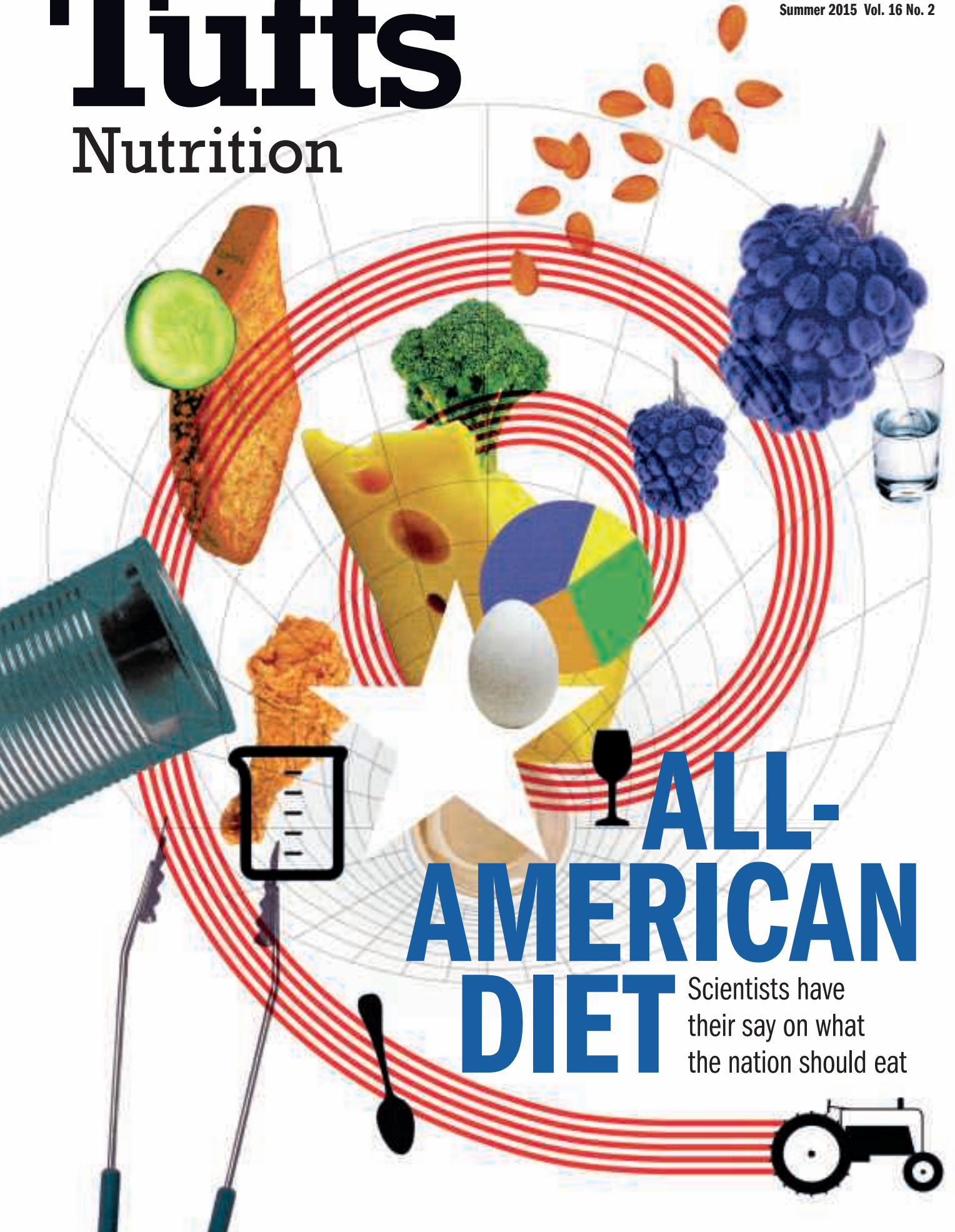


Tufts

Nutrition



ALL-AMERICAN DIET

Scientists have their say on what the nation should eat



BEHIND THE PROMISE OF BALLET WORKOUTS

Women everywhere are flocking to barre workouts. Most of the time is spent holding an arm or leg very still and then moving it up an inch and then down an inch, until your muscles are screaming.

These ballet-inspired classes promise to help you develop a dancer's physique by creating long, lean muscles without bulk that look and feel more graceful. But take that with some skepticism.

Donato Rivas, Ph.D., an exercise scientist at the Jean Mayer USDA Human Nutrition Research Center on Aging, explains that you build muscle by progressively increasing the weights you use. Most barre classes use light weights, so once those two-pound dumbbells are manageable, you won't build any more muscle mass, even if you're sweating while you work. So the secret of the barre-class lean muscles is to not build much muscle at all.

But what about toning? In Rivas' view, "Muscle toning is having less subcutaneous fat so you can see the muscle itself." To do this, you have to watch what you eat in addition to working out.

As for lengthening muscles, Rivas says that your muscles attach to your bones in set places, depending on their function. They don't ever become "longer," and you wouldn't want them to; it would probably indicate that something was very wrong.

The barre does have benefits, though. You probably build muscular endurance, Rivas says, allowing you to keep doing those leg lifts over and over. If you find the class challenging, the work will slightly raise your heart rate, so you'll burn some calories. Barre is also less intense on the joints than many other workouts.

It's good, safe exercise. Just be wary of the hype. —KATHERINE PETT, N16

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A VIBRANT YEAR



LOOKING BACK AT my first year as dean of the Friedman School, I am amazed and delighted at our successes in pursuit of our mission of education, research and public impact.

In education, we partnered with Jim Glaser, dean of Tufts' School of Arts and Sciences, to propose a new minor in nutrition for undergraduates, which I hope might grow into a major as well as a "4+1 program," allowing undergraduates to also obtain a Friedman School master's degree in five years.

We advanced our acclaimed online learning programs, including the hybrid M.S. in nutrition science and policy and our online graduate certificates: a new certificate, Nutrition Science for Health Professionals, starts this fall.

We refined our student training, internship opportunities and alumni connections, including a successful pilot program that matched current students to alumni mentors. We are reorganizing our academic programs, including bringing our strong public health nutrition and community interventions into the heart of our teaching. One of my priorities is to increase the diversity of the students, staff and faculty, with greater outreach, larger endowment support and novel collaborations with students and alumni.

We are about to launch the largest strategic expansion in school history, involving multiple faculty hires across diverse areas and substantial new space. We rejuvenated our leadership structure, including new deans for education, faculty and administration; better integration of key staff leaders in student affairs, finance, hybrid learning and media/communications; and a new Office of Faculty Affairs to maximize faculty success and support. We synergized our communications, including this great magazine, the school website, social media, media relations and the Tufts' *Health & Nutrition Letter*. I am delighted to have HNRCA director Simin Meydani as a partner in advancing our joint missions.

The school has also achieved substantial public impact, from fantastic research discoveries to major policy reports—several of these are highlighted in this magazine. We had a remarkable year in philanthropy from alumni and friends. We achieved a record in annual giving; another record in student participation in the 2015 Class Gift; and the second-highest fundraising year in school history. Many of you generously support the school each year—please accept my sincere thanks.

To our faculty, staff, students, alumni, volunteer leaders, friends and partners: thank you for all you do. This phenomenal year is a testament to your energy and passion, the quality of our education and scholarship, the strength of our mission and our potential for even greater impact.

DARIUSH MOZAFFARIAN, M.D., Dr.P.H.
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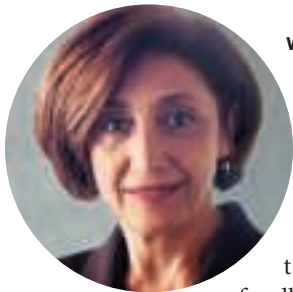
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THE MISSING LINK IN FOOD SAFETY



WE ALL KNOW the world is getting smaller, and as we globalize, changes in food production, distribution, quality and accessibility make it easy for people to be exposed to contaminated food. This is in addition to the emergence of new and more virulent pathogens, and an increase in antimicrobial resistance in humans. Reducing food contaminants is incredibly important for the health of the global population; however, protecting ourselves from foodborne illness does not end when the plate reaches the table.

Nutrition that keeps the immune system strong is important in optimizing people's resistance to pathogens.

The United Nations addressed this multidimensional issue on World Health Day 2015, which was themed "Food Safety: From Farm to Plate, Make Food Safe." At the event in April, I spoke about the fact that vulnerable populations, including children, pregnant women and the elderly, are particularly susceptible to foodborne pathogens. These populations account for 90 percent of listeria infections—the third-leading cause of death from food poisoning globally. Nutrition plays a key role in protecting these individuals from foodborne pathogens. The recent multistate listeria outbreak in the United States luckily was not catastrophic, but not all nations are as well equipped as ours on nutritional defense.

Changes in food quality and availability can occur without warning, as we saw in the recent earthquakes in Nepal [see "Lessons from Nepal," page 10]. Food systems can be set back years and expose populations to numerous health risks. At this crucial time in Nepal, taking steps to reduce the amount of contaminants in food is incredibly important, as is making sure those at high risk for infection, such as children and the elderly, can get nutritious food.

When it comes to food safety, most of the attention has been on the continuum of farm to table. We need to extend the continuum to include our ability to fend off foodborne illness. Given the breadth of research and scholarly activities in food and agriculture, biomedical sciences and public health policy at the HNRCA and Friedman School, we are in a unique position to advance the World Health Day theme. Let's make it "from farm to plate *to people*: make food safe and make a difference in the lives of people around the world."

A handwritten signature in black ink that reads "Simin Meydani".

SIMIN NIKBIN MEYDANI, D.V.M., Ph.D.

Director, Jean Mayer USDA Human Nutrition Research Center on Aging

LAURELS

ANGELO AZZI, M.D., PH.D., a scientist in the HNRCA's Vascular Biology Laboratory, received a Lifetime Achievement Award from the European Society for Free Radical Research in Paris.

Professor **ROGER FIELDING, PH.D., N93**, director of the HNRCA's Nutrition, Exercise Physiology and Sarcopenia Laboratory, received the Olof Johnell Science Award for his contributions to osteoporosis research worldwide.

Several researchers received awards from the American Society for Nutrition during its annual meeting in Boston in March. Assistant Professor **SAI K. DAS, PH.D., N02**, a scientist in the HNRCA's Energy Metabolism Laboratory, received the E.L.R. Stokstad Award for outstanding fundamental research in nutrition. Professor **JOHANNA DWYER, D.SC.**, director of the Frances Stern Nutrition Center and a scientist in the HNRCA's Nutrition Epidemiology Program, received the Excellence in Nutrition Education Award. **JEAN-MARC ZINGG, PH.D.**, a scientist in the HNRCA's Vascular Biology Laboratory, received the McCormick Science Institute Research Award for advancing the understanding of the potential health benefits of culinary herbs and spices.

LETTER

I was happy to see Alicia Romano's well-written, evidence-based response to the question about drinking raw milk ("Milk in the Raw," Winter 2015). I was surprised, however, that she failed to mention that in terms of nutrition, milk is an excellent source of calcium, whether pasteurized or not. But raw milk is not fortified with vitamin D, unlike pasteurized brands.

ROBIN (PARNES) WECHSLER, N02
WELLESLEY, MASSACHUSETTS

A La Carte



Global Diet Quality on the Decline

Bad choices outpace healthy changes **BY KATHERINE PETT, N16**

A **FIRST-OF-ITS-KIND STUDY ASSESSING** global dietary patterns in 187 countries found that diets worldwide are getting worse. Using dietary surveys from 1990 and 2010 that were representative of more than 90 percent of adult diets around the world, researchers assessed how individual nations' diets changed over time. Seventeen key foods and nutrients served as a proxy for total diet quality. Healthy foods included whole grains, fruit and vegetables, while unhealthy items included sugar-sweetened beverages and those high in sodium.

What researchers discovered was concerning. Overall, healthy

food intake increased in high- and middle-income countries, but so did consumption of unhealthy food, with the latter trend outpacing healthy changes.

"People in high-income countries, and increasingly middle-income countries, are among the biggest consumers of unhealthy foods," said first author Fumiaki Imamura, Ph.D., N09, a senior investigator at the Medical Research Council Epidemiology Unit of the University of Cambridge.

On the other hand, people in poorer regions like Sub-Saharan Africa are eating fewer healthy foods than they did two decades ago.

