Tufts UNIVERSITY | GERALD J. AND DOROTHY R. FRIEDMAN SCHOOL OF NUTRITION SCIENCE AND POLICY

March 30, 2018

RE: **Topics and comments to be examined in the review of the scientific evidence supporting the development of the 2020-2025 Dietary Guidelines for Americans**
Docket No. FNS-2018-0005-0001

Dear Dr. Wright, Mr. Lipps, and Ms. Koegel:

As one of the leading institutions for nutrition science and policy in the world, the Friedman School's mission is to produce trusted science, future leaders, and real-world impact. The following recommendations build upon the listening session comment submitted by Dean Dariush Mozaffarian and Jerold Mande in November 2017. As experts in the field, the undersigned are delighted to provide these additional suggestions for the 2020 DGA.

We recommend that the 2020 DGA's should:

1. **Review the relationship of specific foods and other dietary factors with major health outcomes such as weight gain, obesity, type 2 diabetes, heart disease, stroke, cancers, and brain health, rather than focus on "achieving nutrient and food group recommendations."**
    a. *Relevance:* The scope and scale of chronic diseases including obesity, type 2 diabetes, heart disease, stroke, cancers, and cognitive dysfunction far outweigh nutrient deficiencies in the United States. At the same time, advances in nutrition science demonstrate that isolated and reductionist focus on individual nutrients has little relevance for these chronic diseases. Evaluating relationships of foods and other dietary factors with major health endpoints is essential and far more relevant than merely assessing their potential to achieve isolated nutrient targets. Furthermore, assessing the relationship of eating certain foods with meeting "food group recommendations" is a circular exercise with unclear relevance.
    b. *Importance:* Poor quality diet is a primary cause of death and disability among Americans. Specific food groups are linked to higher and lower risk of weight gain, obesity, type 2 diabetes, heart disease, stroke, cancers and brain health. Therefore, it is of the utmost importance to assess foods and other dietary factors in relation to their potential contribution to these major disease outcomes.
    c. *Potential Federal Impact:* Understanding the relationship of specific foods and other dietary factors with major health outcomes such as weight gain, obesity, type 2 diabetes, heart disease, stroke, cancers, and brain health would have the larger potential impact on guidance to inform Federal food and nutrition policies and programs.
    d. *Avoiding duplication:* As summarized in our recommendations below, existing federal guidance does not adequately assess or provide guidance on many key foods and other dietary factors based on their links to major disease endpoints; therefore, there is no risk of duplication.

2. **Evaluate the separate relationships of distinct subtypes of dairy products, including yogurt, cheese, and milk (as well as low-fat vs. whole-fat versions of each) with major health outcomes such as weight gain, obesity, type 2 diabetes, heart disease, stroke, cancers, and brain health.**

150 Harrison Avenue, Boston, MA 02111 | tel: 617.636.0374 | nutrition.tufts.edu | email: dariush.mozaffarian@tufts.edu

a. *Relevance:* This food-based question is entirely within the scope of the Dietary Guidelines. Evaluating the relationship of dairy subtypes based on major health endpoints is essential and far more relevant than solely assessing dairy based on its potential to meet isolated nutrient levels.
b. *Importance:* Considerable epidemiological evidence reveals that dairy subtypes are not the same in terms of health effects, with potentially different effects on cardiovascular disease, diabetes, weight gain; and potentially related to differences in probiotics, fermentation, and other characteristics. However, no past versions of the DGAs have comprehensively evaluated the relationship between different subtypes of dairy foods, as well as direct evidence for health effects of low-fat vs. whole-fat versions. Dairy provides about 10 percent of calories to the food supply, making it crucial to understand the relationship between different types of dairy products on health and disease.
c. *Potential Federal Impact:* Evaluating dairy subtypes has tremendous potential for federal impact. Dairy is a staple in many federal food programs including school lunches and WIC, and informed guidance is essential to improve the nutritional integrity of these programs.
d. *Avoiding duplication:* Federal guidance has been released for dairy products in terms of food safety as well as based on theoretical effects of isolated nutrients in dairy products (calcium, vitamin D, calories). However, the evidence for actual health effects of different dairy subtypes has never been comprehensively evaluated at the federal level; therefore, there is no risk of duplication.

