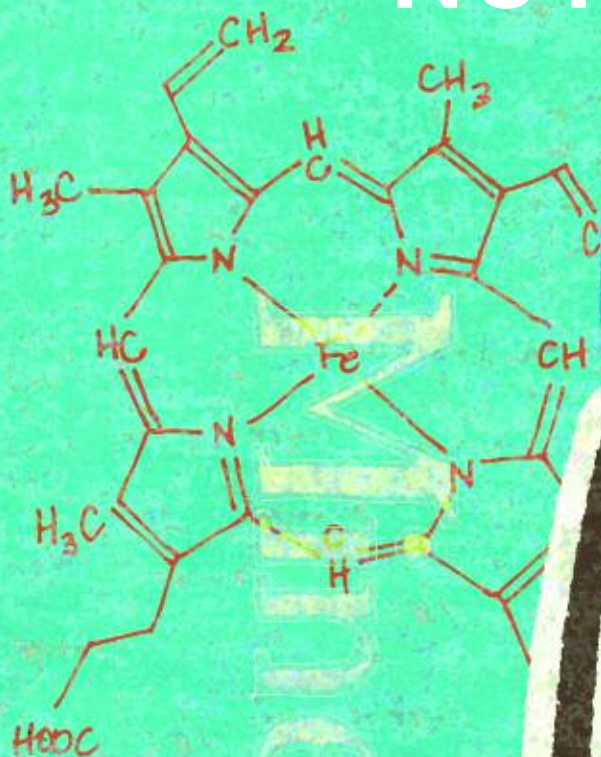


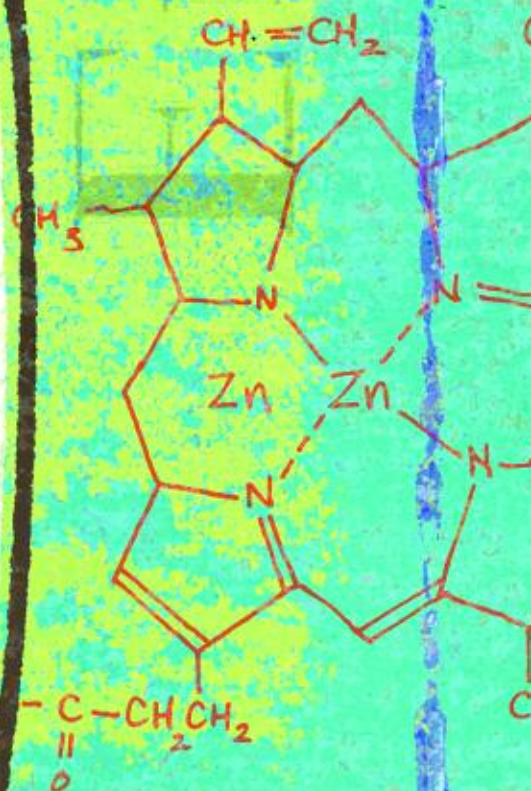
Tufts

NUTRITION



Banning the bottle

Breastfeeding in America is a complex mix of science, economics, policy and culture



Imported organic trust

For this installment of “Ask Tufts Nutrition,” Kathleen A. Merrigan, an assistant professor and director of the Agriculture, Food and Environment Program and the Center for Agriculture, Food and Environment at the Friedman School, serves as our expert.

Q ■ Recently, I saw a bag of USDA-certified organic rice that was labeled “product of Pakistan.” I’ve also seen USDA-certified organic pears from Argentina. How does the USDA ensure that food grown overseas truly meets organic standards?

A ■ I’m not surprised that consumers are noticing organic imported products. Today, more than 100 countries produce food organically on 59 million acres of land. Argentina has 7.4 million organic acres, the second most of any country in the world, while Pakistan is a minor producer with just under 5,000 organic acres.

In the United States, 20,000 natural food stores and 73 percent of conventional grocery stores sell organic products produced on our 2.35 million domestic organic acres.

Imported organic food must meet one of three criteria. One is that our country could establish an “equivalency agreement” with another country, which means that even if our standards are not identical, we consider them equivalent, and food

may be traded without impediment. The other two ways require that U.S. standards be met exactly. A U.S.-based certification agent, such as the Northeast Organic Farming Association here in the Northeast, could travel to another country, inspect the farm and certify that U.S. organic standards are being met. The third option is for certifying agents from other countries to apply for USDA accreditation. If they are accepted, it means that the USDA believes that agent to be competent to inspect food producers in their home countries and determine if they meet U.S. standards.

While these mechanisms provide the necessary tools, our national organic program has been in place only since October 2002. Time will tell if the USDA will take the kinds of enforcement actions likely necessary to prevent fraud over the long term.





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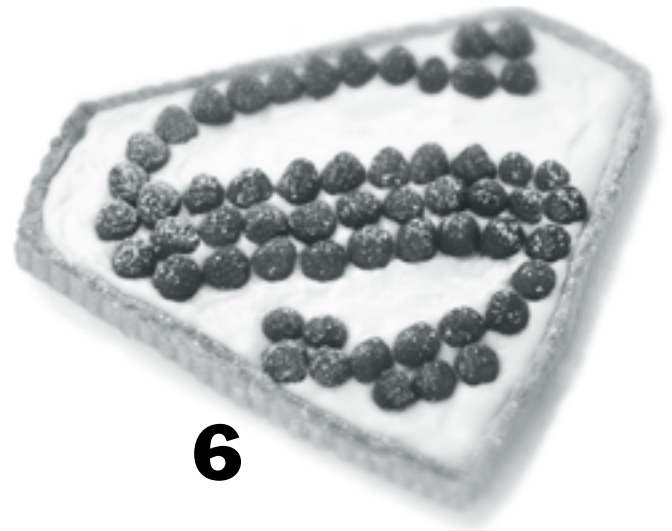
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Charting our future

THIS ACADEMIC YEAR HAS BEEN AN EXCITING AND PRODUCTIVE TIME FOR THE FRIEDMAN School. On November 3, Tufts University launched the active phase of a new capital campaign, *Beyond Boundaries: The Campaign for Tufts*. The campaign has significant implications for building a solid base for the Friedman School to continue to attract world-class faculty and students.

The Friedman School is fortunate to have Elizabeth Cochary Gross, an alumna and member of the Board of Overseers, as the school's vice chair for the campaign. The Friedman School's campaign goal is \$50 million. We seek to build on our efforts over the past two years, including the vision reflected in our 2005 Strategic Plan to train the future leaders in nutrition. This provides an opportunity for faculty, staff, students, alumni and the larger Friedman community to chart where the school wants to be five, 10, 25 years from now.

The first annual Friedman School Symposium was convened on September 19. The theme—Dietary Guidelines 2010: The Right Stuff—attracted scientists and policymakers from government, academia and the private sector. Throughout the two-day symposium, there was a lively discussion on the links between science and policy. The school was fortunate to have Mark Hegsted as one of the keynote speakers. He was one of the architects of the 1977 Senate Dietary Goals as well as the first Dietary Guidelines for Americans published in 1980. His remarks highlighted the fact that researchers need to go beyond scientific discovery to influence the public policy agenda. Almost 30 years after Hegsted championed the Dietary Goals, his passion for nutrition is still palpable.

Another popular part of the symposium was the “Meet the Students” breakfast, when our students had an opportunity to meet scientists from around the world. We are fortunate that the proceedings from the symposium will be one summary document that will be used in deliberations for the 2010 Dietary Guidelines.

Early in 2007 the Friedman School will be launching the first in a series of conferences for the general public. We want to have a dialogue on timely nutrition topics. Stay tuned!

The Rosenberg Professorship in Nutrition and Human Security, named in honor of former Dean Irwin H. Rosenberg, was inaugurated at a celebration on November 13. Peter Walker, director of the Feinstein International Center, is the first chair holder. His lecture outlined the four forces that threaten human security: climate change, globalization, empire change and the pervasive “attitude virus” of us versus them. At the same event, the school honored the 2006–07 Friedman Fellows—Jennifer Obadia, Kamel Patel and Chloe Puett. The fun continued at a reception and dinner at Gifford House with President Lawrence S. Bacow and Adele Fleet Bacow.

On October 20, I had the opportunity to attend the USDA awards ceremony in Washington, D.C., when Jose Ordovas, professor of nutrition and a senior scientist at the Jean Mayer USDA Human Nutrition Research Center on Aging, was one of a select group of individuals—and the only nutrition scientist—to receive the Agricultural Secretary's Honor Award. Congratulations, Jose.

Congratulations, also, to Jerry Dallal, the 2006 recipient of the Friedman School's Distinguished Faculty Award. A ceremony and reception were held in Boston on December 13.

I'd like to hear from the readers of *Tufts Nutrition*. What do you want to hear more about from me? Please e-mail me at eileen.kennedy@tufts.edu and let me know.

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The mission of the school is to passionately advance nutritional well-being for people worldwide through excellence in research, teaching and the shaping of public policy.

We welcome your letters.

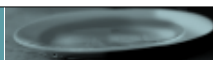
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We're online. Please check out the magazine and the world of *Tufts Nutrition* at <http://nutrition.tufts.edu>.

THE MAILBOX IS EMPTY

Tufts Nutrition is your publication, and as the editor, I am eager to hear from readers. Let me know what you like and don't like. Tell me what you want to read about. I look forward to hearing from you.

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Sight robber

THE LOW-CARB CRAZE MAY BE OVER, BUT DON'T REACH FOR THAT sugar bowl yet. Low-quality carbs—like those found in potatoes, white bread and white rice—may be linked to a common form of vision loss, according to research by Allen Taylor, chief of the Laboratory for Nutrition and Vision Research at the HNRCA. Taylor and his colleagues found that women who consumed diets with a relatively high glycemic index were more likely to develop signs of early age-related macular degeneration than women who consumed diets with a low glycemic index.

The glycemic index ranks foods according to their effect on blood sugar (or glucose) levels. High-glycemic-index foods—such as potatoes, bananas, white bread and white rice—cause blood sugar to spike higher and sooner than lower-glycemic-index foods such as whole wheat breads, oats and pasta.

“Most highly processed foods are high-glycemic-index foods,” says the study’s lead author, Dr. Chung-Jung Chiu, a scientist in Taylor’s lab and assistant professor at the School of Medicine.

Given that the vessel-rich retina depends on blood glucose to function, researchers suspected that glucose metabolism might affect this part of the eye. The macula, at the center of the retina, is responsible for our central vision and ability to see fine details. Age-related macular degeneration is one of the most common forms of vision loss in people over age 40 and affects more than 1.5 million Americans. The study appeared in the *American Journal of Clinical Nutrition*.

The Tufts researchers examined the eyes of more than 500 healthy women between the ages of 53 and 73. They also looked at the women’s total carbohydrate intake over the preceding 10 years. Total carbohydrate intake, however, could not be linked to the eye disease, leading the scientists to conclude the types of carbohydrates being consumed mattered more than the absolute amount. To follow up, Chiu is investigating whether high-glycemic-level diets are associated with a greater risk of the disease progressing.

BAD TO THE BONE

THE NEXT TIME YOU PICK UP A CAN OF COLA, THINK about your bones. That soda may be sucking minerals from your bones, increasing your risk of developing osteoporosis.

