President Robert Russell, MD, said Fellows Committee Chair and Past President Robert Stokstad, Vernon Young, and others.

Members of the Class of 2016 Fellows gathered at the ASN & ASN Foundation Awards Ceremony April 4.

Personalized Nutrition Can Impact Alzheimer’s and Other Brain Aging

Every 67 seconds, someone in the U.S. is diagnosed with Alzheimer’s. By mid-century, that number is projected to drop to every 33 seconds, said Simin Meydani, DVM, PhD, as she kicked off the April 3 symposium Exploring the Aging Brain Through Nutrition.

“Nutrition is a key factor in any preventative strategy for brain aging, and that is exactly why we’re here today,” she said. The symposium included four presentations:

**The Aging Brain: Current Knowledge and Future Possibilities**

Dennis Steindler, PhD, Human Nutrition Research Center on Aging, Tufts University, discussed regenerative nutrition, which helps rebuild compromised tissue—including brain tissue. Steindler and his team have discovered it may be possible to reverse aging through bone marrow stem cell transplants. There is also a part of the hippocampus anecdotally referred to as “brain marrow” that can generate thousands of new brain cells every day. “If this brain marrow is stimulated with nutrition, it can produce even more new cells,” he said.

Steindler’s research targets indigent stem cells in the brain. “We call these wonderful cells throughout the brain adult human neural progenitor cells,” he said. “In mice, these cells can make all the neurons you’d want in a brain you’re trying to fix.” His research shows it’s possible to clone a single neural progenitor cell and make enough brain cells to produce new brains for 50 people.

In a trial done in Germany a few years ago on epilepsy patients, researchers removed seizure-causing tissue from the temporal lobes of the patients. “They found that the high-performing individuals had beautiful stem progenitor cells,” Steindler said, but the people...
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E.V. McCollum Lecture Addresses the Integration of Nutrients, Infections, Babies and Public Purpose

This year’s E.V. McCollum International Lectureship in Nutrition focused on Rebecca J. Stoltzfus’ work on nutrition and infection in young children. She presented her work April 4 at the ASN Scientific Sessions and Annual Meeting.

Stoltzfus, PhD, is a professor and director of the program in global health at the Cornell University College of Human Ecology. As a young researcher in the mid-1990s, she made her first trip to Pemba Island in Zanzibar, Tanzania to conduct field research on the impact of hookworms on childhood anemia.

Stoltzfus was able to show that hookworms were accountable for anemia in 41 percent of Pemba Island schoolchildren. The research was subsequently expanded to Zanzibari men and women and Nepalese pregnant women, and showed a strong relation between hookworm infection and hemoglobin. In addition, Stoltzfus and her team discovered that deworming helped with malaria infection and hemoglobin.

In the early 2000s, Stoltzfus and her team conducted trials on zinc plus iron and folic acid (IFA) supplementation in Zanzibari and Nepalese children. They found that none of the supplements had any effect on mortality. In fact, one of the trials was stopped early for lack of statistically significant results.

This led to quite a bit of reflection on her part, Stoltzfus said. “These were massive trials with prominent funding and influential investigators, but we weren’t well-prepared to deal quickly and rapidly with the findings.”

There were some positive results, though. IFA supplementation decreased time to walking for infants with iron-deficiency anemia at baseline.

The trail ended in 2006—a year that ushered in a new global era of human rights, health and economics, Stoltzfus said. “This larger agenda shattered any individual assumption that we could de-commission should only claim credit commensurate with the extent of their participation in the activity.”

An online conference evaluation for Continuing Professional Education (CPE) Credits for ASN’s Scientific Sessions & Annual Meeting at EB 2016 will be open through June 30, 2016. Up to 30 credit hours are available. Select Sponsored Satellite Programs also offered credits and have separate evaluations (see below).

Access the survey for ASN’s Scientific Sessions & Annual Meeting at EB 2016. Please allow three weeks for the processing and distribution of certificates.

Questions? Please contact Gwen Twillman at gtwillman@nutrition.org.