3. **Evaluate how different aspects of carbohydrate quality, including processing and glycemic response, whole grain content, fiber type (soluble, insoluble, natural, inulin) and content, added sugar content, and the ratio of starch plus sugars to fiber (total carbohydrate to fiber ratio) in food products and the overall diet, in relation to major health outcomes.**
   a. *Relevance:* The health effects of different types of carbohydrate-rich foods is among the most important questions facing our nation today, and highly relevant to the scope of the Dietary Guidelines. The 2010 and 2015 DGAs recommended increased intake of "whole grains", yet the definitions of healthful whole grains, and the most relevant corresponding metrics, remain unclear. Evaluating different aspects of carbohydrate quality based on their relationships with major health endpoints is essential and far more relevant than solely assessing carbohydrates based on their potential to meet isolated nutrient levels.
   b. *Importance:* Industrial changes in carbohydrate processing have increased Americans' refined carbohydrate consumption, which a large body of evidence suggests is linked to the pandemics of obesity and type 2 diabetes. In a food environment saturated with self-proclaimed "whole grain" products, consumers are confused about what constitutes a "healthy" carbohydrate-rich food. Assessing carbohydrate guidance based on different attributes of the food and major health endpoints is essential to inform consumer decisions and improve public health. In addition, this review will provide important evidence to inform the relevance of new product development in manufactured foods and in restaurants, which could potentially focus on the relative balance of different aspects of carbohydrates (such as the ratio of total carbohydrate to fiber) for achieving better healthfulness.
   c. *Potential federal impact:* Further guidance on the topic would certainly inform federal food and nutrition policies and programs. For example, in addition to the DGAs, the National School Lunch Program includes recommendations for whole grains and the FDA has guidance for whole grain labeling. Yet, the criteria for characterizing whole grains in these policies and programs are loosely defined, inconsistent, and not based on the up-to-date science. Evaluating carbohydrate quality is essential to improve the way the government labels, promotes, and defines refined grain and whole grain products.

d. *Avoiding duplication:* The appropriate metrics for defining healthful carbohydrates have never been adequately addressed in the DGAs or in any other federal guidance; therefore, there is no risk of duplication.

4. **Evaluate the relevance of overall fat quality (e.g., relative proportions or ratio of unsaturated fats vs. saturated fat) instead of only absolute cut points (e.g., maximum intake level for saturated fat) in food products and the overall diet in relation to major health endpoints.**
   a. *Relevance:* This nutrient-based question is entirely within the scope of the Dietary Guidelines. The potential of health benefits of focusing on fat quality, rather than fat quantity, have been progressively recognized by each new DGAs. Yet, metrics for assessing overall fat quality, such as the ratio of unsaturated to saturated fat, have not been assessed by prior DGAs.
   b. *Importance:* The 2015 DGAC report recognized the scientific evidence over the past two decades that absolute levels of total fat are not related to health, and concluded that the upper limit of 35% energy from total fat is no longer evidence based and should not be advised. The large Women's Health Initiative randomized trial explicitly tested the health effects of lowering total fat (from 36% to 29% of energy), and found no benefits for any major health endpoint including cardiovascular disease, type 2 diabetes, or cancer. The large PREDIMED randomized trial tested the health effects of a Mediterranean-type diet supplemented with high intakes of unsaturated fats from either nuts or extra-virgin olive oil (achieving total fat intake of 44% of energy), and documented reduced risk of cardiovascular disease, type 2 diabetes, and certain cancers. Thus, for both individual food products and the overall diet, the overall quality of dietary fat appears to be far more relevant than the absolute quantity. The next logical extension is to evaluate the relevance of providing guidance based on overall fat quality (e.g., the ratio of unsaturated to saturated fat in foods or the diet), rather than absolute levels of different types of fat. This new review has the potential to fill an important knowledge gap and significantly improve the way the DGAs address dietary fats in the American diet. In addition, this review will provide important evidence to inform the relevance of new product development in manufactured foods and in restaurants, which could potentially focus on the relative balance of unsaturated and saturated fats for achieving better healthfulness.
   c. *Potential federal impact:* Evidence favoring proportions of saturated and unsaturated fats over absolute cut points has the potential to change the way the federal government labels fats and promotes incorporating a healthy dietary fat profile into food products and a healthy diet.
   d. *Avoiding duplication*: There is no federal guidance on overall fat quality such as the recommended ratio of unsaturated to saturated fats; therefore, there is no risk of duplication.

