drewnowski A. 2005. A nutrient density standard for vegetables and fruits: Nutrients per calorie and nutrients per unit cost. J Am Diet Assoc 105(12):1881-7.

DHHS/USDA. 2015. Scientific report of the 2015 Dietary Guidelines Advisory Committee. Available from: http://www.health.gov/dietaryguidelines/2015-scientific-report/PDFs/Scientific-Report-of-the-2015-Dietary-Guidelines-Advisory-Committee.pdf. Accessed 2015 February 19.

Dwyer JT, Fulgoni VL, Clemens RA, Schmidt DB, Freedman MR. 2012. Is "processed a four-letter word? The role of processed foods in achieving Dietary Guidelines and nutrient recommendations. Adv Nutr 3:536-48.

Eicher-Miller HA, Fulgoni VL, Keast DR. 2012. Contributions of processed foods to dietary intake in the US from 2003–2008: A report of the Food and Nutrition Science Solutions Joint Task Force of the Academy of Nutrition and Dietetics, American Society for Nutrition, Institute of Food Technologists, and International Food Information Council. J Nutr 142(11):2065S-72S.

Fulgoni VL, Keast DR, Bailey RL, Dwyer J. 2011. Foods, fortificants, and supplements: Where do Americans get their nutrients? J Nutr 141:1847-54.

Hall MG, Howe J. 2012. Energy from waste and the food processing industry. Process Safety Environ Protect 90(3):203-12.

IFT. 2010. Feeding the world today and tomorrow: The importance of food science and technology. A Scientific Review of the Institute of Food Technologists, Chicago, Ill. By Floros J, Newsome R, Fisher W, Barbosa-Canovas G, Chen H, Dunne CP, German JB, Hall RL, Heldman DR, Karwe MV, Knabel SJ, Labuza TB, Lund DB, Newell-McGloughlin M, Robinson J, Sebranek JG, Shewfelt RL, Tracy WF, Weaver CM, Ziegler GR. Comp Rev Food Sci Food Safety 9(5):572-99.

IFT 2013. Comments Relevant to the 2015 Dietary Guidelines Development. Available from: http://www.ift.org/~/media/Public%20Policy/Advocacy/Comments/IFT_CommentsDG2015.pdf. Accessed 2015 February 19.

Lewis KD, Burton-Freeman BM. 2010. The role of innovation and technology in meeting individual nutritional needs. J Nutr 140:426S-436S.

Macdiarmid JI, Kyle J, Horgan GW, Loe J, Fyfe C, Johnstone A, McNeill G. 2012. Sustainable diets for the future: Can we contribute to reducing greenhouse gas emissions by eating a healthy diet? Am J Clin Nutr 96:632-9.

Martindale W. 2010. Waste: Uncovering the global food scandal. Intl J Sust Engr 3(2):144-5.

Marquart LF, Jonnalagadda SS, Van Klinken J, Clemens R, Jensen G, Arndt E, Webb D. 2013. Delivering healthy and affordable whole grain foods: How can the food industry produce whole grain products that consumers will eat? Food Technol 67(7):52-62.

Mohamedshah FY, Ruff J. 2014. Dietary guidance and the role of food science: Developing healthy foods to help Americans achieve the dietary recommendations. Nutr Today 49(6):284-290.

Niba L. 2012. Progress in fiber-enriched foods. Food Technol 66(11):36-43.

Nicklas TA, O'Neil CE, Liska DJ, Almeida NG, Fulgoni VL. 2011. Modeling dietary fiber intakes in US adults: Implications for public policy. Food Nutr Sci 2:925-31.

Slavin J. 2015. The challenges of nutrition policymaking. Nutr J 14:15.

Thomas RG, Pehrsson PR, Ahuja JKC, Smieja E, Miller KB. 2013. Recent trends in ready-to-eat breakfast cereals in the U.S. Proc Food Sci 2:20-6.

USDA/DHHS. 2010. *Dietary Guidelines for Americans,* 2010, 7th ed. U.S. Department of Agriculture and U.S. Department of Health and Human Services. Washington, DC: U.S. Government Printing Office.

Vieux F, Darmon N, Touazi D, Soler LG. 2012. Greenhouse gas emissions of self-selected individual diets in France: Changing the diet structure or consuming less? Ecological Economics 75:91-101.

Vieux F, Soler LG, Touazi D, Darmon N. 2013. High nutritional quality is not associated with low greenhouse gas emissions in self-selected diets of French adults. Am J Clin Nutr 97(3): 569-83.

Weaver CM, Dwyer J, Fulgoni VL, King JC, Leveille GA, MacDonald RS, Ordovas J, Schnakenberg D. 2014. Processed foods: Contributions to nutrition. Am J Clin Nutr 99(6):1525-42.