Sponsored Satellite Programs

• CPE Survey for the Fourth Global Summit on the Health Effects of Yogurt (Organized and sponsored by the Danone Institute International, the International Osteoporosis Foundation and ASN)

• CPE Survey for Food for the Brain: Learning How What We Eat Affects Cognition and May Prevent or Delay Dementia (Organized and sponsored by the California Walnut Commission)

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Influences on Nutrition at the Individual, Household, and National level

By ASN Blogger

Many factors can influence the success of a project, running from the individual to the institutional level. Presenters at the minisymposium on Global Nutrition: Nutrition-Sensitive Programs on April 4, shared results from studies at a variety of levels.

At the individual and household level, gender roles within the household can influence individuals’ ability and willingness to carry out different activities. Marion Min-Barton presented results from qualitative research in Ethiopia, in which men and women were asked about gender roles for nutrition actions, with nearly 40 percent of men and women felt that the activities were the responsibility of both the male and the female. However, later in the minisymposium, Gordon Zello shared results from a different study in Ethiopia, where researchers found that women’s work burden (for example, being responsible for fetching water) was a significant factor associated with household food insecurity and hunger. This suggested even if men and women feel that they are equally responsible for nutrition, disproportionate constraints on women’s time could be affecting nutrition in the household.

Glucose self-efficacy in complementary feeding was the focus of a study in Zambia. Djeinam Touré explained that in this study, a home gardening intervention had a positive association with women’s self-efficacy in complementary feeding, and that this relationship was mediated by social support from husbands and also by household food insecurity. In other words, the intervention was positively associated with social support from husbands, which in turn was positively associated with women’s self-efficacy.

Also focusing on household food production, Afia Atuobi-Yeboah and Lilila Biltzhashka presented results from Ghana and Burkina Faso. The study in Ghana found that an intervention to improve egg production at the household level, coupled with school nutrition education, significantly improved egg consumption among children. The study in Burkina Faso was a follow-on to an impact evaluation that had previously found positive impacts on women’s dietary diversity and underweight as well as child wasting and anemia. Two years later, significant differences remained between intervention and control groups in women’s underweight and child wasting but not in women’s dietary diversity or child anemia, suggesting that for the latter two indicators, the control group may have improved to the level of the intervention group.

Moving to the institutional level, speakers presented findings from both qualitative and quantitative research. Tuan Nguyen presented results from an impact evaluation of a national mass media campaign in Vietnam, which was found to be positively associated with exclusive breastfeeding. Andrea Warren shared findings from a qualitative study in Ethiopia that found inadequate coordination structures for nutrition-sensitive interventions at the national level, among other challenges. Gina Singh presented findings from a project to collect and analyze individual-level national or subnational data to determine dietary intakes of key nutrition-related crops’ availability from 1980–2015. This effort has thus far assembled 1,226 total surveys-years of data on dietary intakes of a variety of foods and nutrients.

The minisymposium made clear that a variety of approaches, through a variety of sectors, are important for improving nutrition globally.

Health Professionals Need More Nutrition Education — How Can We Deliver?

By ASN Blogger

It’s not a revelation that most Americans would benefit from increased nutrition education and guidance. Newly released data from the Centers for Disease Control and Prevention show that 64 percent of Americans are overweight or obese — a number that’s held steady over the past few decades. And nearly 40 percent of us consume less than 1 serving of fruits or vegetables daily. $210 billion is spent annually on obesity-related care.

In trying to address this problem, physicians trained in nutrition achieve improved health outcomes in patients with obesity-related conditions. Numerous clinical guidelines recommend that physicians counsel their overweight and obese patients on diet, and yet, fewer than 25 percent feel that they received adequate training in doing so. As a result, only 1 in 8 medical visits includes a discussion of nutrition.

The Problem

It is recommended that physicians-in-training receive 25 contact hours of nutrition education, including basic nutrition knowledge, assessment, nutrition from the individual to the population and dietary treatment of disease. However, nutrition education in medical schools has continuously and updated every 4-5 years. The number of hours devoted to nutrition education has dropped substantially since 2004, while the number of schools with no required nutrition education has risen.

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Advantage of at least one NIM module, and the program has proven to be successful in providing 33 percent more nutrition education in schools that use NIM versus those that do not.

Future Directions

Despite the advances made by NIM in improving the dissemination of nutrition knowledge in the medical curriculum, challenges remain. Martin Koldenreim, NIM’s principal investigator, has acknowledged that building good nutrition education tools is expensive and time-consuming, since materials need to be reviewed continuously and updated every 4-5 years. Supporting a web-based tool takes a significant amount of resources, and funding sources are difficult to consistently maintain.