5. **Evaluate how sodium and potassium ratios (rather than absolute values) in food products and the overall diet influence blood pressure and health endpoints.**
   a. *Relevance:* This nutrient-based question is entirely within the scope of the Dietary Guidelines. Similar to the aforementioned recommendations regarding carbohydrate quality and fat quality, evaluating "mineral quality" is highly relevant for understanding the positive health impacts of offsetting sodium with potassium intake, as opposed to current siloed cut points for sodium and potassium.
   b. *Importance*: New research shows that achieving appropriate sodium and potassium ratios could have a greater impact on lowering blood pressure and improving health endpoints than lowering of sodium intake alone. This question also minimizes current controversy and confusion over potential risks of very low sodium levels in the diet, as all existing

evidence is consistent for benefits of higher potassium to sodium ratios. In addition, this review will provide important evidence to inform the relevance of new product development in manufactured foods and in restaurants, which could potentially focus on the relative balance of potassium and sodium for achieving better healthfulness.

c. *Potential Federal Impact:* Evidence favoring ratios of sodium and potassium has the potential to change federal guidance on these minerals and promote incorporating a healthy mineral profile into food products and a healthy diet.

d. *Avoiding Duplication*: The health effects of the ratio of sodium to potassium is not addressed in any existing federal guidance; therefore, there is no risk of duplication.

6. **Separately evaluate the health effects of processed meats vs. unprocessed red meats (as well as both lean and non-lean unprocessed red meats) in relation to risk of obesity, diabetes, stroke, heart disease and cancers.**

   a. *Relevance:* This food-based question is entirely within the scope of the Dietary Guidelines. Evaluating the effects of different types of meats based on major health endpoints is essential and far more relevant than merely assessing total meat intake or on its potential to meet isolated nutrient targets.

   b. *Importance:* A growing body of evidence suggests that processed meats (including red meat and poultry processed with sodium and other preservatives) are especially harmful to health including for stroke, coronary heart disease, type 2 diabetes, and colorectal cancer. For example, since the publication of the 2015 DGAs, the World Health Organization classified processed meats as a class 1 carcinogen. In contrast, unprocessed red meats appear to be relatively neutral for these endpoints. The 2015 DGAC report did not separately evaluate the relationships of either processed meats, unprocessed red meats, or lean or non-lean unprocessed red meats with major health outcomes. Instead, the 2015 DGAC report only indirectly speculated on the health effects of meats as part of their review of overall diet patterns. There remains considerable confusion in the American public on the role of meat for health, including as part of popular diets such as very low-carbohydrate and Paleo diets. A DGAC review of the evidence relating meat type to health endpoints is essential.

   c. *Potential Federal Impact:* Conducting a rigorous analysis of the different health effects of types of red meat is crucial for robust and flexible recommendations by the federal agencies.

   d. *Avoiding Duplication:* Current federal guidance does not distinguish between these types of meat or between levels of processing and preservatives in terms of health benefits; therefore, there is no risk of duplication.

7. **Address nutrition topics for which important science is emerging, even if that science may not yet be conclusive, including for gluten, fermented foods, probiotic-containing foods, and flavonoid-rich foods.**

   a. *Relevance:* This food-based question is entirely within the scope of the Dietary Guidelines. Such research evaluated in the 2020 DGAs should focus on key foods and food sources in relation to major health outcomes.

   b. *Importance:* The potential health effects of gluten-containing foods, fermented foods such as cheese, probiotic-containing foods such as yogurt, and flavonoid-rich foods such as cocoa are of considerable relevance for dietary recommendations to the American public**.** While there are additional nutrition topics of potential public concern, these categories in particular cannot be ignored. A myriad of new food products (gluten free, flavonoid and probiotic rich, fermented, etc.) are entering American diets. The 2020 DGAs must acknowledge that the science on these foods is developing quickly and should be reviewed to inform this DGA reports.

150 Harrison Avenue, Boston, MA 02111 | tel: 617.636.0374 | nutrition.tufts.edu | email: dariush.mozaffarian@tufts.edu

c. *Potential Federal Impact:* Conducting a rigorous analysis of the different health effects of these foods is crucial for informed recommendations by the federal agencies, including the potential for conclusions that current evidence remains equivocal or uncertain.
d. *Avoiding Duplication:* Current federal guidance does not distinguish between these types of foods based on these characteristics; therefore, there is no risk of duplication.

8. **Address meal structure, including the number of recommended meals per day, balance of calories across different meals during the day, potential benefits of intermittent fasting, and a review of evidence on snacking in relation to major health outcomes.**
   a. *Relevance:* Reviewing meal structure with an emphasis on health outcomes puts both the food-based and nutrient guidance into context and is entirely within the scope of the Dietary Guidelines.
   b. *Importance:* Growing research suggests that each of these characteristics of meal structure may affect weight gain and obesity. Given the continuing and expanding obesity epidemic, the DGAs must review this evidence to determine if they should not only advise the public on what foods and nutrients to consume, but also when to consume them.
   c. *Potential Federal Impact:* Meal structure guidance could impact multiple federal food and nutrition policies and programs, including not only the DGAs but also the timing and balance of federal food services (e.g. school breakfast and lunch).
   d. *Avoiding Duplication:* Meal structure has yet to be discussed in any federal guidance; therefore, there is no risk of duplication.