"If we don't step up efforts to improve the current food supply, we could see the same turn toward nutrient-poor, processed foods as we've seen in China, India and other middle-income countries where we saw the largest increases in consumption of unhealthy foods," Imamura says.

Some patterns were consistent throughout regions of the world. In general, older people eat more healthfully than young adults, and women eat better than men.

The variety of ways that diets are changing indicates that there is no one-size-fits-all approach to improving global nutrition, said Dariush Mozaffarian, M.D., Dr. P.H., senior author on the study and dean of the Friedman School. "Poor diet quality is now the number one cause of poor health in the U.S. and the world, causing enormous suffering and costing trillions of dollars," he said. "These new findings can be used to inform policies and prevention efforts aimed at improving dietary patterns to reduce these burdens."

The study, published in the March issue of *The Lancet*, was funded by the Bill & Melinda Gates Foundation.

BREAKFAST IN THE CLASSROOM

Some research has shown that children who eat breakfast make better students—they have better test scores and are more able to focus in school, for example. That has been the impetus behind the National School Breakfast Program. A new Tufts study looked at whether one version of that program, Breakfast in the Classroom, was making a difference in academic performance.

Traditionally, National School Breakfast Program meals are served in the cafeteria before school, and the cost is based on family income. The Breakfast in the Classroom version, on the other hand, provides free meals to all students right in the classroom after the school day begins.

For the study published in *JAMA Pediatrics*, Stephanie Anzman-Frasca, Ph.D., a research associate with ChildObesity180 at the Friedman School, looked at 446 public elementary schools in a large, urban school district, where about 58 percent of schools had newly implemented Breakfast in the Classroom programs. The other schools in the district continued to offer breakfast before school in the cafeteria.

The results suggest that serving breakfast in class did improve participation in the National School Breakfast Program, with about three-quarters of students participating, versus 43 percent in the other schools. Schools that offered Breakfast in the Classroom also had slightly better attendance. But the students at those schools did no better on standardized math and reading tests than their peers at the other schools.

The authors note that academic performance might be better assessed after the programs have been up and running for more than a few months.

KEEPING WEIGHT IN CHECK?

Watch those sources of carbs and protein

WHEN IT COMES to maintaining your weight, food combination might matter as much as individual food choices, according to new research.

The study, published in *The American Journal of Clinical Nutrition*, followed the dietary habits of 120,000 U.S. health professionals over 16 years. Unsurprisingly, processed and red meat protein sources and refined carbohydrates, such as hamburger meat and French fries, were associated with weight gain, while such foods as fish, nuts and whole grains were associated with moderate weight loss over time.

Interestingly, full-fat dairy products, including milk, cheese and butter, were not associated with weight gain, and yogurt was associated with weight loss. First author Jessica Smith, Ph.D., a visiting scholar at the Friedman School, noted, “When people consumed more low-fat dairy products, they actually increased their consumption of carbs, which may promote weight gain. This suggests that people compensate over years for the lower calories in low-fat dairy by increasing their carb intake.”

And increasing carbohydrates is not always good, especially if they have a high glycemic load (a measure of how a food affects blood sugar). Researchers found that when people simultaneously increased foods high in glycemic load and protein sources like red meat, there was a stronger association with weight gain. Similarly, while eating fish was linked to weight loss, that association decreased when the diet overall was high in glycemic load.

This is one of many studies leading nutrition experts to advise consumers to pay more attention to overall diet pattern and less to individual “good” or “bad” foods. Senior author Dariush Mozaffarian, M.D., Dr.P.H., dean of the Friedman School, explained: “Focus on quality, not quantity of your diet. Foods are diverse and interact with our bodies and each other in complex ways. Increase fish, yogurt, nuts, fruits and whole grains in your diet, and reduce potatoes, white bread and rice, and sugars.” —KATHERINE PETT, N16



GET MORE OUT OF YOUR VITAMIN D

If you take a vitamin D pill to meet your requirements for the sunshine vitamin, you'll get more out of it if you eat it with a little fat. Fat stimulates the release of bile into the small intestine, which makes it easier for the body to absorb fat-soluble vitamins like D.

Bess Dawson-Hughes, M.D., director of the Bone Metabolism Laboratory at the Jean Mayer USDA Human Nutrition Research Center on Aging (HNRCA), showed how important the pairing can be in a study that was published in *The Journal of the Academy of Nutrition and Dietetics*.

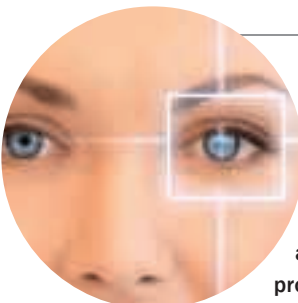
She gave 50 healthy men and women 50,000 international units of vitamin D3. (Note that this is a monthly dose, which is much higher and easier to study than the typical daily dose.) Some of the subjects ate a nonfat breakfast of egg whites, toast, fruit and juice with their dose. The others ate a similar breakfast, but with 30 percent of the calories coming from corn or olive oil. Each group ate a lunch and dinner with fat ratios that mimicked those in their breakfasts.

At the end of the day, blood tests showed that the people who ate the meals with fat absorbed 32 percent more vitamin D than the nonfat group. Avocados, nuts, salmon and vegetable oils are all good sources of the healthy unsaturated fats that will do the trick.

NEW GRANTS

Functional Foods

Two researchers at the HNRCA have received a combined \$1 million in funding from the USDA's National Institute of Food and Agriculture to dig into the health benefits of common foods that may go beyond basic nutrition. Half went to Associate Professor Stefania Lamon-Fava, M.D., Ph.D., to study roles of omega-3 fatty acids found in fish and fish oil in inflammation and lipid metabolism. The other half went to Professor Xiang-Dong Wang, M.D., Ph.D., who will look at the role of bioactive components in tomato and tomato products in preventing obesity-related inflammation and cancer development.



CATARACT CLUES

A cataract, the debilitating clouding of the eye's lens, may start as a molecular miscommunication. Normally, obsolete or damaged proteins in the eye are removed via biochemical pathways, particular chain reactions among molecules in a cell. In studies with mice, Professor Allen Taylor, Ph.D., director of the HNRCA's Laboratory for Nutrition and Vision, and his team noticed that when one of these pathways falters, calcium flows into the cells of the eye lens, activating another pathway, which causes cataracts.

"We discovered that the ubiquitin pathway and the calpain pathway communicate with one another. When their conversation goes awry, cells start a vicious cycle in which proteins are improperly degraded," Taylor says. "This leads to alterations in proteins and the beginning of the clouding of the lens that defines cataract."

The newfound relationship between the ubiquitin and calpain pathways provides a fresh avenue for researching drugs and dietary approaches that could prolong the function of these pathways and delay the onset of cataracts, which more than half of Americans will develop before age 80. It could also provide an opportunity to learn more about how abnormal proteins may accumulate in other diseases, including Alzheimer's and Parkinson's, Taylor notes.

The results were published in the *Proceedings of the National Academy of Sciences*.



NOT SUPERSIZED, BUT STILL NOT GOOD

We all know that fast-food portions and their associated calories have continued to balloon for the last two decades—except that they haven't.

Two Tufts studies looked at the nutrition data on cheeseburgers, grilled chicken sandwiches, fries and colas served by three national fast-food chains between 1996 and 2013. They found that the average calories in those items were high, but stayed pretty much the same over that time, as did sodium and saturated fat. One noticeable change was in the fries, which declined in saturated fats in 2001, and then in trans fats between 2005 and 2009, most likely the result of legislation.

“However, the variability among chains is considerable,” says Alice H. Lichtenstein, D.Sc., the Gershoff Professor at the Friedman School and the director of the Cardiovascular Nutrition Laboratory at the Jean Mayer USDA Human Nutrition Research Center on Aging, who led the studies, which were published in the journal

Preventing Chronic Disease. Depending on the chain, in 2013 a large cheeseburger with fries and a regular cola ranged from 1,144 to 1,757 calories (an entire day's worth for some people). A small order of fries could differ by as much as 110 calories and 320 mg of sodium from chain to chain.

Consumers should look for the actual counts on calories, salt and saturated fat, information that more restaurants are making available at the counter. “A 100-calorie difference per day can mean about a 10-pound weight change per year,” Lichtenstein says.

Eat, Sleep and Be Healthy

THE RESEARCH IS pretty clear that people who regularly get enough sleep have healthier body weights than people who skimp on shut-eye. Whether that is because sleep keeps weight in check, people with better body weights sleep more soundly or some other reason is unknown.

Hassan Dashti, Ph.D., N12, N15, may have found a connection between sleeping and the food choices people make that helps explain it.

For a study published in the *American Journal of Clinical Nutrition*, he looked at nearly 15,000 people from several countries and compared how much sleep they usually get each night to the fat, protein and carbohydrates in their diets.

He found that younger adults who reported sleeping more tended to eat less saturated fat than their less-rested peers. Older women who slept more reported eating fewer carbohydrates and more polyunsaturated fat.

“Our results suggest that the connection between sleep and weight may be partly due to

food choices,” Dashti said. “The results consistently suggest that better-rested adults tend to have healthier intakes, particularly related to fat intake, than those sleeping fewer hours.”

Working in the HNRCA's Nutrition and Genomics Laboratory, Dashti also looked at mutations in a gene called CLOCK (Circadian Locomotor Output Cycles Kaput), which affects circadian rhythms, helps control appetite and has been associated with body weight.

While the results weren't statistically significant, he did find some evidence suggesting that for people with a certain CLOCK mutation, getting regular sleep could ameliorate a genetic predisposition to obesity.

“Achieving sufficient sleep may improve their diets, and by doing so, potentially reduce their risk of becoming obese,” Dashti said.



Dig In



GOING TO THE DOGS (AND CATS)

Nutrition research could learn from man's best friends

BY JULIE FLAHERTY

WHEN IT COMES to nutrition, we have a lot in common with our pets: We both love to eat, treats are often our downfall, and our obesity epidemics are sadly in sync. Diet also plays a role in the illnesses we share, such as heart disease. So close are we, in fact, that some veterinarians think dogs and cats could help us solve the problems of

human nutrition. Simin Nikbin Meydani, D.V.M., Ph.D., director of the Jean Mayer USDA Human Nutrition Research Center on Aging and president of the American Society for Nutrition, invited some of them to speak about “one nutrition” at the Experimental Biology conference in April.

Studying nutrition in companion animals has

advantages over using the typical lab rats and mice, says Lisa Freeman, D.V.M., Ph.D., J86, V91, N96, who earned her doctorate at the Friedman School and is a veterinary nutritionist at Cummings School of Veterinary Medicine at Tufts.

Rodents can be bred to develop certain diseases, but it doesn't really reflect what you would see in a person, Freeman says. “We can cure mouse cancer really well... but when you then try and take it to people, those drugs or devices often are not successful.”

Our pets, on the other hand, naturally develop many of the same health problems that we do.

“These dogs have been bred for certain characteristics—how they look and how they act. We unfortunately then have bred in certain diseases,” Freeman says. Take heart disease. About half of Doberman pinschers develop a heart condition called dilated cardiomyopathy, and 80 to 90 percent of King Charles springer spaniels develop mitral valve prolapse.

“We have those specific breeds that develop a disease at higher rates than you would see in the general human population,” she says. “It offers a great opportunity for you to study it very closely.”

Freeman is researching

how nutrition can slow the progress of these diseases. Sodium restriction can be very important, as well as proper levels of B vitamins, potassium and magnesium. In one study, boxers with dilated cardiomyopathy that were given omega-3 fatty acids had fewer heart arrhythmias.

Unlike with humans, “we can control these animals' diets very carefully to study the role of nutrition in these diseases,” she says. This kind of research could help not only pets, but ultimately humans.

Deborah Linder, D.V.M., V09, who counsels pet owners at the Tufts Obesity Clinic for Animals, sees potential for programs that help pets and owners lose weight together. She points to one study that showed that while people who exercised with their pets did not lose more weight, they did enjoy exercising more and were more likely to stick with it.

About 54 percent of cats and 56 percent of dogs are overweight. Unlike humans, however, they don't care if they are fat.

“On the playground, the overweight dog isn't shunned in the corner,” Linder says. “Dogs have no self-body perception, and don't perceive it in others.” She can envision nutrition studies where it

would be useful to have such stigma-free subjects.