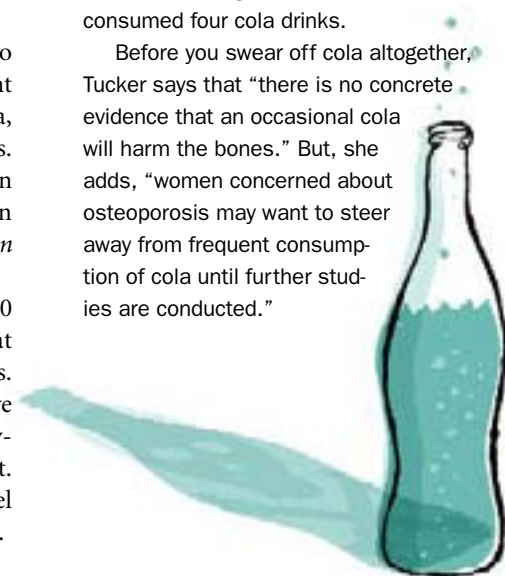
“The more cola that women drank, the lower their bone mineral density was,” said Kathleen Tucker, director of the Epidemiology and Dietary Assessment Program at the Jean Mayer USDA Human Nutrition Research Center on Aging and a co-author of the research published in the October issue of the *American Journal of Clinical Nutrition*.

Tucker and her colleagues analyzed dietary questionnaires and bone mineral density measurements at the spine and three places on the hip of more than 2,500 people in the Framingham Osteoporosis Study. In women, cola consumption was associated with lower bone mineral density at all three hip sites, regardless of their age, menopausal status, total calcium and vitamin D intake and the use of cigarettes or alcohol.

However, cola consumption did not affect bone mineral density in the hips of men, nor was it associated with lower density in the spine for both men and women. Drinking diet cola produced similar results, and bone mineral loss was somewhat less for drinkers of decaffeinated cola.

The men reported drinking an average of five cola beverages a week, while the woman consumed four cola drinks.

Before you swear off cola altogether, Tucker says that “there is no concrete evidence that an occasional cola will harm the bones.” But, she adds, “women concerned about osteoporosis may want to steer away from frequent consumption of cola until further studies are conducted.”



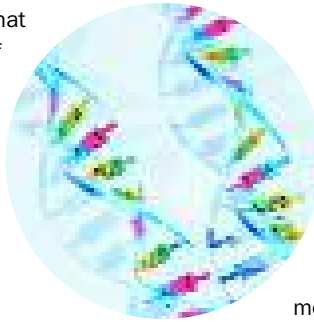
GENETICS AND HEART DISEASE

PEOPLE WHO CARRY A GENE VARIANT THAT REGULATES THE METABOLISM OF FAT in the blood may raise their risk for heart disease if their diets are laden with omega-6 fatty acids, found in meats and processed foods made with corn and soy oils.

In their study involving 2,000 participants in the Framingham Heart Study, HNRCA researchers found that 13 percent of men and women carried the variant of the apolipoprotein A5 (APOA5) gene. Those whose daily diets contained more than six percent of calories from foods containing omega-6 fatty acids had blood lipid profiles that made them more prone to atherosclerosis (hardening of the arteries) and heart disease, including higher triglyceride levels. The study was published in *Circulation*.

“Previous research points to polyunsaturated fatty acids like omega-3s and omega-6s as ‘good’ fats, thought to reduce the risk of heart disease by lowering cholesterol levels if used in place of saturated fats that are mostly found in animal sources,” said senior author of the study Jose Ordovas, director of the HNRCA Nutrition and Genomics Laboratory.

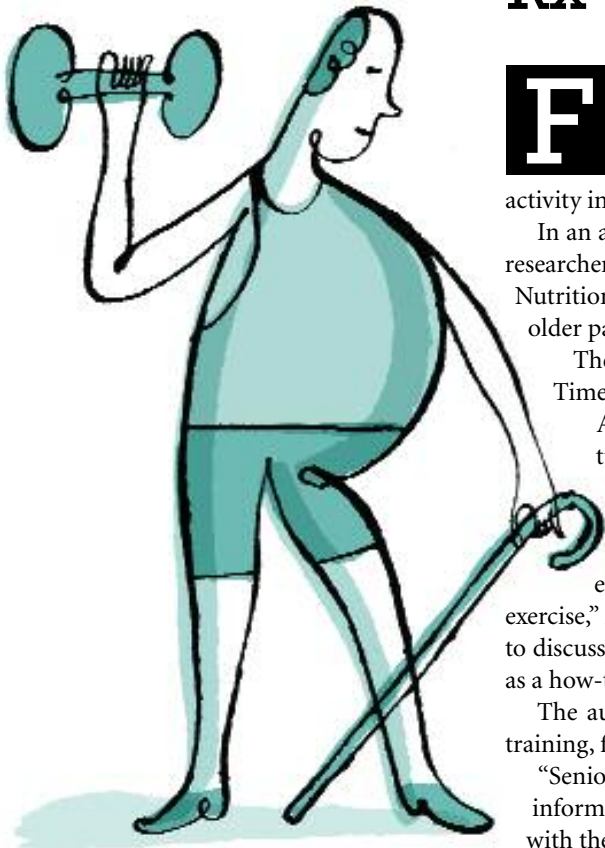
Omega-6s and omega-3s are known as essential fatty acids that have to be derived from the diet because our bodies don’t produce them. Omega-3s are found in nuts, leafy green vegetables, fatty fish and vegetable oils like canola and flaxseed, while omega-6s are found in grains, meats and vegetable oils.



However, Ordovas noted, current research has not yet found “if there is an optimal ratio for omega-3s to omega-6s, or if consuming a certain amount of omega-6s might negate the benefits of omega-3s.” But for the 13 percent who are carriers of the APOA5 gene variant, he said, consuming fewer omega-6s in relation to omega-3s may be important in helping reduce the risk of heart disease.

In the study, the carriers of the variant who ate more than six percent of their total calories from omega-6s had a 21 percent increase in triglyceride levels and a 34 percent elevation of certain atherogenic lipoprotein particles in the blood. However, consumption of omega-3s decreased triglyceride and atherogenic lipoprotein levels in the blood, regardless of a person’s APOA5 gene variant.

Rx for exercise



FOR MANY OLDER ADULTS, A VISIT TO THE DOCTOR USUALLY ENDS WITH FILLING a prescription for medication. But what if physicians also prescribed exercise? Two researchers at the HNRCA are proposing that doctors use the familiar medication prescription to help their older patients incorporate physical activity into their routines.

In an article in the journal *American Family Physician*, Ann Yelmokas McDermott, a researcher in the Lipid Metabolism Laboratory, and Heather Mernitz, a scientist in the Nutrition and Cancer Biology Laboratory, offer physicians specific guidelines for giving older patients “exercise prescriptions.”

Their exercise prescription employs these elements: Frequency, Intensity, Type, Time, Progression—collectively called FITT-PRO.

A FITT-PRO exercise prescription must be tailored to each patient’s health status and explicitly recommend what type of exercise to do, how often, how hard and for how long. The exercises must also progress in difficulty over time as the patient becomes more physically fit.

Fewer than half of older adults report ever having their physician suggest exercise, and “only 30 percent of America’s senior citizens engage in regular exercise,” McDermott said. “Clinicians shouldn’t feel like they have to be fitness experts to discuss exercise with their patients,” she said. “These guidelines are intended to serve as a how-to manual for health-care providers.”

The authors suggest that any fitness regimen combine aerobic exercise, resistance training, flexibility and lifestyle modification.

“Seniors tend to have less access than other demographic groups to physical activity information and programming,” Mernitz said, but “they have relatively more contact with their health-care providers.”

The lowdown on choline

PEOPLE WHO CONSUME MORE CHOLINE, AN ESSENTIAL NUTRIENT FOUND IN MEAT, milk, eggs and fish, have lower levels of homocysteine in their blood. Betaine, which is derived from choline and is found in grains, spinach and beets, has the same benefit, according to a study published in the *American Journal of Clinical Nutrition*. The findings are good news, because higher plasma levels of homocysteine—an amino acid involved in hundreds of reactions throughout the body—have been linked to cardiovascular disease, dementia, Alzheimer’s disease and some cancers.

“We don’t know if homocysteine is the culprit or just a bystander or a marker, but the association [with those diseases] is pretty clear,” said the study’s co-author, Paul Jacques, a senior scientist in the Nutritional Epidemiology Program at the HNRCA and a professor at the Friedman School.

To determine how choline and betaine affect homocysteine levels in the blood, the researchers analyzed data from almost 2,000 volunteers enrolled in the Framingham Offspring Study, which keeps tabs on the adult children of participants in the long-running Framingham Heart Study. Recruited in 1971, more than 5,000 offspring continue to fill out questionnaires and undergo examinations for the study every three or four years. Jacques and his colleagues used self-reported food records and blood tests from 1991 to 1994 to examine the relationship between dietary choline and betaine intake and blood homocysteine levels—something that was not possible until the USDA published a database of choline-containing foods in 2004.

“Based on the biology, we would have predicted that dietary choline would affect fasting homocysteine levels, but now we have a way of testing it,” Jacques said. The database—developed largely by one of Jacques’s co-authors, Steven H. Zeisel of the School of Public Health at the University of North Carolina at Chapel Hill—contains the choline and betaine content of hundreds of foods, from fresh egg yolks, one of the richest sources of the nutrient, to carbonated cola drinks, which contain almost none.

The researchers found that higher intakes of choline and betaine each were related to lower levels of homocysteine in the blood, independent of age, sex and whether a person smokes, drinks caffeine or takes blood pressure medication. Jacques and his colleagues also found the results held when they adjusted for consumption of folates and B vitamins, a family of nutrients shown in previous studies to lower homocysteine levels. That Jacques and his colleagues were able to show choline and betaine’s role in homocysteine metabolism may represent evidence that the general population’s intake of the nutrients is inadequate.

“If we were all consuming adequate levels of choline, we wouldn’t see these results,” Jacques said.



LABELING FOR NAUGHT

WITH HUNDREDS OF PRODUCTS IN THE SUPERMARKET cereal aisle alone, how do consumers decide what goes in their shopping cart? Nutritional labels don’t seem to have much sway, according to an Associated Press poll. While close to 80 percent of Americans say they read nutritional labels, nearly half confess to buying unhealthy foods anyway.

“This doesn’t surprise me,” said Susan Roberts, chief of the HNRCA Energy and Metabolism Laboratory and professor of nutrition. “Once people get to the point of reading a food label, they have probably already largely committed to buying it.”

The FDA mandated nutritional labeling for virtually all packaged foods and some produce in 1994. Meant to serve as a check on marketing claims such as “low fat” and “lite,” the labels also were designed to help Americans make healthier food choices. More than 10 years later, however, two-thirds of Americans are obese or overweight, and that rate keeps climbing.

It’s not that people don’t know what to look for. The AP survey of 1,003 adults found that most people check food labels for fat and calorie content. Moreover, Americans are savvy shoppers, with almost three-quarters of them double-checking products’ claims of “low fat” or “reduced fat” against the nutrition label on the back.

Labels alone aren’t enough, said Jeanne P. Goldberg, director of the Center on Nutrition Communication at the Friedman School. “We need to figure out what information people really need and include that as part of comprehensive nutritional education.”





the

This simple test may offer genetic clues about why some of us stay thin while others pack on the pounds

WHEN BEVERLY J. TEPPER LECTURES, SHE OFTEN LEAVES HER audience with their tongues hanging out. Literally. As part of a talk on taste sensitivity, she passes out little circles of filter paper embedded with what is, to some people, a bitter-tasting compound with the unappetizing name of 6-n-propylthiouracil. She can tell immediately who in the audience is genetically programmed to taste it. ■ “It is absolutely striking,” she said. “You can see it on people’s faces.” Those who are sensitive to the compound usually grimace like a baby tasting its first Brussels sprouts. The non-tasters look curiously around the room, wondering what the fuss is about because “it literally tastes like a piece of paper to them.” ■ It’s more than a party trick. This little test may provide genetic clues as to why some people like vegetables and others don’t, why some can eschew high-fat foods and others can’t, and why some people stay thin while others (many others) gain weight. ■ Tepper, N82, N86, a food science professor at Rutgers University, has been studying taste sensitivity for almost two decades. As an academic who often works closely with the food industry, she is combining food sensory science with nutrition science and psychology to better understand the links between taste, diet and health.