Recently, this cause has been taken up by several prominent health and medicine-focused organizations. A new effort has been launched to teach medical students, physicians, and other allied health professionals how to address these issues and consider a path forward.

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Efforts toward a Standardized Diet for Zebrafish

Like their rodent counterparts, zebrafish have become a widespread model of human disease onset and progression. With the NIH’s renewed emphasis on rigor and reproducibility, ASN members should be patient, said an array of researchers, agribusiness representatives, feed manufacturers, journal editors, and USDA and NIH representatives convened an ad hoc session to discuss the development of improved dietary knowledge as well as evidence-based instruction of clinical skills. In addition to providing biochemical, clinical, and epidemiological components and virtual case studies, NIM also offers nutrition tools like pocket notes, nutrition recommendations and quizzes, and YouTube video vignettes. Nearly 75 percent of U.S. medical schools take advantage of at least one NIM module, and the program has proven to be successful in providing 33 percent more nutrition education in schools that use NIM versus those that do not.

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Established in 1928, the American Society for Nutrition (ASN) is the premier research society dedicated to bringing together the world’s top researchers and clinicians to advance our knowledge and application of nutrition science. Members of ASN receive benefits ranging from free access to the top peer-reviewed journals in the nutrition and dietetics category to reduced registration rates for topical meetings and conferences. Take advantage of the following ten ways that ASN can advance your career by becoming a member today!

1. **CUTTING-EDGE SCIENTIFIC PROGRAMMING**
   - ASN Scientific Sessions & Annual Meeting at Experimental Biology is an interdisciplinary, scientific meeting, bringing together over 15,000 scientists from throughout the world. The annual Advances and Controversies in Clinical Nutrition is designed to communicate significant, cutting-edge advances in nutrition research, and to stimulate discussion on emerging topics that impact human health.

2. **TOP RANKED PUBLICATIONS**

3. **REDUCED REGISTRATION RATES**
   - Members receive reduced conference registration rates to Experimental Biology ($165 savings!), Advances and Controversies in Clinical Nutrition ($100 off!) and co-sponsored meetings throughout the year.

4. **REDUCED PUBLICATION FEES**
   - Members receive discounted print subscriptions, page charges and waived manuscript submission fees. Additionally, ASN members are eligible to receive our partner publication, *Nutrition Today*, at a 58% discount off of the regular subscription rate.

5. **EDUCATIONAL RESOURCES**
   - ASN’s online educational portfolio contains podcasts, author videos, recorded webinars, videotaped conference sessions, blog entries and more.

6. **MEMBERSHIP IN FASEB**
   - You receive a variety of important additional benefits through ASN’s membership in the Federation of American Societies for Experimental Biology (FASEB) alliance such as access to FASEB’s Legislative Action Center, subscription discounts for The FASEB Journal, online access to the FASEB Member Directory and career development resources.

7. **NETWORKING OPPORTUNITIES**
   - All members are eligible to join one of our 15 Research Interest Sections (RIS). The RIS are communities designed to provide a mechanism for topic-specific discussion regarding nutrition research and practice. Additionally, members are encouraged to join one or more of the following Scientific Councils: Medical Nutrition, Global Nutrition, and Nutritional Sciences.

8. **NUTRITION RESEARCH SUPPORT**
   - ASN is your voice and is committed to increasing the investment in nutrition research. We make it our mission to provide our members with the information and resources necessary to take a stand for nutrition research.

9. **AWARDS AND RECOGNITION**
   - In recognition of our member’s professional accomplishments, ASN honors scientists, clinicians and scholars for significant achievements in nutrition research and practice. The program grants over $452,000 in scientific awards, student grants, travel awards and honoraria.