Cats and dogs are not immune to fad diets, although they may remain blissfully unaware of the bandwagon they've been put on.

Just about every human diet trend—gluten-free, raw foods, antioxidant “superfoods”—eventually makes its way to the pet food industry, and the lag time has all but disappeared, says Kathryn Michel, D.V.M., V83, a professor of nutrition at the University of Pennsylvania School of Veterinary Medicine.

Some of these diets are not benign, such as the raw pet foods that were found in tests to carry salmonella and listeria, dangerous pathogens that can be passed to humans.

Some grain-free pet foods, designed to appeal to the notion that dogs' wild ancestors didn't eat grains, contain potato starch and tapioca, “which I also don't think wolves are eating in the wild,” Michel says.

Perhaps the biggest translational value of that knowledge is the mirror it holds up to human nutrition: When you find yourself buying dog treats because they are enriched with kale and pomegranate, it should make you wonder if a food fad has gotten out of hand.

FILLING THE PLATE

Students investigate hunger in Massachusetts

BY AMY ELVIDGE, N14

AN EXHAUSTED WORKING mother with her two toddlers in tow slowly approaches me at the East Boston Neighborhood Health Clinic. I am staffing the application desk for the Supplemental Nutrition Assistance Program (SNAP), formerly known as food stamps, and she is looking for extra help during this brutal winter. Between her car payments, mortgage, utility bills and child-care expenses, she isn't able to afford both rent *and* food—yet I have to tell her that her \$41,000 salary for a family of three is still deemed too high for federal assistance. It pains me to turn her away. Hungry and desperate, she accepts a pamphlet for a nearby food pantry.

While the U.S. economy is rebounding, putting food on the table is still a struggle for many families. Today in Massachusetts food insecurity—the lack of access to healthy food—is roughly 40 percent higher than it was before the start of the 2008 recession.

To help identify what drives food insecurity

across the state, a team of six Friedman School students from the class of 2015 were asked to write a report for the Metropolitan Area Planning Council, a state agency. Making up the team were Erin Foster West, Abigail Harper, Samantha Kelly, Elena Martinez, Ashley McCarthy and Nina Rogowsky, with Urban and Environmental Planning Professor Julian Agyeman, Ph.D., and Jennifer Obadia, Ph.D., N11, serving as advisors. They found that Massachusetts is a leading state in the fight against hunger, with exemplary non- and for-profit organizations that collaborate with local communities. Nonetheless, in profiling

several of these organizations, including my employer, Project Bread, the students found these organizations face many barriers.

A common problem is that many donors want to see their dollars go to food, not staffing. For example, while Project Bread would love to fund dozens of people in my position as a SNAP enrollment coordinator—connecting food-insecure individuals with the resources they need—we only have enough funding for me and another advocate in Worcester.

Further challenging these organizations is the sheer number people in need. Since 2008, the influx of first-time clients as well



as residents seeking emergency food aid make it hard for hunger organizations to make headway on long-term food security.

In addition to identifying the most vulnerable and underserved counties in Massachusetts to better target food-insecurity resources, the students made several recommendations. Increasing the minimum wage to \$11 an hour by 2017 would enable more families to afford food on their own. Expanding the Healthy Incentives Pilot would allow SNAP-recipient families to purchase more fruits and vegetables. Supporting the Massachusetts Food Innovation Trust Fund would encourage more farmers markets, food trucks and other vendors to set up shop in underserved “food desert” communities. Nonprofit hospitals could also help by using allocated federal Affordable Care Act funding to address the need for health-promoting food in their communities.

I agree with the report’s finding that current efforts are reducing hunger in the short term, but that there needs to be a greater focus on the long term. As a SNAP advocate, I can enroll a family for emergency benefits for a month at the click of a button—but this is by no means a permanent solution to their need for fresh, healthy food.

LESSONS FROM NEPAL

What keeps a disaster from becoming a catastrophe?

BY JULIE FLAHERTY

FOR THE PAST four years, several dozen Nepali research staffers have worked for Tufts on a project looking at the connections between agriculture and health in their homeland. As employees of the Nutrition Innovation Lab at the Friedman School, they have been conducting annual surveys of farm families at 21 sites across the country, including in some of the most remote villages.

That research came to an abrupt halt on April 25 with the earthquake that killed more than 8,500 people and left hundreds of thousands homeless. The Tufts field researchers in Kathmandu, some injured and all shocked but alive, quickly began helping organize local relief efforts and offering what medical assistance they could. Like many others, they slept in their cars or in the open.

But not having been trained as humanitarians, there was only so much they could do. Patrick Webb, Ph.D., the McFarlane Professor at the Friedman School, director of the lab’s program

in Asia and former chief of nutrition for the U.N. World Food Programme, quickly approved a plan that would put the local staff’s skills to work.

TUFTS NUTRITION: How did their mission change?

PATRICK WEBB: They wanted to do whatever they could. I was getting calls and emails asking, What can I do? We thought the best way they could contribute was to use their statistical and sampling and survey experience.

So we managed to get the donor, the U.S. Agency for International Development, to agree to allow us to reallocate the team. They will train other Nepalese workers to form needs-assessment teams who go out to remote areas to assess damage and needs for food, health care and shelter. Then they will work with UNICEF and the ministry of health to

manage data and quickly analyze it so it can support prioritization of the relief efforts. They are being reallocated to help in a substantive way that speaks to their strengths.

How does this affect your research?

I’ve always firmly believed that research should be done only if it can be useful. We are likely to go ahead with the household surveys we had planned—with some additional questions—starting with the districts that were least affected. By July and August, we hope to reach the districts that were affected the most. It will allow us to immediately compare what was there before and what is there now.

A challenge will be finding the people we have interacted with in past years. We had GPS locations for everyone’s



A man carries water past damaged houses in Nepal.

home, but if the house is gone, we don't know where the people have gone. But to the extent possible, we'll do this next survey and feed those data back to the government as quickly as possible. It will be like a real-time assessment of how people's lives are affected and the impact of relief resources.

You have said that the fallout from this earthquake is more than a "natural" disaster. In what way?

If you don't protect the gains of development you've been making over the decades—improved roads, clean water, pipes, education and health care—then it takes literally 30 seconds for it all to be destroyed. The fact that regional hospitals collapsed is outrageous. They should have been built to standards that would withstand earthquakes or at least retrofitted to be more resilient. But too few donor partners have funded such activity, and Nepal is still a desperately poor country.

What's the old phrase? "Hope for the best, but plan for the worst." That means regarding shocks not as "abnormal" events, but as entirely normal, and therefore factoring them into long-term strategies for development. Natural forces cause these disasters, but it is human inactivity—the lack of investment in building resilient livelihoods and food systems,

and ignoring the need to strengthen public services—that turns a disaster into a catastrophe. We need to be less reactive to shocks by preparing better and making the foundations of development less fragile.

SCARED STRAIGHT

Inmates take a hard look at their delinquent diets

BY JULIE FLAHERTY

SNACKING IS PERVERSIVE at the Massachusetts Correctional Institute at Norfolk, a medium-security prison for men just south of Boston. A pint of Ben & Jerry's is a daily ritual for some, and a common treat is the "honey bun sandwich"—a chocolate bar melted between two honey buns, totaling more than 1,500 calories. The inmates snack out of boredom, missing their families or depression. "Just the quantity of ice cream, chips and cookies, and why they were eating—that was astonishing to us," says Jessica Jones-Hughes, N09.

Jones-Hughes and Megan Miraglia, N09, learned a lot about prison cuisine when they designed and taught a Nutrition Science 101 course as part of Boston University's Prison Education Program, which enables inmates to earn a bachelor's degree during their incarceration.

Over two years, they taught more than 50 men at MCI-Norfolk, and found them to be the most engaged group they had ever worked with.

The women, both registered dietitians, designed the class to be rigorous and consulted with Assistant Professor Kelly Kane, who teaches introductory nutrition at Tufts, about current textbooks. The syllabus covered the basics of nutrition science, but in true Friedman School fashion, they also delved into agriculture and the food system. Some prisoners took the class to find out how to build muscle and tone their bodies, but were soon critiquing Michael Pollan's *In Defense of Food*.

The teachers were impressed by their students' creativity, especially when it came time for final presentations. One group did a rap and interactive play demonstrating cholesterol transport. Another did a version of *Eat This, Not That!*, complete with a prison cookbook and smuggled food samples they had concocted in the prison commissary, including lower-sugar cookies and baked chicken rolled in crushed corn flakes.

To curb the snacking epidemic, the instructors taught the inmates to analyze their diets and read labels, revealing that the bags of chips they would eat in one sitting actually contained multiple servings. But most of the ideas

came from the students themselves, once they were armed with the right information. The men suggested asking for extra vegetables in the dinner line, or taking advantage of the prison's trading culture to swap a candy bar for someone else's orange. One student lost 12 pounds and improved his blood sugar so much that he was able to see the TV without his glasses for the first time. Another discovered tools to manage his binge-eating disorder. A committee of inmates aimed to use what they had learned in the course to persuade the administration to improve the menu and water quality at the prison.

Miraglia, who works as a health-improvement strategist at Cigna, and Jones-Hughes, the vice president of fair-trade produce importer Oke USA, have had plenty of experience trying to get people to shift their eating behaviors. Their work with the inmates, they say, will always remind them that any population has the capacity to change, given the right knowledge.

While prisoners face more tangible obstacles than most, "everyone has barriers in their lives," Miraglia says. "The question is, if you want to make a change now, what can you do with what you have? Seeing their motivation and how creative they were in making different changes was awesome."

Factions continue to duke it out over what the nation's dietary guidelines should be, but the scientists have had their say:
less meat, less sugar, and please, eat your veggies

SHIFTING AMERICA'S DIET

BY JULIE FLAHERTY

ILLUSTRATIONS BY STUART BRADFORD

IT'S AN AFTERNOON IN LATE MARCH, AND GERSHOFF PROFESSOR ALICE H. Lichtenstein, D.Sc., is in her office, listening to a live feed of what Americans have to say about the Scientific Report of the 2015 Dietary Guidelines Advisory Committee. The exercise requires a thick skin, as does reading the thousands of public comments that have been posted to the guidelines website. There is a plea to “recognize and promote the role that beans can play in the health of Americans” and a demand that “schools need to stop overcooking vegetables.” But one of the most repeated criticisms goes like this: “...my family does not need the federal government at our dinner table promoting the agenda of elitists and activists. ...”

That would be aimed at Lichtenstein and the 13 other nationally recognized nutrition and health experts on the committee who spent 18 months going over the research for the report, which they submitted to the government in February. Now it's time for the Department of Health and Human Services and the Department of Agriculture to decide what, if anything, they will include from the committee's report in the actual Dietary Guidelines for Americans, which they will announce by the end of the year. It is a cycle that repeats every five years.

The commentary will go on for hours. As per federal rules, the committee has disbanded, and Lichtenstein, who served as co-chair, is officially out of the discussion except as an observer. “I registered [for the live streaming] like any other person in order to have access to it,” she says. She's not bitter; it's just the process that keeps



the science separate from the politics. The same goes for fellow committee member Professor Miriam Nelson, N85, N87, Ph.D., associate dean of the Tisch College of Citizenship and Public Service, and Associate Professor Timothy Griffin, Ph.D., who served as a consultant. (The Friedman School was the only institution to have three representatives work on the report.)

FOLLOW THE SCIENCE

After reviewing hundreds of studies, the committee outlined a way of eating that you've probably heard recommended many times before. A healthy dietary pattern, the report concludes, is higher in vegetables, fruits, whole grains, low and nonfat dairy, seafood, legumes and nuts; moderate in alcohol; lower in red and processed meats; and low in sugar-sweetened foods and drinks and refined grains.

Industry had made it clear that it has a beef with that “lower in red and processed meats” part, and a separate conclusion that a diet “lower in



animal-based foods” is better for the health of the food system (see “Good for You, and the Planet,” page 16). This was by far the most controversial part of the report, with meat industry advocates rushing to defend the nutritional benefits of their products, while supporters of plant-based diets cheered the conclusions. The push-and-pull isn’t surprising, Lichtenstein says, but it takes away from what she sees as a selling point of the report’s recommendations: flexibility. You can go vegetarian; you can go Mediterranean; you can have meat and potatoes—just as long as the other half the plate includes

green and orange vegetables.