BY JULIE FLAHERTY



Beverly J. Tepper, a super-taster, responds to the bitterness of PROP. She has spent years studying a genetic trait that causes some people to taste bitterness while others taste none.

HE

er interest in taste genetics began around 1994 when she was investigating why some people enjoy high-fat foods more than others do. She asked test subjects to rate foods with different levels of fat, and then tried to cross their reactions with different variables, such as their age, sex, attitudes toward nutrition, what they grew up eating and whether they could control their food urges. “But nothing was coming out of that [research] that was really very interesting,” she said. “It’s the kind of thing that food companies tear their hair out trying to understand: Is there something about people’s backgrounds that pushes them in one direction or the other about what they prefer?”

NON-TASTERS AND SUPER-TASTERS

Then she learned about a colleague’s study that found that people who were really sensitive to that bitter 6-n-propylthiouracil (or PROP, for the tongue-tied) also, for some reason, gave higher creaminess ratings to dairy products than those who could not taste PROP.

“Maybe that’s the key,” Tepper recalled thinking about her own research. “Maybe the variability is genetic. It’s biological. It’s not just something out in the air.”

PROP is nothing new. PROP sensitivity had been known as a genetic trait since it was discovered in the 1930s. People with the TAS2R38 genotype have receptors on their tongues that recognize the acrid substance.

Based on the dairy study, Tepper thought that the PROP test could tell her more than how well people could tolerate bitterness. She started by dividing test subjects into PROP non-tasters, medium tasters and particularly sensitive “super-tasters.” (Statistically, about 25 percent of Caucasians are non-tasters; 50 percent are medium tasters, and 25 percent are super-tasters.) She then gave them high- and low-fat versions of salad dressings to taste. As predicted, the non-tasters liked the high-fat dressings better.

Subsequent work by Tepper and others has pointed to a host of taste tendencies that separate tasters from non-tasters.

“We recognized that PROP tasters not only taste the bitterness of PROP and the bitterness of other compounds more, but they perceive sweetness more; they perceive the textural aspects of dairy products more; they perceive hotness—like chili pepper—more,” Tepper said. “It’s a whole range of sensory characteristics that they seem to be more sensitive to.”

How is one bitter receptor on the tongue responsible for all these differences? One theory is that people who are tasters, and in particular, super-tasters, seem to have more taste buds. And people who have more taste buds, it follows, may experience most taste sensations more intensely.

Perhaps because of this, super-tasters also seem to pick up on food nuances. When Tepper asked study subjects to describe a range of dairy products they tasted, the super-tasters used lots of adjectives—creamy, thick, rich, buttery, sticky, syrupy and milky. The non-tasters used just a handful of words to describe what they ate. “They perceive something different,” Tepper explained, “and they clearly know what they like, but they have difficulty describing it.”



WEIGHING IN

All of which may be useful for predicting who will grow up to be a food critic. Tepper, however, is looking for a connection that could have larger public health implications: How does PROP taster status affect weight?

Two years ago, Tepper found that women in their 40s who were super-tasters were 20 percent thinner than non-tasters. The super-tasters appeared to eat less overall, be it bitter vegetables or fatty foods. The super-tasters had a body-mass index of 23.5; the medium tasters had an average of 26.6, and the non-tasters nearly 30. (A BMI of 30 or above is considered obese.) So far, she has only seen body-weight correlations to PROP status in women, not men.

But before you run out to have your PROP status tested, you should know that there are plenty of exceptions to these rules. Tepper is herself a super-taster. ("That little disk is so bitter to me, it blows the back of my head off," she explained.) And yet, she likes all the foods she theoretically should hate. "It took me a number of years to develop a taste for them, but I like hot food; I like briny olives; I like

anchovies; I like broccoli and Brussels sprouts," she admitted. "After a while I thought, 'I don't even support my own hypothesis, so how is this going to work?' It's rather obvious: It's not just taste genetics that's influencing people's behavior and food preferences. There are so many other factors. And we can't just forget about all of them."

DARING DINERS

One significant factor is food adventurousness, or a willingness to try unfamiliar foods. "We decided to add just a single question to our surveys: How often do you try new foods?" They found that super-tasters who are not food adventurous are the ones who hate everything. As a super-taster who is also food adventurous, Tepper's food preferences make perfect sense.

Another trump card is a person's ability to fight food urges, called "restrained eating." People's self-control, particularly if they are concerned about nutrition or their weight, seems to override taster status, so that statistically, it has no effect on body-mass index. So this one gene does not control weight—or

definitively determine what foods you like. Nor does it mean that super-taster children are destined for a vegetable-free life. Tepper recently looked at a group of preschoolers to understand when these genetic differences appear. (The results appeared this July in the *American Journal of Clinical Nutrition*). She offered the kids carrots and red pepper along with the more bitter cucumbers, raw broccoli and black olives (which, while not technically vegetables, are viewed that way by children).

The children showed clear signs of their PROP status and food preferences at this early age. The non-tasters spontaneously ate almost a serving of vegetables, including more of the bitter ones. But the taster kids were no slouches, eating almost a half-serving of vegetables of their choosing.

"It is possible to get vegetables into kids if you pay some attention to their genetic predispositions. What's ultimately valuable is what someone selects or doesn't select when they are given a variety of choices," Tepper said.

One question she has is whether mothers, who make most of the menu decisions at home, are offering their children vegetables that they may not like themselves and giving their children an opportunity to develop a preference for them.

Tepper, who grew up in Boston and studied biology at Northeastern University, was a member of the first nutrition school class at Tufts. Looking back, she is glad that she and her classmates were required to study not only basic nutritional biochemistry, but also the impact of nutrition on people, including those in the developing world. "You really understood the interdisciplinary nature of nutrition, and I find that is a bit lacking in some programs," she said.

After graduating with her Ph.D. in 1986, she completed a postdoctoral fellowship at the Philadelphia-based Monell Chemical Senses Center, a research institute focused on taste and smell research. Her interest in sensory evaluation was born. When a position came up at Rutgers for a sensory scientist in 1989, she took it.

As director of Rutgers' Sensory Evaluation Laboratory, Tepper often collaborates with food companies. "When I work with industry, usually there is something applied in it that they are interested in and something



As director of the Sensory Evaluation Laboratory at Rutgers University, Beverly Tepper often collaborates with food companies, helping test their products while furthering her own research on taste sensitivity.

basic research-oriented that I'm interested in. It's really a marriage of the two." She has worked with the Linguagen Corp., a biotechnology company that received a patent for the first molecular compound that blocks bitter tastes in foods and drugs. In her lab—which has a kitchen and 11 tasting booths equipped with computers where test participants record their reactions to foods—she tested the bitter blocker in combination with black coffee, dark chocolate, white grapefruit juice and tonic water. The blocker helped blunt the bitterness of the coffee, but nothing else.

DIETS FOR DIABETICS

Other tests are purely for scientific elucidation. Tepper has been interested in diabetes research since her graduate school days. One of her first studies was to confirm the long-held medical belief that people with type 2 diabetes have an increased desire for sweets.

More recently, she has been focusing on women with gestational diabetes. Her studies so far have found that pregnant women with diabetic symptoms tend to like sweetened drinks, such as strawberry milk, and report that they consume more sweet foods in their diet. Tepper is interested in how pregnant women's increased desire for sweet foods may influence their dietary compliance. Women who are diagnosed with gestational diabetes usually receive the same dietary recommendations as those given for type 2 diabetics, but they do not always follow those recommendations. In the long run, she hopes this

How is one bitter receptor on the tongue responsible for all these differences?

research will help focus nutritional recommendations for women with gestational diabetes and for diabetics in general.

Most of Tepper's students go on to work in the food industry. "A lot of our students have backgrounds in biology or microbiology or chemistry, and often they are students who like science, but they can't see the application. They come into food science, and they see chemical and biological principles being illustrated in something they know very well, which is food, and all of a sudden, the spark happens, and they get very excited about it."

Of the 22 full-time faculty who work in the food science department at Rutgers, just two have backgrounds in nutrition. Most food scientists are concerned with the chemical and biological aspects of foods rather than the organisms that eat them. They leave that to the nutritionists.

PARTNERING NUTRITION AND SCIENCE

Tepper says her nutrition education gives her a special vantage point, one that convinces her there should be more collaboration between nutrition and food science

departments. "I think they should be closer," she said. "If you have someone who understands the basic biology of a fat cell, and then you have a food scientist who understands the physical and biological dimensions of putting fat into a food product, I see a lot of strength there."

Tepper and other PROP researchers are looking at several ways that this one genetic proclivity may affect public health. At least one study has found that heavy smokers are significantly more likely to be non-tasters than tasters, who appear more sensitive to the irritation of smoke and the bitterness of nicotine. Similarly, tasters perceive more bitterness and irritation from ethyl alcohol, and research has found that tasters consume fewer alcoholic beverages per year than non-tasters. Tepper stresses that more work needs to be done in both areas, and that if there is a PROP connection, it would only be a risk factor, not a genetic mandate.

"My view is this is just another indicator as to whether a person is going to find alcohol acceptable or not," she said. "But to conclude that this determines whether it makes them an alcoholic or not is kind of far-fetched."

In the future, Tepper believes PROP research will be especially useful in the fight against obesity. Although there have been hundreds of studies looking at PROP status over the decades, only recently has it been recognized for its potential influences on eating behavior and body weight.

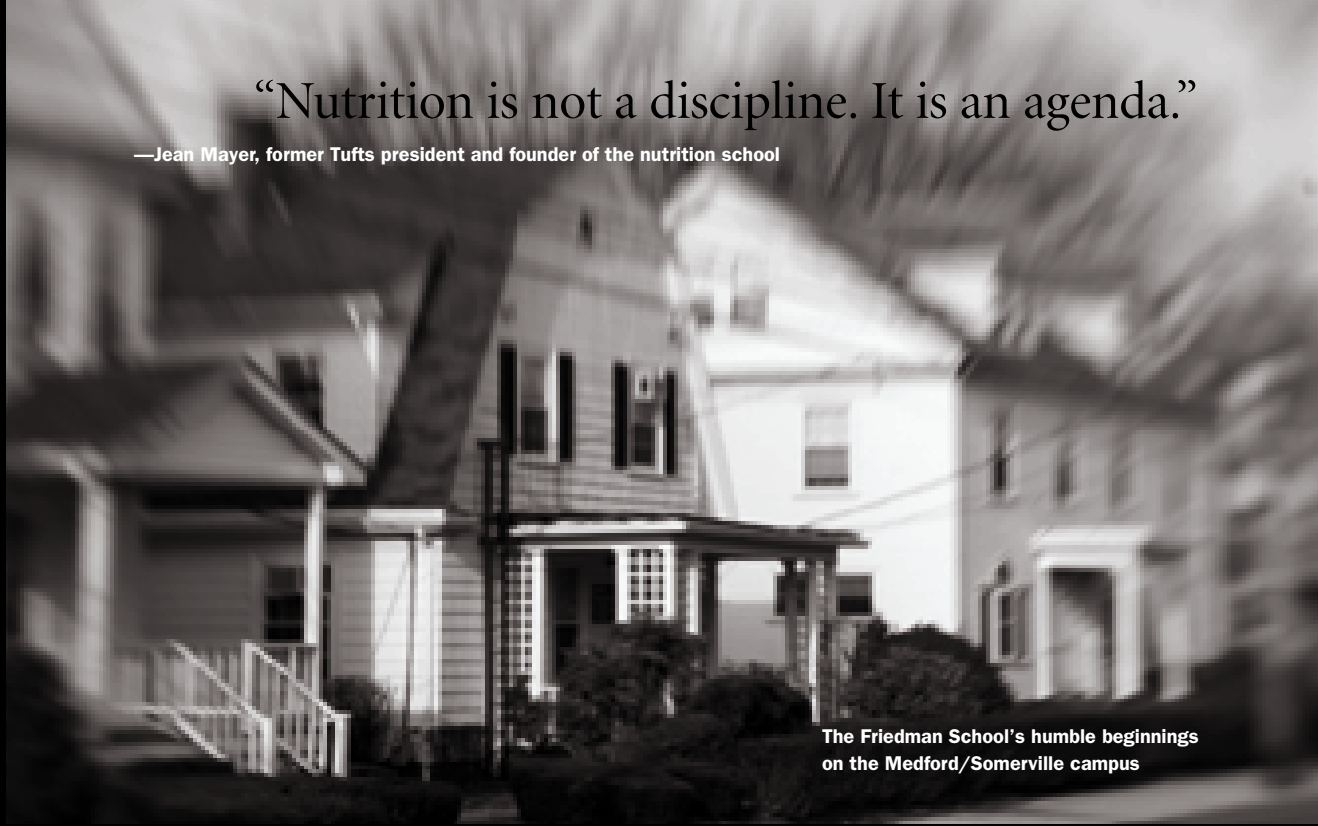
To epidemiologists who study obesity, PROP status may be the new kid on the block. But Tepper thinks it will win them over. "We have identified a lot of obesity genes, but many of those genes are involved in very rare forms of human obesity," Tepper said. "Whereas here's a phenotype that's really easy to measure, that seems to be related to body weight."

