Knowledge and debate in the *American Journal of Clinical Nutrition*: new sections, new science, and looking forward and outward

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In Vision 2028, the ASN's 10-y vision for its role as a scientific society, it is proposed that the ASN should adopt "a new outward-facing role to more actively leverage our science in the service of humanity (and animals) through the active translation and promotion of optimal nutrition for health" (1). In contrast to endorsing an archetypical inward-focused academic society, the white paper lists several ways for the ASN to engage its members and nutrition scientists to advance science and nutrition globally.

The Editors of the *American Journal of Clinical Nutrition* (*AJCN*) share these broad values (2), and have evaluated how the pages and content of our journal can carry these forward for the next 10 or more years. Although more changes are sure to come in these print and electronic pages, we are pleased to share with you our latest additional sections for the journal.

Great Debates in Nutrition

Recognizing that scholarly debate is a hallmark of the scientific process, we announce a new article category type entitled Great Debates in Nutrition (GDN).

All too often in nutrition science, major controversies regress to polarized camps in which the like-minded collaborate and agree with each other, but fail to seek common ground with those from opposing camps. This admittedly human tendency, if not directly addressed, can impede a rational examination of evidence and promote politicization of science. Consider the acrimonious and unproductive discourse that can occur between advocates of low-fat compared with low-carbohydrate diets, or plant-based compared with animal-based diets; or on the hazards of fructose, saturated fat, and omega 3:6 ratio; or on how best to manage conflicts of interest and industrial support of research.

The aim of this new article type is to provide a venue for vigorous, timely, scholarly, and collegial discourse on hot topics in nutrition, especially those with direct translation to clinical care and public health. For each GDN, a specific topic (formulated as a proposition) will be identified by the Editor, with suggestions from the *AJCN* readership welcome. For example, "National Dietary Recommendations Should Strictly Limit Consumption of Saturated Fat." Two widely respected experts on the topic with opposing perspectives will be invited to provide manuscripts with the following components:

- *The Main Argument for/against the proposition*, comprising the primary statements of opinion. Limit: 2000 words, 20 references. Upon determination by the Editor of potential suitability, each Main Argument would be shared with the opponent, who would each write:
- *Refutation*. Limit: 1000 words, 10 references. Then, these would be shared, so that each author would subsequently write:
- *Rebuttal*. Limit: 500 words, 5 references.
- *Common Ground*. Written by the 2 authors (Editor negotiating as needed). Bulleted lists of points of agreement and suggested research to resolve remaining disagreements.

With online publication, reader response will be encouraged, as supported by an online comment feature. Selected GDNs will be featured at annual ASN meetings in a moderated oral debate session.

Nutrigenomics and Precision Nutrition

In recent years there has been significant growth in the use of nutrigenomic techniques in nutrition studies. Such techniques include transcriptomics, epigenomics, proteomics, metabolomics, and microbiome analysis (3). In particular the application of metabolomics in nutrition has grown and had significant impact on nutrition research from clinical studies to epidemiology (4). More and more studies are employing "-omics" methods to do one of the following: *1*) identify biomarkers related to dietary intake with the hope to improve dietary assessment; *2*) identify metabolic pathways altered following dietary interventions to enhance our understanding of the biology of the interventions; and *3*) study relations between dietary intake and disease risk. The growth of such studies and the development of more

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integrative analyses to use "multi-omic" data drive the need for a new article category—Nutrigenomics and Precision Nutrition. Systems biology approaches to study nutrition are going to become commonplace, and this growing and influential field needs a home in one of the world's leading nutrition journals. With the growth of such studies there also comes the requirement for deposition of -omics data into public repositories, and all authors are encouraged to adhere to this.

Concomitant with the growth in nutrigenomics, there is a rapid increase in interest in interindividual responses to nutrition interventions, and an understanding of such responses lays the foundations for development of precision nutrition (5, 6). Precision nutrition can be defined as personalization of dietary advice that encompasses an individual's response to diet. Our understanding of the basis of individual responses is limited, and developing and understanding these is becoming increasingly important for this area to grow. New concepts and statistical tools are needed for the analysis of clinical nutrition studies to examine individual responses. More studies demonstrating how to implement personalized approaches and potential health benefits are needed to enable precision nutrition to the delivered at scale. Ensuring that strong scientific evidence underpins the developments in this field will be important for its success; the *AJCN* will play an integral role in the publication and dissemination of this evidence as it becomes available. Harnessing the development of precision nutrition and providing a forum for the publishing of leading papers in this emerging field is the goal of this new section.

Food Systems and the Environment

Food systems involve the production, processing and packaging, distribution, marketing, and purchase of food and the related consumer behaviors. Yet food systems are under increasing pressure to deliver healthy, safe, and nutritious foods in both sustainable and equitable ways in changing times (7). The world has taken notice, particularly with the UN Climate Summit this past September. Unprecedented attention is being given to both the challenges and opportunities that food systems and diets present in mitigating climate change, and ensuring that the environment and its natural resources are sustainably utilized. A series of high-level, media-grabbing reports—from the EAT-*Lancet* Commission on food, planet, and health (8), the Intergovernmental Panel on Climate Change on land use (9), and the World Resources Institute on sustainable food futures (10)—all emphasized that food systems need to be changed and reshaped in positive directions for both human and planetary health.