10. **GLOBAL CONNECTIONS**
    - ASN is a global organization that enables its members to form relationships with top nutrition researchers throughout the world. ASN is the US Adhering Body to the International Union of Nutritional Science.

www.nutrition.org/join
Research Conflicts
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Principals.
"It's very, very clear that the role of industry funding is going to become more relevant," she said. "How do we promote a new dialogue around this? We have to address the myriad of perceived conflicts that exist in order to make real progress in the research arena. Trust and transparency is something we should all have a tremendous stake in working together to achieve."
Arya M. Sharma, MD, PhD, University of Alberta, discussed the nature of competing interests. "A lot of the public thinks there needs to be a wall between academia and industry—and not just any wall. It's got to be huge, it's got to be beautiful and it's got to be paid for by industry," she said as the audience laughed. Someone in the industry participation is often necessary for big research projects. For instance, the INTERHEART study that discovered that high waist-to-hip ratios raise the risk factor for myocardial infarction was sponsored by more than a dozen pharmaceutical companies.

Asking the Real Questions
Conflicts disclosure forms for research journals don't ask the real questions, Sharma said. "When you look at conflicts, there are always three things: interest, agenda and integrity. Interest drives an agenda, and that agenda may or not affect the integrity of what you're doing."
Commercial conflict is simple, Sharma said. "Follow the money." But career conflicts are more nuanced. For example, someone's interest could be obtaining tenure, which leads to an agenda of getting grants and producing more papers. The integrity issue is overestimating a research question or results.
Ideological conflicts are the most complicated, Sharma said. In those cases, the interest is someone's opinion. The agenda is to spread that opinion. And the integrity issue is whether to spin the story to support the data to support the opinion.
A capacity crowd listened to presenters at the "Pulse: Authenticity in Nutrition Research and Opportunities" sponsored satellite program on April 2. The event was organized and sponsored by the U.S. Dry Pea & Lentil Council, the American Pulse Association, Pulse Canada and the World Food Center at the University of California, Davis.

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Robert M. Suskind, MD, California University of Science and Medicine, delivered "Finding a Way to Prepare Tomorrow's Physicians: A 50-Year Nutritional Journey" on April 3. His presentation was the inaugural Robert Suskind and Leslie Lowinter-Suskind Pediatric Nutrition Lifetime Achievement Award Lecture. This year’s award was given to Nancy F. Krebs, MD, University of Colorado, Denver, who will deliver next year’s lecture. Suskind acknowledged his wife, Leslie Lowinter-Suskind, in the audience for her partnership and encouragement.

Government Approach
Barbara O. Schneeman, PhD, U.S. Agency for International Development, and Christoph Lynch, PhD, National Institutes of Health, discussed how the federal government approaches research. Schneeman, who formerly worked for the Food and Drug Administration’s Center for Food Safety and Applied Nutrition, detailed how industry-funded research is used by the FDA.
An agency review requires submission of all evidence. "People may not understand the agency does an independent review that focuses on methods and results, and doesn't just accept conclusions from published literature," she said. Determining if evidence is useful for making scientific conclusions is based on the quality of the data, not the funding source, she said.
For product health claims, the FDA looks at safety evaluations and evidence to support the claims. It’s the manufacturer’s responsibility to base claims on "truthful and not misleading" evidence, Schneeman said. The manufacturer is required to provide a full packet of studies, and the FDA determines which studies aren’t useful. Schneeman said acceptable evidence includes human studies that evaluate the substance-disease relationship, intervention studies and observational studies—not meta-analyses and reviews.
Schneeman said fatal flaws in a study include a lack of controls or relevant statistics, no control for key confounders of risk, nonvalidated biomarkers used as an endpoint, no evidence of an independent effect from the study design, use of observational data without intake validation, or studies conducted in malnourished or diseased populations. The funding source isn’t a fatal flaw. Lynch explained how NIH grant applications have changed to require more rigor and reproducibility. This affects four key areas:
Scientific premise. Applicants should discuss strengths and weaknesses of prior research, including things like blinding and variables.
Rigorous experimental design. This may be a big change for preclinical researchers, Lynch said. This step is designed to increase the transparency of research, to allow others to reproduce and extend the research in well-controlled conditions.
Consideration of relevant biologic variables, such as sex. Much of the past and current preclinical research has been on male animals, so the goal is to consider using more females.
Authentication of key biological and chemical resources. Examples of things researchers need to authenticate include cell lines, specialty chemicals and antibodies.
Esther Myers, PhD, EF Myers Consulting, followed with a discussion of the question "Is funding related to research quality?"
She cited two studies that address funding and nutrition-related research. In 2007, Lesser L, et al. analyzed 206 research reports on soft drinks, juice and milk. They concluded that all-industry funded studies are more likely to be positive, but they couldn't collect bias factors. In 2012, Wilde et al. looked at 70 studies on obesity funded by the national diabetes checkoff or the NIH. The researchers found little evidence that the checkoff research was more favorable than the NIH research.
However, Myers said, neither study evaluated how well the research was done. So she and her team conducted a study to evaluate quality of research versus risk of bias.
They began with 2,539 research articles evaluated by the Evidence Analysis Library. They measured the quality of each article based on published reports of how critical appraisers viewed the study. Myers and her team found that studies that didn't report any funding at all were nearly five times as likely to have negative ratings compared to other studies, and university- and hospital-funded studies were more likely to have neutral ratings. They also found that review articles are more likely to receive negative reviews from appraisers, compared to observational or interventional studies. However, Myers noted that new research review reporting standards may have changed that.
David Allison, PhD, University of Alabama at Birmingham, closed the session with a look at the future of rigor, reproducibility and transparency in nutrition research.
Frustration, distortion and gross error have existed since the beginning of science. "There's evidence that Gregor Mendel cooked the books a little with his peas," Allison said. Math errors are a common problem, and cluster randomized trials are a major source of confusion.
But retractions in the scientific literature are hard to achieve, Allison said. He noted that one journal charged authors $10,000 if they wanted to retract their study. Others charge to submit letters to the editor pointing out errors in a study.
That said, not all studies merit substantial rigor, Allison said, because some studies just aren't as important as others. In terms of variation in methodologic rigor, "you can be as sloppy as you want as long as you tell the reader, so they can be a judge of how good the science is," he said.
"And lastly, I think we really need to up the value of a culture of truthfulness," Allison said. "I think that's what we need along with our culture of health."
Alzheimers
Continued from page 1