Selling the guidelines to consumers is important. Although the guidelines will affect what foods are included in the National School Lunch Program, the Women, Infants and Children (WIC) program and the Child and Adult Care Food Program, individual Americans, by and large, have not done a good job of following the guidelines.

Lichtenstein doesn’t want us to cringe anymore about what we eat: “We have to get away from the idea that a healthy dietary pattern is punitive, that it tastes bad, that it takes a long time to prepare, that you have to do it only because it is good for you.” Because the diet is brushed in broad strokes, it can be adapted to different cultural patterns and personal preferences, she says. “You can do it if you don’t eat meat, if you don’t mix meat and milk, if you eat several small meals, if you like three meals a day or even if you don’t like Brussels sprouts.”

The committee used many studies that compared dietary patterns—whole diets, from soup to nuts—rather than

CHOLESTEROL

Capping dietary cholesterol at 300 milligrams a day to prevent heart disease has long been a refrain of the dietary guidelines. But this year, the advisory committee suggested nixing it, coming to the same conclusion as the American Heart Association/American College of Cardiology, which did not include it in their 2013 guidelines. It reflects what has been a gradual change in the science, and in what people are eating. Currently, men get about 350 milligrams per day, and women about 250—a far cry from the 800 to 900 mg that people were consuming in the 1950s.

“The bottom line on cholesterol is that within the context of current intakes, increasing it up or down a little bit is unlikely to have a significant effect on plasma cholesterol levels,” says Lichtenstein, who is director of the HNRCA’s Cardiovascular Nutrition Laboratory. The exception is if you are genetically primed to hyper-respond to dietary cholesterol. There is no simple test, so people need to work with their health-care provider to determine their sensitivity.

FATS

This doesn’t mean that blood cholesterol isn’t important, or that diet doesn’t influence it. The main culprit behind high levels of LDL or “bad” cholesterol is saturated fat, and the committee said the science still points to limiting that to 10 percent of calories, specifically by replacing saturated fats, like butter, with polyunsaturated fats, like vegetable oils. The report notes that for every 1 percent of saturated fat people replace with polyunsaturated fat, the incidence of coronary heart disease goes down by 2 to 3 percent.

However, the report goes on, “reducing total fat (replacing total fat with overall carbohydrates) does not lower [cardiovascular disease] risk.” Indeed, the report doesn’t put a specific limit on how much fat people should eat. “The emphasis should be on total calories, not fat,” Lichtenstein says. That’s in keeping with the proposed changes to the Nutrition Facts label, which would no longer list a food’s calories from fat, because, as the FDA notes, “research shows the type of fat is more important than the amount.”

single nutrients like carbs, fats and proteins. The conclusions of these studies, it turns out, were very consistent. Whether the outcome they looked at was obesity, cardiovascular disease, high blood pressure, diabetes or certain cancers, the same way of eating pointed to lower risk.

PEOPLE DON'T EAT NUTRIENTS

The 2010 advisory committee explored this pattern-centered approach, and the 2015 committee delved deeper into the science. Why is it important? Because people don't eat nutrients; they eat foods, and they don't eat foods in isolation. "We know that in diets, when one thing goes down, another thing goes up," Lichtenstein says. "We frequently end up with unintended consequences when we don't take this into consideration and only talk about individual dietary components."

She continues: "When we told people to reduce fat, assuming that would include saturated fat, we did not anticipate there would be this

extraordinary proliferation of fat-free brownies, ice cream, cookies and crackers to fill the void, which are essentially all refined carbohydrate."

What does a diet "higher" in fruits and vegetables and "lower" in red and processed meat mean? Higher and lower compared to what? In many of the studies the committee looked at, the health of people who ate the most of something was compared with that of the people who ate the least. The actual amounts varied among the studies, making pinpointing an optimal number difficult.

But three sample food patterns described in the report, and designed to provide all the nutrition we need while keeping calories in check, give some more detail. At the 2,000-calorie level, both the "healthy U.S.-style" pattern and the "healthy Mediterranean-style" pattern allow for 26 ounces of meat, poultry and eggs per week—less than the average American typically eats now. They differ in the seafood category, with the U.S.-style calling for 8 ounces per week, while

the Mediterranean ups it to 15 ounces per week. All three diets call for two and a half cups of vegetables per day, although the "healthy vegetarian" pattern has twice as many beans and peas, at three cups per week.

Nelson, who was also on the 2010 advisory committee, says the meat recommendation is an incremental change from the previous report, which emphasized shifting to a more plant-based diet. "We weren't as explicit in 2010 about eating less red and processed meat," she says. "Less is relative to what we're eating now. It's not becoming vegetarians."



COFFEE

Coffee is not only safe, it may have health benefits.

"Coffee, whether it is decaf or regular, seems to be very health promoting," says Nelson, who chaired the subcommittee that looked at food safety.

Drinking three to five normal cups of coffee a day, with up to 400 milligrams caffeine, was linked to a reduced risk of cardiovascular disease, Type 2 diabetes, Parkinson's disease and some cancers.

That doesn't mean that you have to start drinking coffee if you don't already. "You can still be healthy without drinking coffee," Nelson says. "But if you enjoy it, it fits into a healthy lifestyle." The caveat: "You do have to think about calories if you are adding a lot of cream and sugar."

The report's statement on coffee started out as a question the committee had about the dangers of caffeine-heavy energy drinks, which are popular with teens and young adults.

While they found several studies that looked at coffee, there wasn't enough evidence about high-caffeine drinks to draw a conclusion, despite case reports of hospital admissions and cardiac issues related to extremely high caffeine intake.

Pregnant women should stop at two cups per day.

ADDED SUGARS

In addition to endorsing a dietary pattern that is generally "low in sugar-sweetened foods and drinks and refined grains," the report put a cap on added sugars. For the first time, the committee recommended limiting them to no more than 10 percent of calories. That may not seem like a huge reduction from the 13 percent that Americans currently average, but "if you're an adolescent getting 17 percent from added sugar, it's a big difference," Nelson says.

WHAT'S NEXT?

It's been a long road for the committee members, who were nominated for their expertise in 2012, appointed in 2013 and have held seven public meetings and weekly conference calls over the better part of two years.

In an op-ed, David Katz, director of Yale University's Prevention Research Center, described the process this way: "Conflicts of interest had to be disclosed, and expunged. The work had to take place in the transparency of a veritable fish bowl, with multiple opportunities for public commentary along the way, including now. The 572-page report includes hundreds and hundreds of scientific citations, including papers espousing both sides of any given argument—because the job of the committee was to examine all sides and reach evidence-based consensus, not pave the way to a polarized position they already held before they started."

Griffin was impressed with how little took place behind closed doors. "There was nothing opaque about it," he says.

For now, the committee can only wait and see what parts of their work end up in the actual guidelines. Many people have pointed out that the meat industry's reaction to the report is reminiscent of what happened the first time the government tried to give dietary advice. The 1977 Dietary Goals for the United States initially called for Americans to eat less meat. After protests from industry, that recommendation was nixed from the draft.

Arguing over the details is all well and good, but getting Americans onboard with a healthier diet and making it easier for people to make those healthy choices in restaurants, convenience stores and grocery aisles is time better spent, Lichtenstein says. After all, she adds, the guidelines as a whole have undergone only minor modifications since 1980, "yet we still haven't moved the population to a huge extent toward them."



GOOD FOR YOU, AND THE PLANET

ONE OF THE most talked-about parts of the advisory committee report was that for the first time it included sustainability of the food system as part of its scientific review. The committee's conclusion was that "a diet higher in plant-based foods... and lower in animal-based foods, is more health promoting and is associated with less environmental impact than is the current U.S. diet."

But even before they drew their conclusion, the pushback began. "Pseudoscience," warned one agricultural engineer. "Not within the committee's expertise," said the North American Meat Institute. Congress, as part of a spending bill, even directed the secretary of agriculture to rein in the committee to keep it from "incorporating agricultural-production practices and environmental factors into their criteria."

Still, the committee pressed on. "Our work is congressionally mandated," says Professor Miriam Nelson, Ph.D., who chaired the subcommittee on food sustainability and safety. "We were aware of the chatter that was happening, but we were insulated because we are independent."

The committee decided the question was within its purview because sustainability affects food security. Ensuring Americans have access to affordable, healthy foods has been a central theme of the guidelines since they were first issued in 1980. “If you care about food security, you really need to care about sustainable diets,” Nelson says. The argument is that if the American diet as a whole is too taxing on our land, water and other resources, we will be unable to produce enough food to feed everyone in the long run.

“And we’re not talking about 50 or 100 years from now,” says Associate Professor Timothy Griffin, Ph.D., director of the Agriculture, Food and Environment Program (AFE) at the Friedman School. “This is about the short term and the long term.”

Because the committee members needed more depth in sustainability and agriculture, Griffin was asked to serve as a consultant, one of three the committee brought on to provide additional expertise.

Despite charges in the press that they were “radical nutritionists” forwarding a liberal agenda, the committee members didn’t undertake the question of sustainability knowing where the research would lead them.

“We didn’t plan this to begin with; we let the science dictate this,” Nelson says. “There were actually 15 high-quality studies that we could review. And the best is when studies have a slightly different approach but they all come up with a similar finding. And every one of them did.”

Even Griffin was struck by the harmony. “I didn’t expect this to be as true as it was, but the level of agreement across those studies was very strong.”

The studies the sustainability subcommittee used were by necessity different from randomized control trials and cohort studies, but no less valuable. “We were looking at really good, high-quality science,” Nelson emphasizes.

It was also narrow in scope, says Griffin. “We weren’t looking at climate change. We weren’t looking at greenhouse gases,” he says. “We were using methodologies that were directly related to healthy and sustainable diets.”

Several of the studies they reviewed involved food-pattern modeling. Such modeling takes what is known about how much land is needed to grow

per day, moving in the direction of less meat is almost certainly going to reduce impact,” Peters says.

“We’re not saying you have to become a vegetarian,” says Nelson, pointing out she has five cows on her family farm. “I believe that if people want to eat meat, they should eat meat.”

In fact, the sustainability subcommittee’s conclusions were in line with

“IF YOU CARE ABOUT FOOD SECURITY, YOU REALLY NEED TO CARE ABOUT SUSTAINABLE DIETS.” —MIRIAM NELSON

particular foods and then connects it to how a population eats—or could eat, with the right incentives.

Among that research was the work of Christian Peters, Ph.D., an assistant professor in the AFE program with a special interest in the impact of dietary preferences on land use. For a study published in 2007, he looked at 42 different diets to determine which offered the most effective use of farmland in New York state. (A follow-up study, looking at the national level, has been submitted for publication.) The diet that fed the most people was a low-fat vegetarian diet. But when he looked at diets with higher amounts of fat—such as a vegetarian diet with plenty of oils and a diet with small amounts of meat or eggs—the omnivore diet was more efficient. Why? Because oil-producing crops like corn and soybeans require high-quality acreage, while cows, sheep and goats can be raised on lower-grade hay and pasture lands, which might not otherwise be put to use.

The key here is “small amounts” of meat—about two cooked ounces per day in his study, a fraction of the current American average.

“From where we are now, with almost six ounces of cooked meat

what the committee as a whole found is good for public health.

“It’s not this landslide change in advice,” Peters says. Still, he wasn’t surprised to see the meat industry up in arms. “It’s a very inconvenient message to be told that your industry needs to shrink in terms of output,” he says. He wonders whether meat producers would be able to adapt to changing demand by adding value. “Organics is purporting to go in that direction. Could you make meat greener, sell less of it, but still sell it for the same amount of money as you were making before?”

Griffin is adamant that the dietary guidelines are first and foremost about nutrition and public health, as they should be. But he thinks that the facts about sustainability could act as an additional motivator for people to adopt healthier eating habits. It’s a win-win.

Many clearly agree. By the time the public-comment period on the report closed in May, more than three-quarters of the nearly 30,000 comments were in support of the sustainability language, Nelson points out.

And if the sustainability wording finds no place in the final guidelines, was it still a valuable exercise? “Sure,” Griffin says. “More conversation about this is better than less. That is a good outcome.”