Although these reports call for transformative change, there remain many research questions and evidence gaps on how to make shifts that benefit human nutrition, health, environment, cultures, and economics. For example, the topic of "sustainable diets" has been around since the 1970s and has been coined in different ways. There is, however, still no agreed definition of what sustainable diets are, what they mean for people, communities, and countries, their impact on human health and nutrition, and how they should be measured. In addition, the science of "food and environment" is evolving. In the last decade, increasing numbers of scientific papers have been published that examine the impact of food systems on climate and vice versa, as well as the impact of certain types of dietary patterns on environmental sustainability. Indeed, we need more and stronger evidence to fill the many gaps that keep policy makers in the dark on how to design policies and programs in the Anthropocene epoch.

The *AJCN* will be soliciting cutting-edge papers that disentangle research that spans food system activities and actors, environmental change, and health and nutrition outcomes, taking into account the rapid socioeconomic, political, and societal transitions in the 21st century. The research space is complex and requires a convergence of new disciplines to understand benefits and trade-offs of evidence so vital to improving diets and nutrition. We are looking for agriculture, food value chains, climate, environment, and diet themes to come together to answer the many evidence gaps that impact nutrition and human health (11). There is a need for integration of perspectives of environmentally sustainable food production, inclusive value chains and food environments, interventions that support public health, and consumption and consumer behavior. Finally, there is a need for high-quality analytical methods to collate, curate, and analyze data across food systems, integration of data sets across disciplines, and new empirical research to solve this grand challenge in sustainable development.

Women's Nutrition

Women and girls hold roles in their communities that make them drivers of development as individuals, and influencers of the health and well-being of their families. To equip women and girls to succeed in school, maximize their work productivity, have, if they wish, their own healthy children, and enjoy healthy, long lives, they must receive appropriate nutrition through all of these periods. In a changing landscape where we increasingly recognize the importance of a life-course approach (12), the previous *AJCN* article category of "Pregnancy and Lactation" seems markedly insufficient to capture the broad spectrum of clinical and research endeavors in women's nutrition.

The Lancet Commission on Adolescent Health, for example, has focused our attention to both over- and undernutrition issues faced by this group, which comprises ∼18% of the world's population (13). Because adolescent girls have not been historically prioritized in global research, there is a significant data gap regarding the burden of low BMI and stunting in adolescent girls in low- and middle-income countries. Conversely, the rising burden of overweight and obesity and eating disorders and related mental health issues that require novel strategies for intervening have dramatically increased in high-income settings, which could be closely followed by similar trends globally.

This is not to say that research in pregnancy and lactation is not critical. Recent estimates are that ∼20.5 million infants are born of low birth weight (14). These are accompanied by 450 million women in developing countries who are estimated to have short stature (15), 240 million women who are underweight (16), and 468 million women of reproductive age who are anemic (17), factors that are causally associated with low birth weight and its underlying causes of preterm birth and small-for-gestational-age. The WHO global guidance for antenatal care recommends many nutritional and health interventions for a positive pregnancy experience, and implementation science is needed to achieve high coverage and reach. Even as this agenda is advanced, global guidance for postpartum/lactation nutrition support is completely lacking evidence. And despite many technical advances, our knowledge of the nutrient and immune systems of human milk and how they influence infant health and what drives variability across geographies and ethnicities is limited (18).

In contrast, the rising prevalence of obesity in the United States and other high-income countries has resulted in enormous challenges for obstetric health, with complications of gestational diabetes, pre-eclampsia, macrosomia, and C-sections surpassing previous rates (19). Globally, 375 million women are obese. Obesity has also given rise to significant increase in breast-feeding difficulty and lactation failure, which requires further study and development of novel interventions because previous known approaches are untested for these changing contexts. More research is needed focusing on guidance for pregnant women in an ever-changing landscape of the obesity epidemic.

Our knowledge of the importance of preconception and interconception nutrition, beyond folate for prevention of neural tube defects, is very limited, and increasingly funders and researchers are moving in the direction of elucidating both mechanisms of and interventions for the early life events of implantation, placentation, and angiogenesis that have nutrition at the core and are influenced through epigenetics. Finally, healthy aging in women is also of particular relevance to the field, which could be linked to their reproductive and early life experience (e.g., postpartum weight gain might relate to obesity; long-term health benefits might accrue from breast-feeding; adolescent nutrition has lifelong consequences for bone health).

Research and findings in these and more areas will find an excellent home in this new *AJCN* article category. With the expanded scope, we will encourage submissions on adolescent nutrition and health as well as preconception, and a renewed focus on lactation and breast-milk composition.

Summary

New scientific areas of inquiry and tools require new approaches from the scientific literature, and nutrition is no exception. We expect that these new features will generate tremendous interest, as measured by website traffic and citations, and that articles in these new series, as well as our standard sections, will be enjoyed by the broad *AJCN* readership.

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