prone to more seizures had poorly performing brain stem cells.

By injecting stem cells into mice that don’t have immune systems, Steindler and his team have made patient-specific avatars. “We’ve found we have to do truly personalized, precision medicine,” he said, which includes personalized nutrition. This includes dietary flavonoids—particularly those in cocoa—that enhance neurogenesis in the hippocampus, Steindler said.

Nutrients, Cognitive Development and the Potential of Personalized Nutrition

The structure and function of the adult brain is mostly determined during the first 1,000 days of life, said Steven H. Zeisel, MD, PhD, University of North Carolina at Chapel Hill. Choline is a key nutritional component at that age.

Zeisel said some women are capable of making choline during pregnancy, but others must supplement with it. Estrogen helps the liver generate choline, but 44 percent of young women don’t have this genetic capability. Precision nutrition can identify people with genetic polymorphisms that interfere with choline production, he said.

Babies have high concentrations of choline in utero, and it remains at high levels as a blood nutrient for about the first year of life. Zeisel said. Mouse studies show that babies who get extra choline don’t ever become senile as they age. But does this apply to humans?

Zeisel said a Harvard study shows a mother’s choline intake during the first and second trimester of pregnancy is indicative of 7-year-olds’ performance on memory tests. The study showed 350-400 mg a day of choline a day is necessary for offspring’s optimal memory function.

Other research shows that taking choline away from mice mothers in late pregnancy results in decreased rates of neural progenitor cell proliferation in their offspring. A lack of choline also affects neurogenesis. Zeisel said layers 2 to 5 of a fetus’ cortex are not formed properly if choline is missing.

Choline is also a factor in epigenetics. “By changing choline in diet, you can change gene methylation,” Zeisel said. His lab work shows that DNA methylation in the fetal brain can be decreased by low choline. He thinks this is because low choline reduces the epidermal growth factor receptor (EGFR). EGFR may be important for cortical layering, so increasing EGFR may be an option in pregnant women, Zeisel said.

Diet and Cognitive Function: What Works and How Do We Measure It?

Most people’s optimal mental performance peaks in their 20s. “But not everything goes, and that’s important,” said Andrew Schley, PhD, Swinburne University.

Crystallized intelligence, including knowledge, vocabulary and verbal ability, can improve throughout life. “Even in the elderly, cognitive decline isn’t inevitable,” said Schley, citing studies showing that diet and other factors can slow decline in mental accuracy and speed of recognition in people up to age 85.

Unlike nutritional strategies, drugs don’t target many of the factors involved in Alzheimer’s, Schley said.