9. **Review the evidence for the effects of specific dietary patterns and diet composition on achieving and maintaining a healthy weight.**
   a. *Relevance:* The topic is well within the scope of the DGA and its focus on food-based recommendations.
   b. *Importance:* Two-thirds of Americans are now overweight or obese. The 2015 DGAs and decades of prior federal guidance and policy have largely emphasized diet *quantity*: e.g., total calories, energy balance, portion size. This emphasis has not stemmed the tide: indeed, the prevalence of overweight and obesity continues to rise. It is clearly essential to assess the role of not only diet quantity, but also diet *quality* as defined by specific diet patterns and diet composition. Considerable new science has accrued that evaluates the role of specific diet patterns and diet composition for achieving and maintaining a healthy weight. This includes, for example, research on ketogenic diets, low-carbohydrate diets, Mediterranean-type diets, and low-fat diets in relation to weight gain, overweight, and obesity.
   c. *Potential Federal Impact:* Given the scope, importance, and continuing rise of the obesity epidemic, there is a very high probability that guidance on this topic would inform federal food and nutrition policies and programs.
   d. *Avoiding Duplication:* The effects of specific dietary patterns and diet composition on achieving and maintaining a healthy weight are not currently addressed through existing evidence-based federal guidance other than the Dietary Guidelines; therefore, there is no risk of duplication.

10. **Not re-review the relationship between major dietary patterns (e.g., Mediterranean, DASH, vegetarian/vegan, low-carbohydrate) and risk of major health outcomes beyond obesity.**
    a. *Relevance:* These diet patterns were reviewed thoroughly in the 2015 DGAs, and there has been little new evidence in the last few years that would lead to meaningful change in the conclusions on these diet patterns for major health outcomes beyond obesity. (The only exception might be the low-carbohydrate diet pattern, which is a relatively new pattern and for which new evidence on both obesity and type 2 diabetes may have

accumulated to change the equivocal prior conclusions). It would be far better to utilize the 2020 DGAC's necessarily limited time frame and resources to review other, new, more compelling questions that were not addressed in 2015. These new topics of import are summarized in our recommendations below.

b. *Importance:* While dietary patterns are important, these were reviewed thoroughly in 2015. Now, the important questions that were raised by the 2015 DGAC findings and 2015 DGA are on the health effects of key specific food groups within these diet patterns. These crucial questions, summarized in our recommendations below, were not addressed in 2015 and are more important for immediate focus.

c. *Potential Federal Impact:* Referring to the comprehensive 2015 DGAC report on diet patterns would have no negative federal impact. Additionally, utilizing the necessarily limited time frame and intellectual and other resources of the 2020 DGAC to review other new, critical questions would have major positive impact on informing Federal food and nutrition policies and programs.

d. *Avoiding duplication:* Other existing federal guidance provides detailed recommendations on how to achieve a healthy overall dietary pattern. As described above, the 2015 DGAC also reviewed this question thoroughly. Avoiding a re-review now, and then reviewing diet pattern evidence again in 2025, is the best approach to avoid duplication.

Thank you for the opportunity to provide comments on the proposed topics for the 2020 DGAC. We strongly encourage the Agencies to add to and amend the currently proposed topics to better serve Americans with more complete, robust, and meaningful nutrition advice.

Sincerely,

Dariush Mozaffarian, MD DrPH
Dean
Jean Mayer Professor of Nutrition and Medicine

Timothy Griffin, PhD
Associate Professor
Chair of the Division of Agriculture, Food and Environment

Jerold Mande, MPH
Professor of the Practice
Senior Fellow, Jonathan M. Tisch College of Civic Life

Joel B. Mason, MD
Professor of Medicine and Nutrition
Senior Scientist and Director, Vitamins and Carcinogenesis Laboratory, Jean Mayer USDA Human Nutrition Research Center on Aging

Renata Micha, PhD
Research Assistant Professor

These comments represent the recommendations of individual Tufts faculty members, compiled with staff support. The opinions expressed in this document do not necessarily represent the views or opinions of the Friedman School of Nutrition Science and Policy, Tufts University, or its affiliates.

150 Harrison Avenue, Boston, MA 02111 | tel: 617.636.0374 | nutrition.tufts.edu | email: dariush.mozaffarian@tufts.edu