She is already collaborating with one scientist who is studying a genetically isolated population in a village in southern Italy, which, because the villagers have similar genetic backgrounds and diets, should provide a clearer understanding of PROP status' relationship to diet and disease outcomes. **TN**

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“Nutrition is not a discipline. It is an agenda.”

—Jean Mayer, former Tufts president and founder of the nutrition school



The Friedman School's humble beginnings on the Medford/Somerville campus

Where are they **n**OW?

Catching up with three graduates of the nutrition school's first class By **Jacqueline Mitchell**

WHEN 17 STUDENTS ENROLLED IN THE FIRST CLASS AT WHAT WAS CALLED THE Tufts School of Nutrition 25 years ago, the school had a simple, if lofty, mission: to improve the nutritional well-being of people throughout the world. Today, the Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy—still the only graduate and professional school of nutrition in North America—continues to prepare its graduates for an important global mission. ■ “I stepped into an extraordinarily strong school, and we have an enormous opportunity to take the school to the next level,” said Eileen T. Kennedy, who was appointed dean of the Friedman School in 2004. “In 25 more years, future leaders in nutrition—not simply in the United States, but worldwide—will be coming out of Friedman.” ■ Through its interdisciplinary approach and marriage of scientific research to policy, the Friedman School now has more than 800 alumni. Whether they are pioneering new ways to teach nutrition, solving ecological mysteries or recruiting the next generation of Friedman students, members of the very first class are making their mark. *Tufts Nutrition* invites you to meet three of them.

Sarah Ash: The road to unexpected places

As an undergraduate biology major at Harvard, Sarah Ash wasn't interested in going to medical school. But it wasn't until her roommate brought home a textbook from a summer class that Ash discovered what she really wanted to do.

"I remember thinking that this is where it all comes together—the chemistry and the biochemistry, the physiology and the genetics," said Ash, N82, N86, associate professor of nutrition in the Department of Food Science at North Carolina State University in Raleigh.

The textbook came from an introductory nutrition course Jean Mayer taught at the Harvard Extension School in the summer of 1974. That fall, Ash's academic advisor suggested she satisfy her new-found enthusiasm for the field by cross-registering at Harvard's School of Public Health. It was there that Ash met Stanley Gershoff, also a professor at Harvard, who assigned Ash a research project on liver enzyme metabolism. (Mayer became president of Tufts in 1976, and when he decided to found a nutrition school, he tapped Gershoff as its first dean.)

Gershoff "took me under his wing and made a little project for me," Ash said. "He didn't have to take that time, but he made a huge difference in my professional career."

After working as a lab technician for several years in Virginia and Illinois, Ash eventually wound up back in Boston. In the fall of 1981, she matriculated as a member of the nutrition school's first class. Pursuing her interest in liver enzyme activity, she studied the effects of age and estrogen on vitamin D metabolism in rats as a researcher in the lab of Dr. Barry Goldin, a professor at Tufts' nutrition and medical schools.

By the time she completed her Ph.D. in 1986, she was a married mother of two. When her husband's job took the family to North

Carolina, a neighbor helped her find work in a biochemistry lab at North Carolina State. It wasn't exactly what Ash had in mind.

Ash introduced herself to a woman who taught the only human nutrition course on campus and let her know of her own interest in teaching. Within six months, the instructor left her post. Despite university officials' initial concerns that a graduate of Jean Mayer's school might be a vegetarian (the course was offered through the animal science department), Ash landed the lectureship.

"I established myself as a good instructor and advisor and managed to create a tenure-track position for myself as a result," she said. "I always tell my students to make cold calls, walk up to people, knock on doors. That's basically how I got this job."

Today, her research focuses on service learning, which gives students the opportunity to apply course material in community settings. Students are best able to meet the goals of service learning—which include personal growth and civic engagement—

through reflection on their service-related activities, Ash said. But few good models exist to guide them.

"Service learning often puts students in unfamiliar situations with unfamiliar people," she said, "and poor-quality reflection can reinforce the biases and preconceived notions that students bring to those experiences."

Ash and a colleague are about to publish a student tutorial and instructor's guide based on a framework for reflection that they have developed over the past two years.

Her interests in areas outside the traditional domain of nutrition can be traced to her time at Tufts, where she most appreciated the way the nutrition program managed to integrate social sciences with biochemistry and physiology.

"That experience made me realize early on that a scientist needs more than knowledge of her discipline-specific scientific principles," she said. "She needs to understand the context and the broader implications of that knowledge to society."



Elizabeth Cochary Gross: Building and growing



“I like being involved with things right from the beginning,” said Elizabeth Cochary Gross, N82, N88. In addition to being a member of the first nutrition school class, Cochary Gross was also the school’s first director of admissions. Today, she serves as the founding president of the Friedman School Alumni Association, an organization she helped launch in 2003.

When Cochary Gross came to Tufts, she was most interested in the hard science of nutrition and completed her Ph.D. disserta-

tion on vitamin B6 and aging. But she recognized the significance of the required policy courses early on.

“I remember thinking how difficult it would be to have a positive impact on people in other countries or even other communities in the United States. It’s so important for any nutrition professional to understand science and research as well as how to implement policy.”

After several years of postdoctoral work in the Boston area, Cochary Gross returned to

Tufts as an assistant professor of nutrition. She also chaired the school’s admissions committee, an all-volunteer board at the time. As the school grew and the number of applicants increased, it was clear that a full-time admissions director was needed. She became director of admissions and recruitment in 1997, and held the job for seven years.

“I really enjoyed working with people and meeting prospective students,” she said. “I was acting as their guidance counselor, and I really felt I was helping shape their lives.” Among the challenges, she said, was helping people navigate the graduate school admissions process—taking the GREs, completing prerequisites and identifying sources of financial aid.

Following the terrorist attacks of September 11, 2001, Cochary Gross witnessed firsthand the nationwide decrease in applications as prospective students became more cautious about working abroad, and international students found it harder to obtain the necessary visas to study in the United States. It was a trend she worked hard to reverse over the next few years.

“Keeping the class diverse ethnically and intellectually is really important and challenging,” she said, “as well as keeping that science/policy bridge.”

Now, in her third year as president of the alumni association, Cochary Gross, also an overseer to the school and vice chair of the school’s capital campaign committee, is looking to transform her role at Friedman yet again. She hopes to develop new ideas for school programs and for its fund-raising activities. One day, she’d like to be the first Friedman alumna to serve as a Tufts trustee.

“It’s fun to watch the school grow. Everything was so small back then,” Cochary Gross said of her student days, recalling backyard barbecues at Stan Gershoff’s Medford home and wearing hard hats in the Jean Mayer USDA Human Nutrition Research Center on Aging while it was still under construction on the Boston campus.

Today, one of her priorities is to increase communication among current students, prospective students and alumni. “I’m always working hard to get alums to return to the school for a visit. It’s always fun to see people,” she said. “It would be great if everybody came back.”

Carl Verdon: Right place, right time

When Panamanian officials couldn't determine the cause of 21 mysterious deaths last September, one of the scientists they turned to was Carl Verdon, N82, N87, of the Centers for Disease Control and Prevention (CDC). Verdon's lab, which specializes in measuring toxic metals in human urine and blood, is one of a group of elite emergency response laboratories at the CDC.

Using a method Verdon developed, one of his colleagues identified the toxicant as an industrial coolant ingredient that somehow found its way into the cough syrup each of the Panamanian victims had taken. Similarly, in 2003, when 15 children were diagnosed with acute forms of leukemia in a small town in Nevada, Verdon's lab found elevated levels of arsenic and tungsten in the urine of many of the town's residents.

Verdon helps run the Inorganic Toxicology Laboratory at the CDC's National Center for Environmental Health. The lab analyzes urine and blood samples for toxic and nutritionally relevant elements for the National Health and Nutrition Examination Survey as part of an extensive assessment of the U.S. population's nutrition status and its exposure to environmental chemicals. Verdon specializes in developing ways to distinguish organic from inorganic forms of metals such as arsenic and mercury.

As a chemistry major at Occidental College in Los Angeles, Verdon became interested in nutrition after reading a Linus Pauling book on vitamin C. After graduating, Verdon worked at the USDA Fruit and Vegetable Laboratory in Pasadena, Calif. The lab's director urged him to consider studying at Tufts. That's when serendipity intervened. Stanley Gershoff, the nutrition school dean at the time, happened to be attending a meeting in Anaheim.

"He treated me to lunch, and he really



sold me on the program," Verdon recalled. The cross-country move wasn't the last time he would need to draw on his pioneering spirit. The members of the first class of the fledgling school were met with a number of challenges early on.

"Students had to take a lot of initiative... to get all the classes we wanted," recalled Verdon, who solved the problem by cross-registering for some classes at MIT, Brandeis and other area universities. "In retrospect, that was a good thing. I did a lot of networking."

As a post-doc at Harvard, he sequenced genes "the old-fashioned way," with electrophoresis gel, a magnifying glass and a pad of paper.

After completing a two-year clinical chemistry program at Hartford Hospital in Connecticut, Verdon found himself back at Tufts at the Human Nutrition Research Center on Aging, where, as a USDA scientist, he developed an assay to measure nitric oxide and contributed to another test that measures

substances' antioxidant potential. Known as the ORAC (Oxidative reaction absorptive capacity) test, nutritionists use the method to see how well a food or ingredient protects against free radicals. Many forms of cancer and some symptoms of aging are thought to be the result of reactions between free radicals and DNA, resulting in mutations that can disrupt the cell cycle.

The work garnered Verdon a number of job offers; he signed on with a small nutrient assessment company and moved his family of five to Atlanta in 1996. Three years later, when the struggling company floundered, Verdon turned to building web sites. When a job opened up at the CDC in 2000, he was in the right place at the right time. "I have this bootstrap mentality, and I give a lot of credit to my early education for that." **TN**

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FIRE D UP FOR FITNESS

Down at the station, candy corn no longer qualifies as a vegetable

BY MARJORIE HOWARD | PHOTOS BY MELODY KO

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rown rice or butternut squash in an orange glaze are not typical fare at a fire station. Firefighters like their meat. “We’ll eat until it’s gone, and we eat it quick, too,” Somerville firefighter Jay Colbert said, “because a lot of times, you may find yourself running out in the middle of a meal for a call.” Or, in this case, in the middle of a healthy cooking class.