Yasmin Altwajiri is blazing a trail
for epidemiology and for Saudi women in science

BREAKING THE VEILED CEILING

BY JULIE FLAHERTY PHOTOGRAPH BY ABDULAZIZ AL AQUEEL

IN 2009, YASMIN ALTWAJIRI, THE HEAD OF EPIDEMIOLOGY AT KING FAISAL Specialist Hospital & Research Center in Riyadh, set out with her colleagues to do a groundbreaking study on mental health in Saudi Arabia. They planned to interview 5,000 men and women from all corners of the country, meeting with them in their homes. The data would fill huge gaps in what was known about levels of stress and depression throughout the kingdom.

There were naysayers who warned Altwajiri, N96, N02, a principal investigator on the project, that it wouldn't work. "Everyone told me, 'Don't do this. It's a bad idea. Nobody will open their door.'" They questioned whether Saudis would talk about such a taboo subject and were skeptical of the plan to use laptops to take down the data. "People had doubts about every part of the project, but we challenged them and said, 'We have to try.'"

The survey has hit roadblocks, but not the ones about which Altwajiri was warned. The participation rate has been remarkably high, at 86 percent. So hospitable are the Saudi people, in fact, that they often insist the interviewer join them for lunch and conversation, or expect him to linger over coffee. "Our challenge," Altwajiri says, "is to get the interviewer in and out of the house as quickly as possible."

Such surveys are novel in Saudi Arabia because epidemiology is itself a nascent field there. That has put the research expertise of Altwajiri, who earned her master's and doctoral degrees at the Friedman School, in high demand. In her work and advocacy, she is blazing a trail for epidemiology and for Saudi women in science.

Leading the way can be tiring work. Before she and her team could even begin the Saudi National Health and Stress Survey, they spent a year adapting—for language and cultural differences—a questionnaire that had been



used in other countries. For example, “we don’t ask a Saudi person about how often they play golf,” Altwajiri says.

Something as basic as a food frequency questionnaire, a cornerstone for any nutrition survey, does not yet exist in her country. “To develop that instrument is a major undertaking. It’s a doctoral degree.” She has been hoping to persuade a Saudi student studying in the United States to take on that challenge. In fact, whenever she meets a recent science graduate, she is quick to extol the virtues of a career in epidemiology.

She is especially encouraging to women, who are only very slowly entering the Saudi workforce. Although more than half of college graduates in Saudi Arabia are women, less than 19 percent of women held jobs in 2011, compared to 76 percent of men, according to the International Labor Organization. And only 1 percent of Saudi researchers are women, according to the UNESCO Institute for Statistics.

OPPORTUNITY KNOCKS

“Personally, I think women can be involved in any career they want, whether it is a petroleum engineer in the middle of the desert or an astronaut,” says Altwajiri. But she recognizes that not everyone is as forward-thinking as she is. In a country where women are not allowed to drive and gender segregation is the norm, “science is very suitable for Saudi females who come from a more traditional Saudi upbringing.”

Altwajiri’s own family has always been supportive of her education. She studied community health in college, but was stymied in pursuing a graduate degree, because it was virtually unheard of for women to study abroad on their own at the time. When her husband finished medical school, she saw an opportunity. “I told him he should be applying to residency programs in the U.S.,” she recalls. “But of course, I had ulterior motives.” She filled out 70 applications on his behalf, and when

he accepted a position at New England Medical Center, she moved with him to Boston. She quickly studied for and passed her GREs, and was accepted to the Friedman School. Almost immediately, she found a mentor in Professor Johanna Dwyer, D.Sc., director of the Frances Stern Nutrition Center.

“I just learned so much from her, besides academics,” Altwajiri says. “I learned how a professional, strong female carries herself in her field of work.”

Altwajiri went on to pursue her Ph.D. at the Friedman School, but hit a snag when her husband accepted a fellowship in Houston. Dwyer picked up the phone and called a colleague in Texas. Within a week, Altwajiri had an office at the University of Texas Health Science Center at Houston School of Public Health, was working on a program looking at cardiovascular risk factors in children and was able to continue work on her Ph.D.

OBESITY ON THE RISE

Returning to Saudi Arabia, Altwajiri found that her skills in nutritional epidemiology were urgently needed. An obesity epidemic had taken root, as traditional diets gave way to fast foods (“McDonald’s delivers to your house, here,” she says), cars became commonplace and television and computer screens lured people to sedentary lifestyles. Adult obesity rates climbed from 22 percent in the early 1990s to 36 percent in 2005. Women in particular were gaining at an alarming rate. According to one estimate, 78 percent of Saudi women will be obese by 2022.

“The Ministry of Health realizes that it has to work more on prevention of disease; otherwise, it is going to have a population that is very, very unhealthy, and they will not be able to accommodate all the people with chronic illness in a few decades,” Altwajiri says.

She has advocated for exercise programs for women and children. She applauded the government’s decision this year to allow girls to take physical

education classes in school, something long forbidden by conservative laws.

But many barriers to physical activity remain. Private gyms and fitness clubs are very expensive for an average middle-class family. “The weather doesn’t help,” says Altwajiri, because the heat often makes walking or jogging outside impossible.

To keep her own daughter active, Altwajiri enrolled her in a competitive swim team, as she did her son. That’s the sort of decision cultural conservatives frown on, but reaction from other parents has been positive. “They ask me a lot of questions about the time commitment and the effort that is involved,” she says. “They are intrigued, because it is almost foreign to them.”

The first study Altwajiri conducted when she returned to Saudi Arabia looked at rates of overweight and obesity among school children (as expected, they were high), but she had to branch out from nutrition, as people from other health fields asked for her help. One thing she would like to study is how technology has affected health—Saudis are frequent users of Facebook and YouTube and lead the world in the use of Twitter.

Aside from being a role model (she was profiled in the recent book *Arab Women Rising*), Altwajiri is helping other women take steps toward empowerment. She chairs the Women in Science Committee, a budding national network of Saudi women who work in science and technology. Female scientists, she says, can feel isolated because there are few of them and they don’t have the same networking opportunities that men do.

Most Saudi women who study science end up becoming science teachers, if they take jobs at all. “We wanted to show them there are other opportunities and that we would be there to help support them,” she says.

In that regard, Dwyer continues to be her inspiration. “I try to be supportive to the younger women that I meet in the same way that she helped me,” she says.

Enough Food for All

The answer to how to feed the growing global population has to include small-scale agriculture, not just factory farms, says Tufts researcher **BY GAIL BAMBRICK**

WE SHARE PLANET Earth with nearly 7.3 billion people. By 2050, there will be 9.6 billion of us, according to the United Nations. That's a gain of one person every 15 seconds—or about 74 million more people each year—and each another mouth to feed.

Some claim we need to increase world food production by 70 percent to avoid future shortages, especially in developing countries, where the greatest population increases are expected over the next 35 years.

To deal with the problem most effectively, we need to start implementing new agricultural strategies now, says Timothy A. Wise, G05, director of the Research and Policy Program at Tufts' Global Development and Environment Institute.

TUFTS NUTRITION: Do we need to increase food production by 70 percent to meet demand from a growing population?

TIMOTHY A. WISE: Not according to the U.N. Food and Agriculture Organization. I reviewed these predictions, and their estimates show that we need to increase agricultural production—not food production—by 60 percent by 2050 and that we are generally on track to meet that need. Remember that agriculture also produces things like cotton and rubber, and in recent years, biofuels.

Can we avert a food-shortage crisis in the developing world in 2050?

If we want to make more food available, there are two very clear areas where we can focus public policy—reducing biofuel production, which would make

more land and food available for human consumption, and reducing food waste. The expansion of biofuel production is sapping a very significant share of food resources and food-producing land. Up to 40 percent of the U.S. corn crop goes to ethanol production, taking corn directly away from human and animal consumption. We could change that. One possible alternative is cellulosic ethanol made from such nonfood products as corn stalks, wood chips and switchgrass.

And then there is food waste. About a third of the food that is grown is never eaten by anybody—often because it never gets to market in developing countries due to a lack of proper storage facilities or refrigeration. In developed countries, food is wasted at the household level—people throw out what they don't consume—and at the retail level, with perfectly good fruit and vegetables rejected for purely cosmetic reasons.

Why isn't large-scale agriculture the answer?

Our industrialized agricultural systems seem efficient because the commodities they produce are relatively cheap. But they are cheap because they fail to account for all their costs—from high emissions of greenhouse gases to water pollution from fertilizer runoff.

Most important, they do not feed the hungry. The majority of the world's hungry are in rural areas. They aren't fed by more commodity crops like Iowa corn. They are fed by increasing their own productivity and access to land, water and technical support. This is especially true in sub-Saharan Africa, because that is where the fastest population growth

is expected; it's where the agricultural productivity has grown the least over the years because of a lack of investment, droughts, economic downturns and military conflicts, so this is the area of greatest concern for the future.

What are the downsides of foreign investment in agriculture in the developing world?

Governments are bending over backward to attract foreign investment, but I've found problems. Take Zambia. It has uncultivated land available and a lot of small-scale farmers who don't have enough land. But the Zambian government makes the best lands available to foreigners to grow whatever they want, and what they often want to grow is for export and not for the local communities. Globally, only 11 percent of those large-scale land acquisitions end up producing food.

Is there a nation where small-scale farming is succeeding?

In Malawi there's some very interesting work going on in what's called "agro-ecological" farming. It's basically working with farmers to change their production practices so they are rebuilding the quality of their soil by planting mixed crops, using animal manure and other age-old practices. That also allows them to grow a wider variety of foods, so their diets diversify, which improves their health. By cultivating different kinds of crops, small farmers can improve the soil over four to five years without as great a need for fertilizers or hybrid seeds, things that they can afford only with loans or government subsidies.

This is a much more sustainable system, and over years, these agro-ecological methods have shown dramatic productivity improvements and an increase in the variety of food crops and diets. That's because in Malawi, the government's priority is food production. This is just one of many examples around the world that are showing tremendous success.

WE TAKE IT FOR GRANTED THAT OUR BODY CAN REGENERATE cells that become injured or simply wear out and die. For most of the 20th century, however, scientists were convinced that one organ—the brain—lacked that ability. Shortly after birth, they thought, our brains had as many neurons as they were ever going to have, and if we lost brain cells because of injury or aging, we were never going to make more of them.

So convinced were scientists of this theory that they stuck with it for decades, despite clear evidence to the contrary—for example, that rats' brain mass increased after they learned to navigate new mazes. It wasn't until 1998 that neuroscientist Dennis Steindler, Ph.D., working at the University of Florida, definitively discovered the existence of human neural stem cells that could become a variety of

many, many gene and protein networks, and to try and get a handle on that influence through a single gene or protein is very difficult," says Steindler. While some drugs have been shown to be effective in stimulating growth of new brain cells, results have been inconsistent.

A few years ago, Steindler began investigating a new angle: nutrition. "Food is medicine," he says. "Nutrition has the ability to affect many of those pathways at the same time." Steindler will continue to explore those pathways as the new director of the Neuroscience and Aging Laboratory at the Jean Mayer USDA Human Nutrition Research Center on Aging (HNRCA).

"When we went looking for a director for our new laboratory, we were looking for a translational scientist who was conducting cutting-edge research related to

FEED YOUR Stem cells

BY MICHAEL BLANDING ILLUSTRATION BY YEHRIN TONG

different types of brain cells—growing on the lining of the brain's internal cavities and in the hippocampus, a seahorse-shaped region in the front of the brain associated with memory.

"When they grow they make copies of themselves, which is unusual," says Steindler. "They make more daughter cells that are involved in memory, learning and mood function, and have an innate ability to repair damaged tissue." The finding led to widespread speculation that these stem cells could be used to repair neurons damaged by degenerative diseases such as Alzheimer's and Parkinson's. In other cases, however, Steindler found these cells could be part of the problem. "They do try and repair disease and aging," he says. "But when they do that too much, they can lead to brain tumors."

The question was how could these neural stem cells be stimulated to produce more healthy cells without over-producing and creating tumors—and how could they continue to make cells as they aged? "Their aging involves

nutrition and prevention of age-associated cognitive impairments—someone who would bring in new areas of research to the center and help move the field of nutrition and brain disease forward," says Simin Meydani, D.V.M, Ph.D., director of the HNRCA.

"I believe we found exactly the right person we are looking for."