He said there’s good evidence that the flavonoids in one small glass of wine or 10 grams of chocolate can improve cognitive function in the elderly. His work shows that cocoa flavanol treatment can increase neural efficiency and improve blood flow, which may be indicative of hippocampal neurogenesis.

A new study of older adults shows curcumin also targets many processes involved in Alzheimer’s. COMPASS cognitive battery tests showed four weeks of curcumin supplementation improved working memory and reduced fatigue. Schley said a surprising result was that curcumin also induced calmness in the participants and appears to buffer against the effects of stress.
mid conflicting reports about the need for vitamin E, recent merging research supports a critical role for this essential nutrient, especially during vulnerable periods of the lifecycle, including pregnancy, the first few years of life, and the elderly. Herein, accumulating research demonstrates a role of vitamin E in neurodevelopment and cognition, as well as the development of allergic airway disease including asthma. These are new findings for vitamin E that extend beyond its mechanistic role as an antioxidant with heart health benefits.

More specifically, research from academic institutions demonstrates a role for vitamin E in fetal development and its association with later life dementia, as well as Alzheimer's disease. There is also evidence for a role of different isoforms of vitamin E in the development of allergic airway disease during the prenatal and postnatal periods. Although the prevalence of dementia, Alzheimer's and allergic airway disease continues to rise at a global level, there are no pharmacological approaches for the management or treatment of these diseases. This emerging research on vitamin E begs the question whether increased dietary or supplemental vitamin E has a role in the prevention of these diseases, particularly important considering that as many as 60% of Americans are not achieving the EAR for vitamin E.

This webinar aims to create awareness and inspire additional research on the role of vitamin E in neurodevelopment, cognition and allergic airway disease, especially during critical periods of the lifecycle.

By the end of this program, attendees will be able to:
- Describe the role of vitamin E and its different isoforms throughout the lifecycle, particularly as it pertains to neurodevelopment, dementia, Alzheimer's disease as well as allergic airway disease.
- State the limitations of measuring vitamin E adequacy through measurement of blood levels alone.
- Identify potential gaps and opportunities to advance the science, guide public policy and educate consumers on the importance of adequate vitamin E intakes during the lifecycle.

Moderators
Deshanie Rai, FACN, PhD, Bayer Healthcare
Lisa Tussing-Humphreys, PhD, RD, University of Illinois at Chicago

Speakers
Functional Relevance of Vitamin E during the First 1000 days and Associations with Later Life Outcomes
Maret G. Traber, PhD, Linus Pauling Institute, Oregon State University

Vitamin E Isoforms Differentially Regulate Allergic Airway Disease: An Update on the Emerging Research
Joan Cook-Mills, PhD, Northwestern University Feinberg School of Medicine, Allergy-Immunology Division

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McCollum Lecture
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sign efficacious nutrition interventions without understanding the local diet.”

Subsequent trials Stoltzfus conducted looked at reasons for childhood stunting. Stoltzfus and Jean Humphrey developed the hypothesis that environmental enteropathy (EE) is a major cause of postnatal stunting. That led to the Sanitation Hygiene Infant Nutrition Efficacy (SHINE) trial in Zimbabwe, which includes infant feeding education and Nutributter, along with a water, sanitation and hygiene (WASH) intervention.

Stoltzfus and Humphrey also discovered that 37 percent of the pregnant women enrolled in SHINE were excreting aflatoxin in their urine, most likely due to consumption of groundnuts and maize. Infant porridges also contained high levels of aflatoxin.

Reflecting on the research highs and lows of her career, Stoltzfus said she’s discovered that “bias in scientific inference is often not motivated by direct profits, but rather by our attachment to our ideas and our scientific identities. I’ve observed in my own life and nutrition, it’s quite common for us to get attached to our nutrients. There’s something about our human attitude toward our data and how it’s used that I think we as a nutrition community can pay more attention to.”

Stoltzfus closed her talk on what good research should entail:
- Frame your questions carefully.
- Learn, develop or collaborate to find the methods you need to answer your questions.
- Use technical terms only when necessary, and define them. Avoid acronyms.
- Identify from the start who will use the knowledge you will seek and how to reach them.

“Above all, remember what is true matters much more than what you would like to be true,” she concluded.