During a nutrition workshop that Claire Kozower, N01, ran at one Somerville fire station, a series of urgent beeps meant the firefighters spooning yogurt and fruit into cups and dicing tomatoes suddenly raced out the door. Thirty minutes later, they quietly reappeared and picked up where they left off.

Life is like that at the station. One minute you’re sitting around. The next, you’re racing up a flight of stairs lugging 100 pounds of equipment.

To help firefighters prepare to go from the sedentary to the swift, the City of Somerville and its fire department received a \$228,000 grant from the Department of Homeland Security to improve the health and wellness of firefighters. Impressed by Shape Up Somerville, an obesity-prevention program the Friedman School ran in the city’s public schools from 2002 to 2005, the fire department asked the nutrition school to step in once again.

The Somerville Firefighters Well-being Program began last spring, when more than 100 firefighters, dispatchers and administrators learned how to exercise on new equipment bought with the federal grant. Dozens also participated in nutrition workshops and cooking classes. Shape Up Somerville creator Christina Economos, N96, holder of the New Balance Chair in Childhood Nutrition, and Sarah Cluggish, J94, associate director of the Children in Balance anti-obesity initiative, are shepherding the well-being program.

Because firefighters work 24-hour shifts, they cook and eat together—often going for the fast and the fattening. At one workshop, Deputy Chief Jim Lucia and his men focused on vegetables—with a side order of teasing. A dozen firefighters sat around two long tables. On the walls were charts describing the nutritional value of fruits and vegetables.



“How many of you eat the recommended amount?” asked Kozower. One man raised his hand. But his co-worker insisted otherwise: “Bud Light is not a vegetable.”

“How many of you eat the recommended amount?” asked Kozower. One man raised his hand. But his co-worker insisted otherwise: “Bud Light is not a vegetable.”

Asked another, “Can you get a serving of fruit from apple pie?” Told that he could, his pal said, “Then he’s had three servings today.”

But when it got to a discussion of how to eat better, things got serious. “More and more evidence comes out every day that it’s important to eat fruits and vegetables,” Kozower said. “I hope you walk away today motivated to incorporate more into your diet.”

Kozower handed out recipes for a hummus-like dip made with tomatoes, nuts and garlic; roasted carrots and broccoli; chili with beans, corn and ground turkey; and yogurt



Clockwise from top left: Mark Wall Sr. and Deputy Chief Jim Lucia. Slicing and dicing, Stephen Longo, Capt. James Dohoney and Lt. Mark Wall Jr. Making dessert parfaits is Dave Alfano.

and fruit parfaits for dessert. The firefighters got to work, and the room turned into a blur of chopping, simmering, dicing and laughter. Buster Siciliano expertly tossed vegetables in a sauté pan. He wasn’t worried that Kozower brought enough food for 30 firefighters, and



it turned out there were only 15 in the group. “You’ve got to cook for 30 to feed 15 at a fire station,” he explained.

The first part of the well-being program was an initial assessment of the firefighters’ height and weight. They also took fitness tests to measure their strength and endurance. “Their number one concern is to be able to respond to any call that comes in,” said Franci Otting, A03, a certified strength-and-conditioning coach who is the liaison between the Friedman School and the firefighters. “The average firefighter has been on the job a number of years. Aging affects all of us,” Otting said. “The goal is not to force change on anybody, but to make the change easy to reach out for.”

In addition to Kozower’s workshop, firefighters heard from Friedman faculty about healthy eating, learned to use knives properly and figured out how to order a healthy meal from a take-out menu. Guy Koppe, N03, who works for Project Bread and is a chef at Gourmet Caterers in Roslindale, Mass., showed the firefighters how to take one main dish and create a variety of menus by pairing it with six different side dishes, each of which could be served with a lemon-and-thyme-roasted chicken for a different meal.

“The meat is really the center of the plate when they cook,” Koppe said, “and they may or may not have vegetables with it. So I tried to shift the emphasis from meat taking up most of the plate. We made a salad, too, and they were excited to make a vinaigrette on their own.”

Colbert is president of Local 76 of the International Association of Firefighters, which was instrumental in bringing the program to Somerville with the support of Chief Kevin Kelleher. “The combination of physical fitness knowledge and nutrition knowledge has been invaluable,” he said.

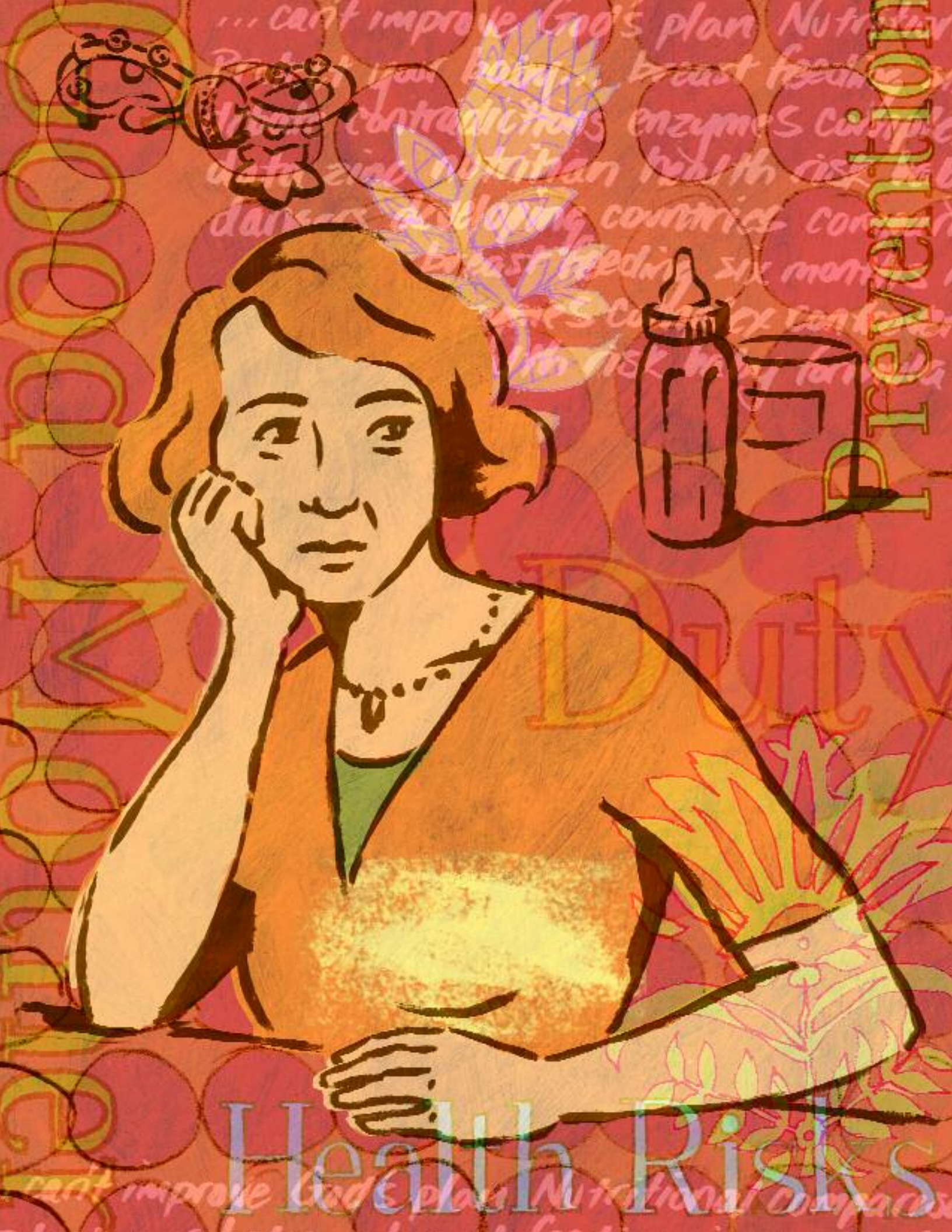
Back at the turkey chili dinner, Kozower asked the firefighters what their favorite fruits and vegetables are.

“Candy corn,” one replied.

“Caramel apples,” said another.

The group laughed and dug into dinner. TM

Marjorie Howard is a senior writer in Tufts’ Office of Publications. She can be reached at marjorie.howard@tufts.edu.



Prevention

Health Risks



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Are we guilt-tripping new mothers without giving them enough support to encourage breastfeeding?

BY HELENE RAGOVIN | ILLUSTRATION BY STEPHEN SCHILDBACH

“To lessen baby deaths, let us have more mother-fed babies. You can’t improve on God’s plan.”

THAT WAS THE MESSAGE IN 1911, WHEN U.S. PUBLIC HEALTH OFFICIALS, alarmed by the number of infants who got sick—or worse—from drinking contaminated cow’s milk, sought to encourage new mothers to breastfeed. ■ Fast-forward almost 100 years. ■ “You wouldn’t take risks before your baby is born. Why start after? Breastfeed exclusively for six months.” So trumpets a TV spot that shows two very pregnant women competing in a log-rolling contest. That’s the message in 2006, as public health officials once again attempt to increase breastfeeding rates. ■ At a time when tainted milk is no longer a significant hazard in the United States, the current effort to promote breastfeeding is more complex—and controversial—than the campaign of a century ago. A small army of data exists to support the nutritional and health benefits of breast milk. But whether this means formula-fed babies are being put at risk is debatable.

The issue of breastfeeding in 21st-century America is filled with contradictions. The federal government is waging a pro-breastfeeding campaign. However, most states do not have laws that guarantee lactating women a time and place to express milk at work. Medical authorities endorse the superiority of breast milk, but most hospitals distribute free formula to new mothers. It’s a difficult mix of science, economics, public policy and culture.

“I am absolutely, unequivocally supportive of doing everything we possibly can to promote breastfeeding in women who can do it,” said Jeanne P. Goldberg, G59, N86, a professor at the Friedman School of Nutrition Science and Policy. At the same time, “in the United States, where not as much hangs nutritionally on breastfeeding or not breastfeeding ... I think that in talking about the risks of not breastfeeding, one really has to consider the lives of the women they’re talking to,” she noted.



BORN TO BE BREASTFED

The U.S. Department of Health and Human Services (HHS) launched its “Babies Were Born to Be Breastfed” campaign in 2004. The two-year effort was designed to help the country meet its goals for Healthy People 2010, a set of national health and nutrition objectives.

The 2010 goals call for 75 percent of mothers to initiate breastfeeding, and for 50 percent to breastfeed exclusively—meaning no supplemental formula or other food and beverages, including juices and water—for the first six months of an infant’s life. At the start of the national campaign, U.S. rates for breastfeeding were 69 percent at birth and 33 percent at six months postpartum, according to the HHS. (Other national statistics place the exclusive six-month rate lower, at anywhere from 14 percent to 25 percent).

The HHS goals fall squarely within current medical recommendations. The American Academy of Pediatrics (AAP) recommends exclusive breastfeeding for six months and urges women to continue breastfeeding until their children are at least a year old, or longer.

“Human milk [is] uniquely superior for infant feeding,” says the AAP’s 2005 policy statement on the issue, and that stance is echoed by many other medical associations and the American Dietetic Association.

Research throughout the world has shown that breastfeeding decreases the incidence of many infectious diseases in infants, including diarrhea, otitis media (ear infections), respiratory tract infections and urinary tract infections. There are also documented health benefits of breastfeeding for mothers, including a more rapid recovery from childbirth, quicker postpartum weight loss and decreased risk of premenopausal breast and ovarian cancers.

Other studies suggest that breastfeeding may help prevent Sudden Infant Death Syndrome during the first year of life and reduce the risk of diabetes, lymphoma, leukemia, Hodgkin’s disease, obesity, high cholesterol and asthma as children grow into adulthood, although the AAP and other scientists note that more research is needed in these areas.