Steindler's focus on the link between nutrition and neurodegenerative diseases is unique in the field. During his career, he has made a habit of pursuing novel ideas, says his longtime collaborator, Brent Reynolds, professor of neurosurgery at the University of Florida. "Dennis is an incredibly innovative scientist," he says. "He is on the cutting edge of so many things. Sometimes he may take his ideas a little far, but what happens more often than not is the rest of the scientific community catches up with him five years later."

Reynolds was the first to discover the existence of neural stem cells in mice, an important step in debunking the

Is nutrition
the future of brain
health? Neuroscientist
Dennis Steindler
says yes.



“no-new-neurons” hypothesis that had been in force since the 1930s. He was excited to hear that Steindler had been able to discover their existence in humans. “It was huge step. So often we do things in rodents that don’t translate to humans,” he says. “When you demonstrate that, you are now saying that everything we’ve done in rodents is now possible to translate.”

Shortly after that discovery, Reynolds was working on a process to isolate neural stem cells and grow them into “neurospheres,” large balls of cells that could be implanted into the brain to potentially repair damage, when he saw a presentation by Steindler at a conference outlining exactly the same thing—and Steindler was on track to publish first. The two scientists worked on the paper together, and Steindler later recruited Reynolds to work with him at the University of Florida, where they collaborated on a number of other papers on neural and cancer stem cells.

THE ROLE OF INFLAMMATION

Reynolds will continue to collaborate with Steindler on his research at Tufts, which will focus on how to retain the ability of these stem cells to repair and regenerate cells as they get older. “What’s become very clear is that the regenerative capacity diminishes as you age,” says Reynolds. “The question Dennis will probably ask and answer is how do these nutritional requirements change and how do they tie into the regenerative ability. Once we answer that question, we can ask how we alter nutrition to achieve that.”

To home in on those questions, Steindler has focused on the role that inflammation plays in the aging of stem cells, as well as in neurodegenerative diseases such as Alzheimer’s and Parkinson’s. Research has shown that inflammation produces small proteins, or cytokines, in brain cells. Two of these types of proteins—amyloid and tau proteins—have been associated with Alzheimer’s.

“Particular genetic mutations can’t process these proteins very well,” says Steindler. “The cells try and spit them out to get rid of them, but when they can’t do that, the cells themselves can die.” When they are able to expel them into the environment in the brain, they can affect other cells, which may not function properly, contributing to Alzheimer’s. A similar protein called synuclein may be associated in a similar way with Parkinson’s.

By changing diet and nutrition, patients may be able to limit inflammation of brain tissue and prevent or even reverse these degenerative diseases by giving neural stem cells the ability to heal the damage. “All of the bioactive components in our diet play a role in how cells can battle this tendency to become inflamed,” says Steindler. In particular, he is experimenting with three antioxidants, which he suspects may need to be consumed in higher doses as we age in order to ensure healthy stem cell function—ECGC, found in green

tea; curcumin, found in turmeric; and sulforaphane, found in broccoli, Brussels sprouts and other vegetables.

All three of these chemical compounds are currently under investigation at the HNRCA. Simin Meydani has done work on ECGC, finding that it inhibits the spread of T-cells, white blood cells that can cause some autoimmune disorders. Mohsen Meydani, D.V.M., Ph.D., director of the center’s vascular biology lab, has found that curcumin can limit angiogenesis, the spread of blood vessels within tumors as well as the fatty tissues that cause them to grow more quickly. That property may be helpful in reducing the size of brain tumors.

STAR WARS THERAPY

In order to test the effect of these various nutrients, and see how they interact with drug therapies, Steindler has pursued a novel technique: creating “avatars” of patients—a term he borrowed from a boy suffering from brain disease who participated in one of his clinical trials. “He was a Star Wars fan, and asked me to use his brain tissue so other children wouldn’t have to experience what he did,” says Steindler. “He asked me to create a clone army of his cells to study.”

Inspired by the idea, Steindler has pioneered a technique whereby a patient’s cancerous or neurodegenerative diseased cells, along with their unique immune system and disease profile, are cultured and implanted into mice. These “avatars” are then subjected to various combinations of drug and nutrient therapies to see which are most effective in preventing the spread or recurrence of disease.

The cells “become a surrogate of the patient,” Steindler explains. “Instead of studying therapies directly on the patients, we can stay two steps ahead by testing them on the surrogate.” Eventually, Steindler hopes that these techniques can be replicated electronically, distilling a patient’s unique chemistry into a data model that can be manipulated on the computer to determine the best course of nutrition. “Eventually these avatars will be patients on a chip,” he says. “That’s where we are heading.”

In the meantime, Steindler is ramping up the laboratory at Tufts to better investigate the properties of these nutritional supplements. He hopes drawing upon the expertise of his colleagues will help determine the most effective changes in diet to attack the inflammation that leads to brain degeneration as well as cancer. “Truly, Tufts and the HNRCA are leaders in these things,” says Steindler, crediting his predecessor at the neuroscience lab, Jean Mayer University Professor Irwin Rosenberg. “I am hoping to collaborate extensively in order to get these new therapeutic reagents into a clinical setting. All of the diet and nutrient therapies we study seem quite able to slow down the diseases—and possibly, if done right, even prevent them.

MICHAEL BLANDING is a Boston-based freelance writer.

From All Corners

UNIVERSITY, SCHOOL & ALUMNI NEWS

TAKING A STAND

THIS CLASSROOM ROCKS—and rolls, and generally tries to keep graduate students active. Ergonomic rocking stools, exercise balls and standing desks are now part of Room 156 at the Jaharis Center on Tufts' Boston campus, thanks to a Tufts Innovates grant from the Office of the Provost. Associate Professor Jennifer Sacheck, Ph.D., N01, and doctoral student Stacey Blodin applied for the grant program, designed to fund “imaginative ideas to enhance learning and teaching.” Sacheck is assessing the tools' impact on the classroom experience for students in her course on Nutrition, Physical Activity and Health.



Nia Bissanti, the most-researched HNRCA volunteer, with 67 studies to her credit, visits with nutrition tech Verona Bembridge, herself a 30-year HNRCA employee.

Me and My Study

Research volunteers embrace life in the cohort **BY JULIE FLAHERTY**

NIA BISSANTI OF Quincy, Massachusetts, is a record-setter at the Jean Mayer USDA Human Nutrition Research Center on Aging (HNRCA), having volunteered for 67 studies over the past 30 years. It would have been 68, had she not recently been turned down for a study on muscle loss, which is common in people her age. Her muscle mass, the researchers told the petite 90-year-old, was just too good.

The secret to her robust health? “Good food,” she said, “and optimism.”

Bissanti was one of a couple hundred HNRCA volunteers who were celebrated at an appreciation event in May. It was a way to say thank you to some of the 2,339 people who made possible the 62 human research studies conducted at the center over the last five years.

Some volunteers are like Claudette Norville, 64, who took part in a grains study. While she could have lived with 12 weeks of white bread had she been assigned to the refined grains group, she was happy to be in the whole grains group. “That’s all I buy now,” she said, describing how volunteering has changed her eating habits for the better.

Some are couples like Dee Ramee, 63, and Dean Brown, 67, who wanted to contribute to science while making a little extra money during retirement. “For me, it’s about giving back and doing something that you feel is eventually going to help a lot of people,” said Ramee. At the event, she was particularly looking forward to hearing about the results of some of the studies. She was curious about the outcome of the vitamin trials she took part in, even knowing she may have been taking placebos.

Outreach like this is crucial to successful research, said Professor Sarah Booth, Ph.D., the HNRCA’s

associate director, who chatted with the guests over breakfast. She pointed to a 2013 survey of 5,600 volunteers conducted by the Center for Information and Study on Clinical Research Participation, which found that the prospect of receiving results was one of the top five reasons people participate in trials.

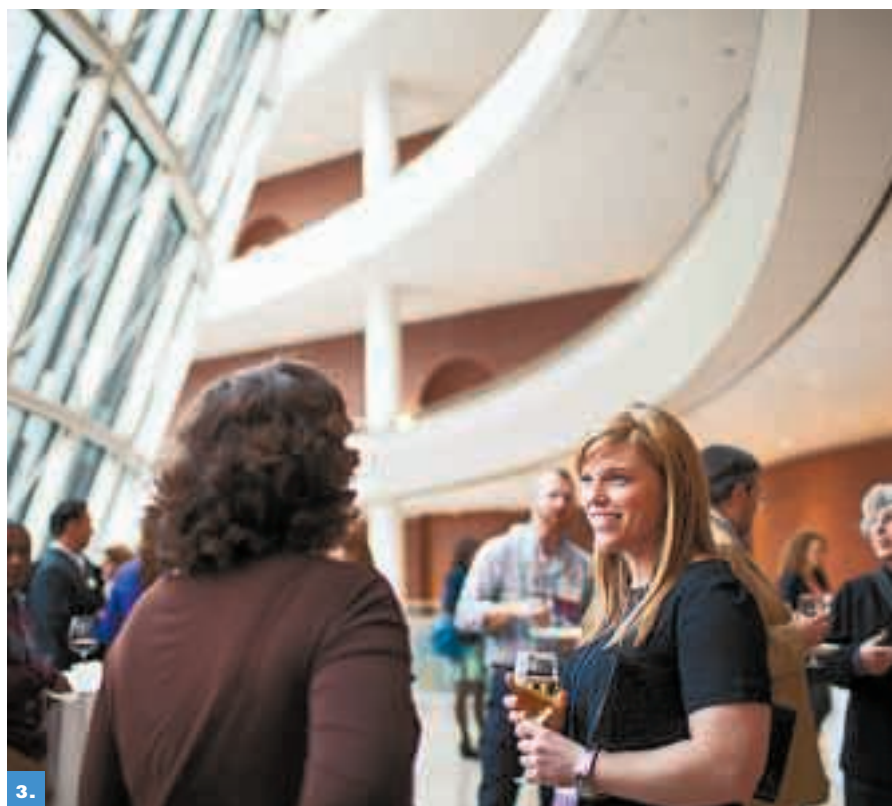
After researchers presented study results and took questions, the volunteers heard from gerontologist Karl Pillemer, Ph.D., a professor at Cornell University, who interviewed more than 1,000 senior citizens for his book *30 Lessons for Living: Tried and True Advice from the Wisest Americans*. Heads in the audience nodded as he shared the seniors' sage advice for aging happily.

Pillemer said later that the elders he spoke to for the book absolutely recommended volunteering. "This kind of generative activity, where you are giving up your time to benefit other people—and in this case, to advance knowledge and improve health—is extremely positive. Volunteering for anything helps lead to improved health and even to reduced mortality in a lot of studies."

For Bissanti, the event was a chance to visit with center staff, some of whom she has known for decades. It's been a long time since her first exercise study, to which she wore dress shoes. (She had to borrow the principal investigator's sneakers to ride the stationary bike.)

The staffers are meticulous in their jobs, Bissanti said, recalling the time she was called back to the kitchen because she had not finished her assigned breakfast. She returned to find that a grain of sugar remained in the bottom of her drained coffee cup.

The data is important, but the people who provide it are never treated as numbers, as Bissanti knows. She has lived at the HNRCA from time to time, for studies that require overnight stays. If she sometimes had trouble sleeping, it was only because a favorite nurse kept her up—laughing and talking with her.



REUNION 2015

The Friedman School held its Alumni Awards Ceremony and Dinner during All-Alumni Reunion on Saturday, March 28, at the Moakley Courthouse in Boston.

1. Eric Ciappio, N11, and Lara Park, N09. **2.** Tatyana El-Kour, N05, who received the Leah Horowitz Humanitarian Award for striving to achieve lasting change by empowering communities and creating systems-based solutions to problems; Dean Dariush Mozaffarian; and Ke Ha, N99, MPH99, who received the Leadership and Expertise Award for conducting high-impact work in the field of nutrition. Roger Fielding, N93, (not pictured) received the Nutrition Impact Award for making outstanding contributions to the field of nutrition. **3.** Kerri Hawkins, N06.



1. From left, master's degree recipients Erin Foster West, Abraham Faham, Emily Dimiero and Brittany Cooper. 2. In addition to his doctorate, Hassan Dashti took home two student awards for his research.

Commencement 2015

Cristiana Falcone Sorrell, N01, F01, predicts that innovation in healthy food will be the next big thing

THE EXUBERANCE OF the graduates at the 34th commencement ceremony of the Friedman School infused Cristiana Falcone Sorrell, N01, F01, as she addressed the audience in Cohen Auditorium on Tufts' Medford/Somerville campus.

"The sparkle in your eyes, the energy you are emanating now—it is contagious!" she said as she pulled out her phone and took a selfie with the cheering graduates.

Falcone Sorrell received her Master of Arts in Humanitarian Assistance from the Friedman and Fletcher schools in 2001. She is the senior advisor to the executive chairman of the World Economic Forum and a member of the Friedman School's Board of Advisors.

Being Italian, she said, has meant that food has always had a strong presence in

her life. Her grandmother's first question to her was always, "Did you eat?" followed by, "What did you eat?"

"So I am biased," she said, "but if you ask me what is the next big thing, I say food. Not a smarter social app or some stellar hyperconnected wearable material. Innovation will come from food—natural, slow-grown, powerful, sustainable food to keep us healthy, ignite our brain, protect the environment, grow our economy, make us happier and renew an ancient bond between all of us and our planet."

Dariush Mozaffarian, M.D., Dr.P.H., expressed his delight in taking part in his first commencement as dean of the Friedman School. "I will always remember the many of you whom I met: your diverse and deep interests, your energy, your drive, your focus on

making a difference," he said.

The school awarded 99 degrees, including 10 doctorates. One Ph.D. went to Daniel Hatfield, N11, N15, an Albert Schweitzer fellow who created a successful running program for sixth-grade boys in East Boston, empowering even kids who could barely walk a mile to run a marathon's worth by year's end.

"Those moments of greatest discomfort are the ones that foster the greatest growth," Hatfield said. Nutrition challenges such as the impending shortfalls in the food supply and unprecedented rates of preventable chronic disease, he said, "won't be solved by staying in our comfort zones, or by hovering around the periphery, or by getting close to opportunity and then passing on it." Take shots when you have them, he advised, even when you might miss.

TOP 10

Research Priorities in the Fight Against Obesity

In this new feature in the magazine, Tufts experts offer their top-10 take on a nutrition topic. Here, in no particular order, are the most promising areas for obesity research, according to Dariush Mozaffarian, M.D., Dr.P.H., dean of the Friedman School, and Simin Nikbin Meydani, D.V.M., Ph.D., director of the Human Nutrition Research Center on Aging.

1 WHAT'S THE INTERPLAY OF OUR DIETS AND OUR GUT MICROBIOME?

Growing evidence suggests that the bacteria and other microbes in our intestines influence how our bodies process and respond to foods, while the foods we eat influence the types and function of these organisms. Understanding these interactions will be crucial to discovering why different foods may have different effects on weight, metabolic health and healthy aging.

2 HOW IMPORTANT IS SLEEP?

Both adults and children who get too little sleep tend to gain more weight than people who get the right amount. Determining why and how short-changing sleep, and altering our circadian clocks, hurts our weight is a ripe area for research.

3 WHAT KEEPS WEIGHT OFF IN THE LONG RUN?

The body naturally tries to keep weight stable over time, a tendency called homeostasis. New studies hint that, rather than focusing on calories, eating specific foods (such as yogurt and nuts, or refined starches and sugars) might help or hinder these natural regulatory processes, leading to less or greater weight gain. Understanding the impact of different foods on a person's ability to maintain a healthy weight, and the underlying mechanisms, is essential for developing effective strategies against the epidemic of obesity.

4 WHAT DRIVES AND CHANGES OUR CRAVINGS?

Specific unconscious areas in our brains react positively or negatively to different foods. A better

understanding of what drives these brain craving/reward centers, and how these responses can be changed, will be crucial to help people break unhealthy habits and shift to healthier foods.

5 WHY ARE SOME PEOPLE OBESE BUT HEALTHY?

While most obese people experience metabolic problems like high blood pressure and diabetes, a small number do not. Figuring out how and why they are protected, including reasons related to their genes and influences in their environment, could suggest new treatments for obesity-related diseases.

6 WHAT HAPPENS IN THE EARLIEST DAYS OF LIFE?

Growing evidence suggests that the risk of obesity and metabolic dysfunction in adulthood may be altered by our parents' behaviors during

(or even before) pregnancy. Understanding how early life influences lead to generational effects, where risks (or protection against risks) are passed from one generation to the next, will give us new tools to reverse obesity and associated diseases.

7 WHAT METABOLIC MESSAGES DO FAT, LIVER AND IMMUNE CELLS SEND?

These cell types are very active, sending numerous signals to other parts of the body. We need to know more about how nutrition influences this communication and leads to or protects against central fat storage, inflammation, insulin resistance.

8 CAN MODERN TECHNOLOGY MAKE A DIFFERENCE?

There is an explosion of

new mobile diet and exercise apps, personal activity monitors, fitness video games and bonding over these on social networks. These technologies are exciting, and we now need to see how they can best promote long-term behavior change.

9 WHAT WORKS IN THE COMMUNITY?

Historically, nutrition efforts often focus on the individual. Some of the most promising new strategies are policy changes, such as programs in schools, worksites and communities; changing food prices; quality standards for marketing; and improving neighborhood environments like supermarkets and walkable streets. We need to test the effects and cost-effectiveness of these strategies, including their special benefits for at-risk and disadvantaged populations.

10 HOW DO WE BRING FOLKS TOGETHER TO ACHIEVE REAL CHANGE?

The food environment is complex, with numerous actors including the public, media, scientists, farmers, food manufacturers, retailers, restaurants and policy makers. We need to develop and test new ways to bring these groups together, design and implement new policies, evaluate the results, and then scale up the effective policies.



All-Fronts Assault on Obesity

Tufts researchers are taking on an epidemic from every angle

THE OBESITY EPIDEMIC is not an American phenomenon. About 37 percent of the world's adults are overweight or obese, and no nation has been able to claim even a tiny reversal in the trend in the last 33 years.

Making a dent in obesity rates is going to take a “global, multidisciplinary, multipronged approach,” said Friedman School Professor Simin Meydani, D.V.M., Ph.D., director of the Human Nutrition Research Center on Aging (HNRCA). She spoke at the Tufts Talks Obesity symposium on April 28, a forum that highlighted some of the dozens of researchers at the Friedman School and the HNRCA who are tackling the epidemic from all angles, from cellular discovery to societal change.

Gershoff Professor Alice H. Lichtenstein, D.Sc., who recently finished work as vice chair of the 2015 Dietary Guidelines Advisory Committee, said a lot will depend on how well we educate the next generation about how to hunt and gather in the 21st century, she said. “We really need to empower children to go into the supermarket and make the best choices.”

That's one aim of ChildObesity180, a partnership of public health, higher education and business leaders directed by Christina Economos, Ph.D., N96, the New Balance Chair in Childhood Nutrition at the Friedman School. Her work on the Shape Up Somerville project was nationally recognized—by Michelle Obama's “Let's Move”

campaign, among others—for showing that community-based efforts could reduce weight gain in children.

“Our goal is to bring the same obesity prevention solutions that grew right out of Somerville to children across the country to create impact on a massive scale,” she said.

ChildObesity180’s programs have helped communities put physical activity back into the school day, replace sugar-sweetened beverages with water on the sports field and boost kids’ intake of fruits and vegetables. So far, the programs have reached 1.2 million children in all 50 states.

While ChildObesity180 is focusing on the young, Professor Susan Roberts, Ph.D., director of the Energy Metabolism Laboratory at the HNRCA, is working to help adults sort out the barrage of conflicting advice on the best way to lose weight. Dropping pounds is not the same as preventing weight gain, she said, because losing weight puts people up against hunger, a basic human survival mechanism that resides in the unconscious brain.

“We can’t just tell people to have calorie-controlled portions of healthy food and expect that to be easy,” she said, pointing out that hunger originates in the same region of the brain that controls breathing. “Willpower is not going to be very good in addressing those things. We have to work with our neurobiology.”

Her lab has developed a diet plan that controls hunger and reduces cravings and, as brain scans have shown, actually gets people more excited by, say, a grilled chicken breast than a fried drumstick.

Other researchers are looking to mitigate the devastating health effects of obesity, which include an increased risk of diabetes and several common cancers. “The effect is a very potent one,” said Professor Joel Mason, M.D., director of the Vitamins and Carcinogenesis Laboratory at the

HNRCA, pointing out that merely being overweight sizably increases cancer risk.

“Unfortunately, we’re not going to be able to tackle this problem of obesity in the next five or perhaps even 10 years,” he said. “A lot of us are trying to tease out the biochemical and molecular mechanisms by which obesity promotes cancer, thereby providing us certain targets that we can block.”

Andrew Greenberg, M.D., the Atkins Professor at the School of Medicine and an associate professor at the Friedman School, has conducted groundbreaking research on fat cells and their relationship to high blood sugar and diabetes. Among other things, his lab, the HNRCA’s Obesity and Metabolism Laboratory, is looking at how some bacteria in the intestine can be protective against diabetes.

In addition to discovery in the lab, we might be well served by questioning what we think we already know about obesity. Dariush Mozaffarian, M.D., Dr.P.H., dean of the Friedman School, said that the root cause of obesity is not to be found in the old saw of

“calories in versus calories out.”

“Saying that obesity is a problem of energy balance is like saying fever is caused by temperature imbalance,” he said.

Any diet can make you lose pounds by cutting calories in the short term, he said, but in the long term—up to 20 years—his research has shown that certain foods are linked to weight gain or loss.

The weight gain associated with sweets and desserts was identical to that from refined grains, making white bread as big a culprit as sugar. Fruits, vegetables, nuts and yogurt were associated with weight loss, while eating more cheese or milk (low-fat or whole) made little difference.

“This is really where the modern science is taking us,” he said. “It’s not about diet quantity; it’s about diet quality.”

He added that the school is now evaluating, with funding from the National Institutes of Health, how different policies, from media and education to locations of supermarkets to taxes and subsidies, can improve nutrition and reduce obesity in the United States.

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TUFTS HIRES CHIEF DIVERSITY OFFICER

Among his priorities, a deeper sense of unity among campuses

WHEN MARK BRIMHALL-VARGAS arrived at Tufts this spring to become the university's chief diversity officer, it was a natural step in a career that has been devoted to the themes of diversity, inclusion and social justice.

"I've been working on these issues my whole life," said Brimhall-Vargas, who had been the deputy chief diversity officer at the University of Maryland at College Park since 2013. At Tufts, he says, "I feel like I'm walking into an institution that has done its homework."

The hiring of a chief diversity officer was among the recommendations contained in the final report of Tufts' Council on Diversity. The university's strategic plan, Tufts: The Next 10

Years, also sets the goal of creating a more welcoming environment on all three campuses.

"In the strategic plan, we state emphatically that Tufts will demonstrate an unprecedented institutional commitment to diversity, inclusion and cultural competency over the next decade," Tufts President Anthony P. Monaco said. "I am confident that Mark Brimhall-Vargas will lead us in advancing that important goal by building bridges and fostering creative relationships across the university."

Brimhall-Vargas, who is also an associate provost, said he is impressed with the groundwork that has been laid by

the diversity council, which Monaco chaired, as well as the strategic plan. "This is what attracted me to Tufts," Brimhall-Vargas says.

"The president and [Provost David Harris] want to do something that makes Tufts even greater, and they are willing to put ambitious goals out there," Brimhall-Vargas said. "What that tells me is that I need to be equally ambitious and bold—and that the campus is ready for that."

Brimhall-Vargas held a number of positions in Maryland's Office of Diversity and Inclusion since 1997, and has taught intergroup dialogue and conflict resolution

in several higher education settings. He holds a doctorate from the Department of Teaching and Learning, Policy and Leadership at the University of Maryland at College Park, a master's in public policy from Harvard's Kennedy School of Government and an undergraduate degree from Pomona College.

Among his first priorities, Brimhall-Vargas said, will be to create a deeper sense of unity among the Medford/Somerville, Boston and Grafton campuses; to examine faculty recruitment and retention; and to support Tufts' goal of becoming accessible to more students from varying socioeconomic backgrounds. He said he also will strive to make both undergraduate and graduate students feel included in the workings of the university. —HELENE RAGOVIN

"Tufts is genuinely concerned about these issues and has the capacity to really start thinking about what it means to create an affirming, welcoming campus for everybody," says Mark Brimhall-Vargas.