Exactly how breast milk performs its magic remains somewhat of a mystery. “We absolutely do not understand all the things that are in human milk,” said Goldberg, not-



ing many of its known benefits cannot be synthesized in a laboratory.

“No one has ever figured out how to imitate the real thing totally,” Goldberg said. “The nutrient composition of breast milk is not stable. It changes from day to day, over the course of a day and even over the course of one feeding.”

“The science on breast milk is fascinating,” said Kristy Hendricks, an associate professor at the Friedman School and the School of Medicine. “Breast milk has many components that are unique to a growing human infant.”

A 1938 poster promoting breastfeeding that was commissioned by the federal Works Project Administration

For instance, breast milk includes enzymes that aid in digestion and active transport mechanisms that help some nutrients cross into an infant’s intestine. Infants don’t have the capacity to digest and absorb fat completely, so these extra enzymes in breast milk help with the absorption of fat, Hendricks said. Components in breast milk also help babies absorb iron and zinc, two important elements that support growth and development in early infancy, she said.

WHAT ABOUT FORMULA?

“Many of the things in breast milk cannot be replicated in formula,” Hendricks said. Yet, she said, infants in the United States face no nutritional dangers if they are fed an iron-fortified, FDA-approved formula instead of breast milk.

“From a strictly nutritional point of view, in the United States, where access to clean water is not a problem and where kids get immunized, it is not a life-or-death situation as it is in some developing countries,” she said. “Formula is safe, and children grow normally on it.”

As scientific knowledge about breast milk has evolved, so have formulas. Formula makers used to use primarily polyunsaturated fat, Hendricks said. But as research has shown that human breast milk has a high proportion of the fatty acids omega-3 and omega-6, formula companies have started adding them to their products.

Formula feeding for infants gained a foothold in the United States in the late 19th century. The first obvious substitute for human milk was cow’s milk, yet before mandatory pasteurization and widespread refrigeration, the result was great numbers of children who died of diarrhea and infectious diseases from drinking impure milk. Hence, public health advocates in the early 20th century tried to promote breastfeeding and worked to create a safer commercial milk supply.

Eventually, home-prepared formulas using evaporated milk, factory-made formulas and powdered-milk formulas presented safer alternatives to cow’s milk. In the 1920s, for example, Henry Bowditch, a pediatrician at Boston’s Floating Hospital, helped develop an early version of the formula Similac.

Breastfeeding rates in the United States reached an all-time low in the early 1970s, and then began to rise, spurred by cultural changes, the availability of breast pumps (which allowed women, especially those in the workforce, to spend time away from their babies and still nurse) and the appearance of more information about breastfeeding’s health advantages.

“For quite some time, the research on breast milk slowed,” Hendricks said. The research resumed when doctors and scientists began to notice that low-weight, pre-term infants tended to do better on breast milk than on formula, she said. “They started to

look at breast milk and see that it's not just protein, carbohydrate and fat. A whole literature evolved ... and [researchers] became intrigued with the uniqueness of breast milk."

SENDING THE MESSAGE

By the time HHS started its "Born to Be Breastfed" promotion, many advantages of breastfeeding were well-established among researchers and public health experts. Most of the HHS campaign included fairly predictable materials: soft-focus images of mothers cuddling blissfully with their nursing infants; print ads touting the health benefits of breastfeeding. It was fairly unremarkable from a nutrition communications standpoint.

That is until two TV ads aired last spring—the pregnant-women-rolling-the-log spot and

"I wouldn't, myself, pursue a threat message that mothers are going to harm their babies by using formula." —Parke Wilde

a similar one in which a pregnant woman was shown riding a mechanical bull—both with the taglines that associated failure to breastfeed with risking a baby's well-being.

In the eyes of some nutrition professionals, those ads—which equated not breastfeeding with engaging in irresponsible behavior—

missed the mark and gave the campaign a credibility problem.

"Before we hang a guilt trip on women, we need to make sure the environment to support [breastfeeding] is in place," said Goldberg, director of the Friedman School's Center on Nutrition Communication. "In the best of all possible worlds, women should be supported to breastfeed if they can, absolutely. But the gaps in the system make me uncomfortable with saying, 'If you don't do this, you're not doing the best for your child.'"

"I wouldn't, myself, pursue a threat message that mothers are going to harm their babies by using formula," said Parke Wilde, an assistant professor at the Friedman School who teaches a course on U.S. food policy. "I tend to focus on the value of upbeat messages, portraying the

A LIFE-OR-DEATH DECISION

IN SOME PARTS OF BRAZIL, THE WAY A MAN DEMONSTRATES HIS RESPONSIBILITY to the mother of his child is to give her a tin of infant formula. If the mother prepares the formula using the local water—swarming with contaminants—it's quite possibly a death sentence for her baby.

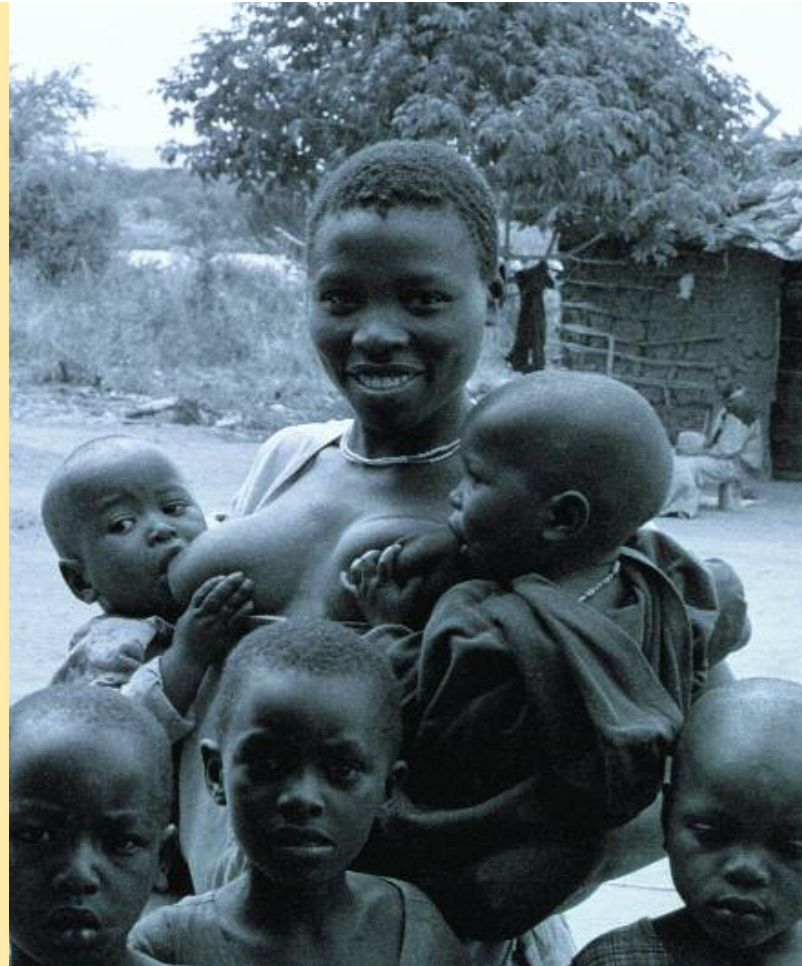
But if a mother instead decides to breastfeed her baby, it represents a symbolic rejection of the father. So mothers continue to formula-feed, and infants continue to get sick, and sometimes die.

"Providing formula is seen as the modern, responsible thing to do" in many developing countries, said F. James Levinson, director of the International Food and Nutrition Center at the Friedman School.

Similar versions of the Brazilian scenario have been playing out in developing nations for decades. While women in the West face more subtle challenges in making the decision to breast- or bottle-feed, for women in places with questionable water supplies, that decision can literally be a life-or-death one.

So in countries where formula has gained a foothold—and its presence throughout the globe is substantial (the United Nations reports that about two-thirds of all infants born in developing nations receive food other than breast milk)—nutrition experts have the task of convincing mothers that breastfeeding offers their children long-term health advantages and immediate life-saving benefits. The World Health Organization (WHO), in its new set of Child Growth Standards issued in April 2006, refers to breastfeeding as the "optimal source of nutrition during infancy."

This is true even in the case of HIV-positive mothers, Levinson said. The dilemma in this case is that breastfeeding poses the risk of transmitting the virus from mother to baby. But given the huge benefits associated with breastfeeding and the problems associated with infant formula, that risk of mother-to-child transmission of the AIDS virus



A Congolese woman breastfeeds her infants. In the developing world, where water supplies are often tainted, feeding babies formula can be a death sentence for the child.



This poster, created by artist Erik Hans Krause in 1939, was one in a series the New York Department of Health and Welfare used to educate mothers about cleanliness, breastfeeding and proper child care.

preferred way of taking care of a child—whether it’s breastfeeding or some other nutrition issue—in a wholesome, enjoyable way.”

“What we need are targeted campaigns, and we need the campaigns to talk to women about issues that are real for them,” Goldberg said.

Data show that mothers who breastfeed are likely to be older, wealthier and better-educated than those who don’t. So campaigns that promote breastfeeding would be well-served to target specific audiences, including

very young mothers or African-American women, who have significantly lower breastfeeding rates than white or Latina women.

Hendricks says men need breastfeeding education, too.

“Data show that help from a partner is important in the mother’s decision to breast-feed,” she said. In America, the past few generations have been primarily bottle-fed, “so not only do young women not know how [to breastfeed], but men may not understand the importance and positive aspects, not having grown up with it.”

GAPS IN THE SYSTEM

“Also, it’s not just giving women knowledge to make a choice, but once they’ve made a decision, supporting them in that choice,”

through breastfeeding may be the lesser danger. “The issue became very much complicated with the onset of HIV,” Levinson said. “While there is some possibility of mother-to-child transmission of HIV, there is also the serious risk of children dying of diarrhea and infections from unclean water used to prepare formula.” Diarrhea is the main killer of children worldwide, with 2 million children dying from it every year.

In much of sub-Saharan Africa, the majority of people have no access to safe drinking water. “And in countries in Africa where HIV is most serious, the water supply available to much of the population is still unsafe. So you can see why we get so concerned about this,” Levinson said.

“The infant formula manufacturers have taken—let’s say exploited—this fear about HIV, despite the fact that the latest scientific wisdom is that in countries with high HIV prevalence—and serious risk of diarrhea and infection—the very best recommendation is exclusive breastfeeding for [the first] six months, followed by a complete switchover to solid foods, with no mixed feeding in between,” Levinson said.

There are other factors that work against breastfeeding that take various forms in various places: a belief that breastfeeding will make for saggy breasts and ruin a woman’s figure or the idea that formula is more “modern” or nutritionally better than breast milk. Or, similar to the situation in the United States, jobs outside the home make breastfeeding difficult or impossible for many mothers.

In Ghana, for example, “it is difficult to get women to stay home and breastfeed, because they are working mothers, and their jobs are taking them away from the baby,” said Akoto Osei, a Ph.D. student in food policy at the Friedman School who is from Ghana and has worked in international maternal-child nutrition programs. “We need creative programs to help working mothers with breastfeeding, because that’s one more challenge.”

Another danger in developing countries is the practice of diluting

formula to make it last longer. That economic practice not only compromises the nutritional status of the baby, but also can result in poor tooth development, said Carole Palmer, a nutritionist with the School of Dental Medicine and the Friedman School.

“If the baby is not getting the nutrients it needs while teeth are developing prior to eruption, they are more susceptible to decay when they erupt,” Palmer said. Once a baby teethes, she said, the teeth become susceptible to early childhood caries. This kind of tooth decay can result when formula (or any other sugar-containing liquid) washes over newly erupted teeth or pools in an infant’s mouth over prolonged periods of time. “It used to be called baby-bottle syndrome, or nursing syndrome,” Palmer said, but the term has been broadened to acknowledge the implication of any sweetened beverage that is sipped consistently over time.

International agencies, including WHO and UNICEF, have been working for several decades to promote breastfeeding and limit the influence of formula manufacturers. In 1981, WHO adopted its “International Code of Marketing of Breast-Milk Substitutes,” which asks nations worldwide to restrict infant formula advertising and promotions. In 1991, WHO and UNICEF launched the Baby-Friendly Hospital Initiative, in which medical facilities that provide breastfeeding support for new mothers become certified. This includes not accepting free or low-cost formula or feeding supplies.

The international code “has been hugely important, and that we got an international code and legislation in many countries controlling marketing of breast-milk substitutes long before we got similar restrictions on tobacco marketing was a major achievement,” said Michael C. Latham of Cornell University, a longtime researcher on the benefits of breastfeeding. “I have no doubt that there would be far lower prevalence rates of breastfeeding worldwide if we did not have the code.”

—Helene Ragovin

Hendricks said. “Lots of other things need to be in the system.”

One, Goldberg said, is individual support for specific problems new mothers face. “The initiation of breastfeeding does take some supervision with a first-born. Not everyone is a natural.” Physical difficulties—whether with the mechanics of nursing or with milk supply—are cited as one of the major reasons women do not pursue exclusive breastfeeding.

Another is economics. While breastfeeding is the less-expensive option—it costs \$1,500 to \$2,000 a year to formula-feed a child using a name-brand formula, according to the federal government—that often has to be balanced against lost wages. According to HHS, 70 percent of employed mothers who

“I think that in talking about the risks of not breastfeeding, one really has to consider the lives of the women they’re talking to.” —Jeanne P. Goldberg

have children under age 3 work full-time.

About 30 percent of those mothers return to work within three months of giving birth, and 60 percent to 70 percent within six months. (African-American women are more likely to return to work earlier, after eight weeks, and to be employed in jobs “that do not allow a mother to be successful at breastfeeding,” according to the HHS Blueprint for Action on Breastfeeding.)

The federal Family and Medical Leave Act guarantees 12 weeks of unpaid leave for those

working for mid-sized or large companies. While some employers are more generous, many are not. And once a woman returns to work, institutional policies don’t always jibe with the logistics required for nursing or pumping. Listen in at any gathering of employed mothers, and you’ll hear stories of expressing milk in supply closets, semi-open cubicles or cars in the parking lot.

“If you are working, and you don’t work for one of the more forward-thinking organizations that create an environment to pump

CLOUT IN THE FORMULA MARKET

NO DISCUSSION OF BREASTFEEDING PRACTICES IN THE UNITED STATES CAN exclude the federal Women, Infants and Children (WIC) supplemental nutrition program. With a current caseload of 8 million people nationwide, including 2 million infants, WIC’s policies and practices have a tremendous impact on how American babies are nourished.

“WIC is a huge player in this, because at any one point in time, a significant percentage of the population of infants goes on WIC,” said

Kristy Hendricks, associate professor at the Friedman School. According to the U.S. Department of Agriculture, about half of all infants in the country receive WIC assistance at some point.

WIC, started in 1974, is a USDA program administered on a state level that provides vouchers for specific foods, such as milk, eggs, cereal or peanut butter, to low-income pregnant and postpartum women and infants and children up to age 5. It is not intended to fulfill all the nutritional needs for mothers and children. Instead, it supplements food stamps, other food-assistance programs and purchased groceries.



More than half of the infant formula sold in the United States is distributed through the Women, Infants and Children (WIC) nutrition program.



Esperanza Miranda, left, watches as Angela Howard endorses a voucher to buy groceries at a WIC-only store in Charlotte, N.C.

breast milk and store it properly, you've got a problem," said Goldberg.

The issue affects American women at all levels of employment, but lower-wage and unskilled women are particularly hard hit. For skilled workers, "there's value to the employer in making sure the employee is happy and preferably doesn't stop working in order to stay at home with an infant," says Wilde, an economist.

"The tough fact is that other employers, whose labor force is unskilled, may find its workers replaceable, and breastfeeding is a

minor hassle that will only be accommodated if public policy requires it," he said.

This past September, an article in *The New York Times* documented this "two-class" system for employed, nursing mothers—even citing instances of differing policies within the same companies, depending on whether the women held white-collar or blue-collar jobs.

Such media attention, Wilde said, can eventually affect public policy. "When there's a big feature in *The New York Times*, sometimes that's enough to influence the domestic political debate," he said. **TN**

Helene Ragovin is a senior writer in Tufts' Office of Publications. She can be reached at helene.ragovin@tufts.edu.

WIC's influence is two-pronged. By offering education, support and financial incentives, it has increased the number of women in the program who breastfeed, reaching many who would not otherwise have made that choice. But because it also provides free formula, distributed through contracts with specific manufacturers, it also dominates the marketing and sales of infant formula in the United States.

Traditionally, breastfeeding rates for women who qualified for WIC have lagged behind those in the general population, although in recent years, WIC rates have increased. In 2002, almost 59 percent of WIC mothers initiated breastfeeding, and 22 percent were breastfeeding at six months, according to the Ross Mothers Survey (RMS), a report on infant feeding practices prepared by Ross Products, a manufacturer of infant formula.

According to Rachel Colchamiro, WIC breastfeeding coordinator for Massachusetts, breastfeeding education is now a mandatory part of WIC services. A particularly successful support program has been a peer-counseling system in which WIC mothers who have successfully breastfed are hired to mentor new moms, either by phone, in the hospital, at WIC clinics or in support groups, Colchamiro said. In Massachusetts alone, there are nearly 100 peer counselors, she said. WIC also provides multilingual breastfeeding materials and will loan electric or manual breast pumps to new moms.

Additionally, women who breastfeed, even if they supplement with formula or other foods, are eligible to remain on WIC for a year after giving birth—six months longer than women who don't breastfeed. Women who breastfeed exclusively are also entitled to additional food vouchers each month.

"A large body of research indicates that participation in WIC is associated with increased rates of breastfeeding," compared to mothers who qualify but do not participate, said Eileen T. Kennedy, dean of the Friedman School and a former USDA deputy undersecretary.

"The strength of WIC is that it continues to try harder to increase both the number of infants [who are breastfed] and the period of time a baby is breastfed."

But WIC also remains the dominant force in the infant formula world. More than half of the infant formula sold in the United States is distributed through WIC, according to the USDA. The inclusion of formula among WIC-supplied commodities troubles some.

"It may sound cruel to suggest that WIC not give infant formula. But a low-income mother has so many economic needs. Why is infant formula the good that is supplied?" said Parke Wilde, an assistant professor at the Friedman School who does research on U.S. food policy and food-assistance programs. "How did it happen that the federal government provides these mothers with no entitlement guarantee to housing, no entitlement guarantee to a fair wage or good public transportation to work or a quality education for their children, but yes, a guarantee of infant formula?"

"The WIC philosophy is that breastfeeding is the best way, and we do everything we can to get the mom breastfeeding," Colchamiro said. "But feeding the baby is a priority, too, and if the mom doesn't choose to breastfeed, the most cost-effective way [for WIC] is to enter into a contract" with formula manufacturers, she said.

Historically, breastfeeding rates among WIC moms have never been as high as the rest of the population. Demographic factors are largely at play, Colchamiro said. "Poorer women, and those who are less educated, are less likely to breastfeed," she said.

"But there are huge cultural differences that we see in the program, depending on where people come from," Colchamiro said. Latinas, particularly those who are recent immigrants, tend to breastfeed at high rates, and for "those who are newer, recently from their home countries, the rates are phenomenal," she said. "As [immigrants] become more acculturated, the rates drop."—Helene Ragovin



in fighting

Col. Gaston Bathalon serves on the front line of the U.S. Army's battle of the bulge by Jacqueline Mitchell

FOR U.S. SOLDIERS IN IRAQ OR AFGHANISTAN, A FRENCH FRY CAN BE more than a deep-fried potato. A comfort food, it can also serve as a reminder of home. Eaten to excess, it can also pack on the pounds, and like their civilian counterparts, more and more American soldiers are losing the battle of the bulge. ■ Col. Gaston Bathalon, N90, N98, is on the front lines of keeping U.S. Army soldiers in fighting shape. As deputy commander of the U.S. Army Research Institute of Environmental Medicine in Natick, Mass., Bathalon does the science that sets nutrition policy for our armed forces. ■ Overweight soldiers who don't meet the Army's standards—as dictated by height-for-weight charts and body-fat-percent standards—at one of their twice-yearly weigh-ins are automatically enrolled in the Army Weight Control Program, known as Army Regulation 600-9. As of June 2006, approximately 15,400 of the Army's 491,956 soldiers were enrolled in the program. Like many other responsible weight-loss regimes, the Army program emphasizes eating less and exercising more. But also like many no-nonsense diet plans, the Army Weight Control Program—which requires soldiers to lose three to eight pounds a month until they meet

their age- and gender-specific weight requirements—doesn't work for everyone.

shape



nearly 4,000 soldiers have been discharged from the Army since 2001 because they were overweight and over-fat, according to the Department of the Army. It is a loss of manpower the military can't afford in wartime. And among those soldiers who did lose weight, evidence suggests some put their health at risk by using laxatives, appetite suppressants and rubber sauna suits to control their weight—behaviors at least as dangerous as carrying extra pounds. Bathalon's research found that 71 percent of the more than 1,400 troops referred to the Womack Army Medical Center at Fort Bragg, N.C., for weight loss reported skipping meals, and 31 percent reported fasting to help control their weight.

CAREER BREAKER

To reverse these trends, Bathalon surveyed soldiers to determine why they gained the weight in the first place. For one thing, Bathalon believes the stigma attached to the Army Weight Control Program—classified as a “negative personnel action”—isn't helping. Soldiers enrolled in the program can't get promoted, assume command positions, attend professional development schools or receive awards.

Overweight soldiers' careers are on the line—and they know it. “I eat because I'm depressed, and I'm depressed because I eat,” one soldier wrote in Bathalon's survey.

“That hits you right here,” he said, resting one hand on his camouflage-covered chest. “My focus is on whether the policy is fair and right. And if not, how can it be?”

It's an attitude he honed during his years at Tufts. Born and raised on a farm in Vermont, Bathalon was always interested in food and nutrition. After studying nutrition at the University of Vermont, he received a direct commission into the Army Medical Specialist Corps, where he worked as a dietitian. At a meeting of the American Dietetic Association, Bathalon met William Evans, then chief of the Human Physiology Laboratory at the USDA Human Nutrition Research Center on Aging (HNRCA) at Tufts. Before long, Bathalon was working on his master's degree and doing research in Evans' lab.

After completing his master's in human nutrition sciences in 1990, Bathalon became

the clinical instructor for the Army Dietetic Internship at Brooke Army Medical Center at Fort Sam Houston, Texas. But Evans, as well as his mentor, Lt. Col. Gale Partridge, urged him to get a Ph.D. By the fall of 1992, Bathalon was back at Tufts. In Susan Roberts' Energy Metabolism Laboratory at the HNRCA, he looked at the long-term consequences of self-imposed dieting in postmenopausal women. Not a hot-button issue for the U.S. Army, but the expe-

rience and skills laid the foundation for his research interests.

Now the first dietitian to have chaired the U.S. Army Research Institute of Environmental Medicine's Human Use Review Committee, Bathalon has been at the Natick facility since 1998. That's a long time for a career soldier to be in any one place.

“It's a testament to the times,” he said. “Leadership has been very supportive of keep-



Col. Gaston Bathalon, N90, N98

ing me here. Because of that, we've been able to make pretty significant inroads."