“We cannot imagine the kind of pressure a war zone can impose on a human being, but we must fully understand that context to provide aid without making the situation even more unbalanced,” says Cristiana Falcone Sorrell.

approaches humanitarian aid.

“The MAHA program has been equipping students for leadership in humanitarian action and policy for more than 15 years,” says Professor Daniel Maxwell, Ph.D., who directs the MAHA program. “Greater scholarship support, particularly for international students from developing nations—who comprise the majority of our students—has always been a major constraint. This generous donation helps to start an enduring source of support for our students.”

Most MAHA students are mid-career professionals with limited resources for further education. Dariush Mozaffarian, M.D., Dr.P.H., dean of the Friedman School, points out that “MAHA graduates often pursue careers with international NGOs, humanitarian aid agencies and foreign governments. Scholarships will allow the best and brightest students to come to Tufts and will be critical for their future success. And the research funds provide freedom and flexibility to test new, high-impact ideas and work even more collaboratively across multiple disciplines.”

Falcone Sorrell, senior advisor to the executive chairman of the World Economic Forum, says her MAHA experience—including writing a thesis on the role of media in the war in Kosovo—allowed her to “marry the practical with the academic” for the first time in her education. It also helped solidify her professional path.

As an inaugural member of the Feinstein International Center’s development committee she hopes the new funds, which were pledged through the JCMRJ Sorrell Family Foundation, will help train leaders and support research to solve future problems.

“What the world needs is leadership that values long-term, ethical goals,” she says. “Humanitarian programs have been short term for a long time; there is no sustainability angle. But the long-term approach is possible with a multidisciplinary education.” —**LAURA FERGUSON**

What the World Needs

Gift will support humanitarians in their work and education

THERE ARE NO quick fixes when it comes to major world crises and humanitarian aid. But we can—and should—make our efforts to alleviate suffering more evidence-driven and effective. That’s the premise behind the Friedman School’s Feinstein International Center. And it just received a big boost.

Cristiana Falcone Sorrell, N01, F01, has pledged \$937,500 to support the center’s work to improve humanitarian responses. Just over half of the gift, \$500,000, will create the Dignitas Scholarship Fund. This fund is the first endowed scholarship for students in the Master of Arts in Humanitarian Assistance (MAHA) program, a joint-degree program of the Friedman and Fletcher schools. When matched by the university through the ongoing Financial Aid Initiative, the fund will total \$1 million.

The remainder of the gift will support the annual fund and establish the Dignitas Research Innovation Fund, created to spur research that helps vulnerable populations faced with emergencies such as famine, earthquakes, conflict and catastrophic weather. The gift aims to stimulate innovation and allow researchers to test new concepts.

“When I was thinking how to give back in a meaningful way, I thought first about the Feinstein International Center, because what it does is so important,” says Falcone Sorrell, who is a graduate of the MAHA program and is a member of the Board of Advisors to the Friedman School. “It is forging a professional culture of humanitarian aid, and now more than ever we need more of that expertise.”

The Feinstein International Center brings multidisciplinary research and professional rigor to how the world

Recent Arrival

Edward Kleifgen has joined the Friedman School as the new executive associate dean. He comes to Tufts from Harvard University, where he served in several executive roles, most recently as senior associate dean at the School of Engineering and Applied Sciences. Earlier positions include assistant dean for academic affairs at Harvard's Faculty of Art and Sciences. He held leadership positions in Massachusetts and New York City organizations devoted to public health, health-related research and education and community development. Kleifgen holds a bachelor's degree in psychology and sociology from Stony Brook University, and a master's in public administration from Baruch College, City University of New York. As executive associate dean, he will provide leadership for all major administrative aspects of the school.

YOUR ALUMNI ASSOCIATION

MENTORS MAKE A DIFFERENCE



AS I REFLECT on all that we have accomplished in the past year, I feel proud to be part of an alumni community that remains dedicated to advancing the Friedman School mission. Last fall we launched the Friedman School's first alumni mentoring program. This pilot program, which was conceptualized, designed and initiated by a group of devoted alumni volunteers, connects students with alumni mentors to support their professional growth. It is an 18-month mentorship guided by the student's interests and career-development goals. The program is an excellent example of the valuable contributions alumni can make to the Friedman community well beyond graduation. We will be seeking new mentors this fall, and I encourage you to consider volunteering your time and expertise to mentor a Friedman student.

It has also been an incredibly successful year for our existing alumni association programming. We welcomed more than 400 guests at our 2015 All-Alumni Reunion events, hosted three informative career panels, met with 26 accomplished alumni volunteers during our annual Washington, D.C., networking trip and engaged a record number of alumni in the university-wide #GivingTuesday initiative. It is clear that alumni are enthusiastic about maintaining a connection with the Friedman School.

I am eager to see what we will accomplish in the future. If you would like to become more involved or have suggestions regarding alumni programming, please feel free to contact me at ashao@herbalife.com. I look forward to seeing you at events in the near future.

ANDREW SHAO, N00

President, Friedman School Alumni Association

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Class Notes

G69

CAROLE PALMER has been reappointed to the New Hampshire Board of Licensed Dietitians by Governor Maggie Hassan. She spoke at numerous events this spring, including the annual meeting of the American Society for Nutrition, the Nutrition and Health Conferences of the Arizona Center for Integrative Medicine, the Massachusetts Dietetic Association annual meeting and at Columbia University.

N96

TANUJA RASTOGI has transferred from the U.N. World Food Programme's headquarters in Rome to the Washington, D.C., office, where she is a senior policy advisor focused on building and

strengthening partnerships and covering nutrition policy issues.

N01

SILVINA CHOUMENKOVITCH moderated an alumni association career panel titled "Communicating Your Value: Interviewing Tips, Salary Negotiation and Skills for Success." The other panelists were **JENNY SHEA RAWN, N05**, and **JOE WALSMITH, N03**.

N06

LAURA IRIZARRY FIGUEROA, A04, N06, and her husband, Joan, welcomed their son, Tomás Servitje-Irizarry, on March 25, 2015. Big sister Rafaela is particularly excited; she throws the occasional Lego in his crib to keep him from becoming bored.

N09

TONI PERT has relocated to Philadelphia for a new position as neonatal intensive care unit dietitian at the Children's Hospital of Philadelphia.

N11

ERIC CIAPPIO moderated an alumni association career panel titled "The Intersection of Science and Policy." The other panelists were **MARY KAY CREPINSEK, N84**; Johanna Dwyer, professor of medicine at Tufts and a senior scientist in the Nutritional Epidemiology Program at the HNR-CA; **CHRISTINA ECONOMOS, N96**, and **JOSHUA NYAMBOSE, F95, N01**.

RONIT RIDBERG and her husband, Ian Koebner, welcomed a baby boy, Enso Simon Koebner, on November 5,

2014. Ronit is thrilled to be a mama, as well as a doctoral student at the University of California Davis.

N12

MOLLY UEBELE has relocated to Malawi, where she is working on a project with the Friedman School and the Nutrition Innovation Lab. She is teaching clinical nutrition courses and overseeing clinical rotations for a new dietetics program.

N13

MEGHAN JOHNSON, N13, MPH13, married Andrew Dinh on June 13, 2015, in Washington, D.C. Friedman School alumni in attendance included **ALLISON KNOTT, N12**; **KATIE ANDREWS, N12**; and **LAURA CARROLL, N13**.

In Memoriam

VALERIE MAE (PAURUS) OTA, N14, age 30, of Brooklyn, New York, died unexpectedly on April 3, 2015. Ota wanted to make a difference in how food was produced and starving nations would be fed. She was born in Rochester, Minnesota. Following a year serving with Youth with a Mission in London and Argentina, she studied anthropology at Wheaton College. For the next four years, Valerie lived in Chicago, working for AmeriCorps and other neighborhood organizations. In 2012 she married Takamasa Ota. She earned a master's degree from the Agriculture,

Food and Environment program and last year was accepted into the doctoral program at Cornell University. She championed microdevelopment that would enable people to eat healthy food produced by farmers making a living in a way that would replenish the soil. Memorials will be applied to the projects that she was passionate about in Malawi, the Philippines and the inner city of Chicago.

JESSICA ANN (BARNEY) TILAHUN, N06, age 38, died on March 26, 2015, from cancer. She worked on nutrition

and food security programs in India, Ethiopia, South Sudan, Brazil, Kenya, Nepal, Malawi, Thailand and Uganda, among other places. Her work is best summed up by a statement she once made: "When we see that something is wrong, we can work to fix it. We can't be silenced." A native of Mapleton, Utah, she attended Utah State University and majored in nutrition science. Shortly after graduating, she fulfilled her childhood dream of serving in the Peace Corps, teaching health education at high schools and a community college in Moldova. She also worked at a free women's clinic

and helped run summer camps. She earned her master's degree from the Food Policy and Applied Nutrition program at the Friedman School. She married Henok Telahun in 2007 and welcomed their son Benyam in 2011. In 2013, while pregnant with their second child, Jessica was diagnosed with breast cancer. She started treatments and gave birth to a healthy boy, Kalab, but eventually succumbed to the illness. Donations can be made in support of her two young boys at www.gofundme.com/JessicaAnnTilahun, or to the Susan G. Komen Foundation.

Good Spores, Bad Spores

CASSANDRA BECKER, N16, a dietetic intern at Tufts' Frances Stern Nutrition Center, serves as our expert.

Q If I see mold growing on an orange, can I just cut away the moldy part or should I discard the whole fruit?

A Molds are microscopic fungi that live on plant or animal matter and can sometimes be seen with the naked eye. These organisms give off spores, which are responsible for their color. While many molds are harmless and beneficial, such as those intentionally grown in cheeses, some molds cause allergic reactions and respiratory problems. Under the right conditions, a few molds produce mycotoxins—poisonous substances that can make you sick. In many foods, mold invades deep

within the food—not just on the surface. In some cases, toxins may have spread throughout the food.

According to the USDA, soft fruits and vegetables with high moisture content, such as an orange, can be contaminated below the surface. Such fruits and vegetables should be discarded in their entirety if moldy. On the other hand, small mold spots can be cut out with a one-inch diameter in firm, low-moisture fruits and vegetables, such as cabbage, bell peppers and carrots.

As a rule of thumb, mold found in hard, low-moisture foods, such as hard cheese, hard salami and dry-cured country hams, can be cut out, while moldy soft, high-moisture foods, such as meat, soft cheese, yogurt, jam, breads, nuts and nut butters, should be discarded in their entirety.



This story originally appeared in the *Tufts Health & Nutrition Letter*. Send your questions for future installments of "Ask Tufts Nutrition" to Julie Flaherty, Tufts University Office of Publications, 80 George St., Medford, MA 02155, or email julie.flaherty@tufts.edu.

There's good reason for optimism.

Dr. Alice H. Lichtenstein has seen obesity rates rise and fad diets come and go. Yet she's optimistic. The good news, like widespread declines in heart-disease diagnoses, blood pressure levels, and cholesterol levels, is due in part to the contributions she has made.

Dr. Lichtenstein is the author of landmark studies on dietary fats and cholesterol, and has been an important voice in the nutrition community, serving for two decades on the American Heart Association Nutrition Committee and twice on the U.S. Dietary Guidelines Advisory Committee.

Your generous gift provides vital support to our mission of advancing nutritional well-being. Thanks to friends like you, scientists like Alice will continue to elucidate the ways that foods and nutrients influence our health.

To make your contribution to the Friedman School Annual Fund, visit nutrition.tufts.edu/givenow2

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*Nourishing Minds.
Nourishing Humanity.*

Dr. Lichtenstein is the Stanley N. Gershoff Professor of Nutrition Science and Policy at the Friedman School of Nutrition Science and Policy, Professor of Medicine at Tufts University School of Medicine, and Senior Scientist and Director, Cardiovascular Nutrition Laboratory at the Jean Mayer USDA Human Nutrition Research Center on Aging.

➔ Change of address? Questions? Email julie.flaherty@tufts.edu.



4 Diets in decline



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NEW CROP OF FOOD FIGHTERS

Innovation in healthy, sustainable food is poised to become “the next big thing,” Cristiana Falcone Sorrell told the crowd at the school’s 34th commencement ceremony. Clearly, good eating was on the minds of many as the school welcomed 99 new graduates to its alumni ranks.

FOR MORE ON THE STORY, TURN TO PAGE 28.