Bathalon has seen the number of soldiers discharged for being overweight and over-fat come down. But in order to lower those statistics, the Army first had to find out why soldiers pack on the pounds.

Like the rest of us, stateside soldiers gain weight because they have desk jobs with little time to work out or prepare low-calorie, balanced meals at home. Bathalon's surveys also showed that soldiers face challenges unique to the military when it comes to controlling their weight. The largest number of soldiers said they gained weight as the result of injury or illness that prevented them from working out. Because a hurt soldier can't necessarily run, walk or work out, Bathalon advocates a preventative approach.

"We need to be partnering with doctors to counsel soldiers in rehab to keep the weight off," he said.

On the home front, some soldiers reported they gained weight as the result of the frequent moves that come with reassignment—as often as every two years.

THE STRESS OF WAR

But almost a third of the soldiers surveyed said they gained weight because they were deployed. Bathalon points out that while some deployed soldiers are physically active on a daily basis, many support personnel have more sedentary jobs. Then, there are the French fries in the mess hall.

"If you put people in a war zone, away from their families, and they happen to be stress-eaters, they will likely see weight gain," said Bathalon, who noted that three-quarters of soldiers enrolled in the Army Weight Control Program struggled with their weight before enlisting.

Still, Bathalon doesn't advocate a completely fat-free mess hall. "We need to be very careful about taking things away from them," he said.

So what are the best ways to slim soldiers down? While many weight-loss programs have been studied in civilians, researchers at the Natick laboratory test



While some deployed soldiers are physically active on a daily basis, many support personnel have more sedentary jobs. Then, there are the French fries in the mess hall.

weight-management techniques on soldiers in their unique military environments. Bathalon is in the midst of a two-year clinical study in collaboration with the Womack Army Medical Center to determine if meal replacements can help soldiers manage their weight better.

At a meeting of the North American Association for the Study of Obesity, Bathalon and his colleagues presented their findings that using personal digital assistants (PDAs) to track calorie intake and exercise was easier and just as accurate as using a pen and paper to keep such records. This study laid the groundwork for the next step: seeing if PDA-based software can help soldiers lose weight.

Technology could come to the rescue in other ways, too. This past summer, Bathalon's colleagues at the Pennington Biomedical Research Center rolled out an interactive

website at Fort Bragg, N.C., where soldiers can find information and guidance on weight loss and exercise. Bathalon is tweaking the website design to help New England's Army Reservists—who don't have the same access to health care as active duty soldiers—stay in shape, too.

"There is clearly not one way for everybody," he said. "The more options we can

provide based on people's different needs and psychology, I think the better we can help them."

In October, the Army revised its weight limits for female soldiers, acknowledging that women carry weight differently than men. The change allows most women to weigh 5 to 19 pounds more under Army Regulation 600-9, which was last updated 17 years ago.

Perhaps most important, Bathalon is looking to support the Army Surgeon General in making the Army Weight Control Program less punitive and more rehabilitative. As part of the program's "Weigh to Stay" component, soldiers learn about eating a balanced diet, keeping food records and getting enough exercise during one-on-one sessions with an Army dietitian. After the three mandatory meetings, soldiers may return for nutritional counseling as often as they want.

"And therein lies the problem," said Bathalon, who suspects soldiers don't prioritize the nutritional visits because they are too busy or possibly too embarrassed to mention it to their commanders. To increase compliance, he'd like to increase the mandatory number of visits as well as integrate some of the other interventions—such as the meal replacements, the PDAs and websites—into the Weight Control Program.

"We're building a bag of treatment options," he said. "I've influenced policy, and that was a theme at Tufts. To influence policy through research, that's quite something." **TN**

Body Fat Standards for Male Army Soldiers

Ages 17-20 . . .20%
Ages 21-27 . . .22%
Ages 28-39 . . .24%
Ages 40+26%

Body Fat Standards for Female Army Soldiers

Ages 17-20 . . .30%
Ages 21-27 . . .32%
Ages 28-39 . . .34%
Age 40+36%

SOURCE: U.S. ARMY

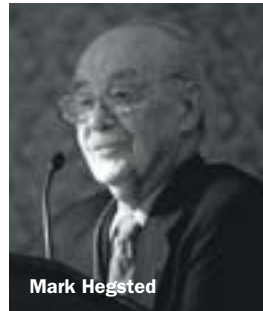
Scoping out the science that will inform the new Dietary Guidelines

Eating well in 2010

RESEARCHERS FROM AS FAR AWAY AS TAIWAN came to Boston this fall for the first Friedman School Symposium, “Dietary Guidelines 2010: The Right Stuff.” The guidelines that will be implemented four years from now “might be the single most critical step to addressing the growing and preventable health crises...affecting American and world populations,” Friedman School Dean Eileen T. Kennedy said.

Every five years, the U.S. departments of Agriculture and Health and Human Services review, update and release new Dietary Guidelines containing the latest nutritional and dietary advice for Americans. The Dietary Guidelines are also the backbone of U.S. nutrition policy, affecting programs such as the National School Lunch Program. In the latest guidelines, released in 2005, some of the key messages were: Get the most nutrition out of your calories; find a balance between food and physical activity; make smart choices from every food group; mix up choices within each food group; know how to prepare, handle and store food safely; and drink alcohol in moderation.

During their three days in Boston September 19–21, 245 researchers and policymakers discussed the best and the newest research coming out of the Friedman School and other institutions that might influence the 2010 guidelines. “The Friedman School—because of the breadth and depth of training and research that goes on here—emphasizes linking science to policy, science to applications and science to communications,” said Kennedy.



Mark Hegsted

“All good public policy has to be rooted in good science,” Carole Tucker Foreman, director of the Consumer Federation of America’s Food Policy Institute, said in her keynote address. As the USDA’s assistant secretary for food and consumer services from 1977 to 1981, Foreman oversaw the development of the first Dietary Guidelines for Americans and used Tufts research to persuade Congress to expand the federal Women, Infants and Children (WIC) program in the early 1980s.

WE’RE NOT ALL FARMERS

Concerned that industrial farming interests are overrepresented by current national policy, Foreman said the United States is “not addressing public health challenges. The priority should be to serve the 98 percent of Americans who are not farmers. Maybe in the audience, there is a budding Jean Mayer [the former Tufts president who was an internationally respected nutritionist] who will have that magic touch with Congress.”

Dr. Simin Nikbin Meydani, associate director of Tufts’ Jean Mayer USDA Human Nutrition Research Center on Aging (HNRCA), discussed the questions and quandaries surrounding vitamin E. Meydani said the research community has gone forward without reaching consensus about dosage and target populations, without measuring patient compliance and without having a hypothesis about how the vitamin might reduce cardiovascular disease, which some research suggests it might.

“Perhaps in the rush to demonstrate the effect, we forgot the basic concepts of any good scientific research,” she said.

Given that 66 percent of American adults are overweight, many of the research presentations focused on the nation’s obesity epidemic. Chronicling Americans’ almost-fanatical pursuit of thinness, Alice Lichtenstein, director of the Cardiovascular Nutrition Laboratory at the HNRCA, compared the low-fat craze of the ’90s to the low-carb fads of the early 2000s. Both kinds of diets appeared to work when they first became popular, but the rate of obesity continued to climb dramatically. Why? Noting that there is very little long-term



Students had the opportunity to chat with symposium participants.

research on the benefits of either diet, Lichtenstein hypothesized that each regimen helped people restrict their calories by eliminating large categories of food from the menu. But when low-fat cookies and low-carb bagels hit the market shelves, those calories crept back into our diets.

Barbara Rolls, professor of nutritional sciences at Penn State, said that Americans' propensity for overeating may be a natural consequence of our "super-sized" world. Her research indicates that people unconsciously eat larger portions of high-energy density foods—foods with more calories per ounce like macaroni and cheese and baked goods—as serving sizes increase. But the bad news is that people usually don't apply that super-size mentality when it comes to eating fruits and vegetables.

"This is very, very consistent across people," Rolls said. But the one demographic in which Rolls did not see the effect is cause for some hope—very young children. "It shows us that kids are still listening to biological cues," she said, emphasizing the importance of research for the school lunch policy.

Another speaker, Leonard Epstein, professor of pediatrics at SUNY-Buffalo, looks at obesity through an economic lens, testing under what circumstances pricing, marketing and labeling influence what foods we buy. In one series of experiments, Epstein and his colleagues manipulated the prices of foods in vending machines. Reducing the price of low-fat foods did increase sales, but only marginally. For example, 50 percent price reductions led to just a 20 percent increase in sales. Even more striking, Epstein found that labeling food as healthy actually decreased sales.

"Though price appears to be the main factor, health messages may imply that food will taste less good," he said.

In studies in a mock supermarket, Epstein and his colleagues found that while thin mothers purchase better food when the price of unhealthful food goes up, obese mothers did not behave the same way. "Understanding how different individuals evaluate food is critical to understanding obesity," said Epstein. "If we can alter purchasing patterns, we can alter consumption."

SCIENCE LINKED TO ACTION

Mark Hegsted, professor *emeritus* at the Harvard School of Public Health and one of the first researchers to link American dietary habits with increases in heart disease, cancer and diabetes, also gave a keynote address. A contributor to the Dietary Goals of the United States in 1977 and the first USDA Dietary Guidelines in 1981, Hegsted talked about his experience determining how much evidence is enough when making public policy.

"When you're the first, you really have to have the strength of your convictions because you take a lot of criticism from your colleagues," said Kennedy, who places Hegsted among the most important nutrition scientists in the last century. "Again, this is science linked to action."

"Lean Plate Club" columnist Sally Squires of the *Washington Post* and Sylvia Rowe, adjunct professor at the Friedman School and former CEO and president of the International Food Information Council, discussed how best to communicate complex nutrition.

Noting that she avoids the words "don't" and "diet" in her columns, Squires emphasized the importance of sending positive messages. "It can't be about what you take away. It's about making small, achievable changes," she said.

"Short of cloning Sally, we have a big challenge ahead of us," said Rowe, citing research showing that just 12 percent of consumers know how many calories they should eat each day. Rowe pointed to the content-hungry, 24-hour news cycle and the dearth of reporters with scientific backgrounds as a possible reason why consumers get confused when they read or see news stories offering nutrition and dietary advice.

"The role of scientists in the media is critical," Rowe said. "Reporters need you to help them provide context and separate out the information that warrants behavior change."

The symposium also gave Friedman School students the opportunity to meet with experts in the field over breakfast. Rachel Cheatham, who expects to complete her Ph.D. in nutritional biochemistry and metabolism next spring, met nutri-

MEET THE NEW CLASS

WHO THEY ARE

Completed applications	257
Admitted	123
Master's students matriculated	54
Ph.D. students matriculated	9
Women	54
Men	9

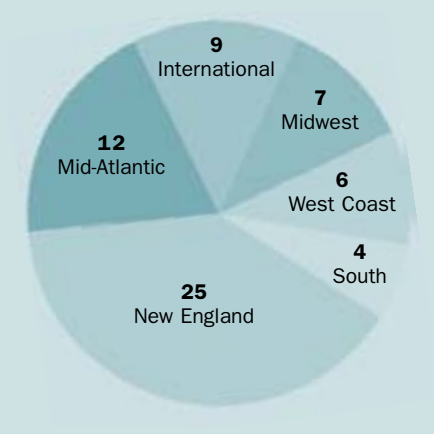
PROGRAM ENROLLMENT

Agriculture, Food and Environment	8
Biochemical and Molecular Nutrition	9
Food Policy and Applied Nutrition	18
M.A. in Humanitarian Assistance	6
Nutrition/Dietetic Internship	8
Nutritional Epidemiology	6
Nutrition Communication	8

ACADEMIC ACHIEVEMENT

Average GPA	3.54
Average GRE Verbal	580
Average GRE Quantitative	668

WHERE THEY COME FROM

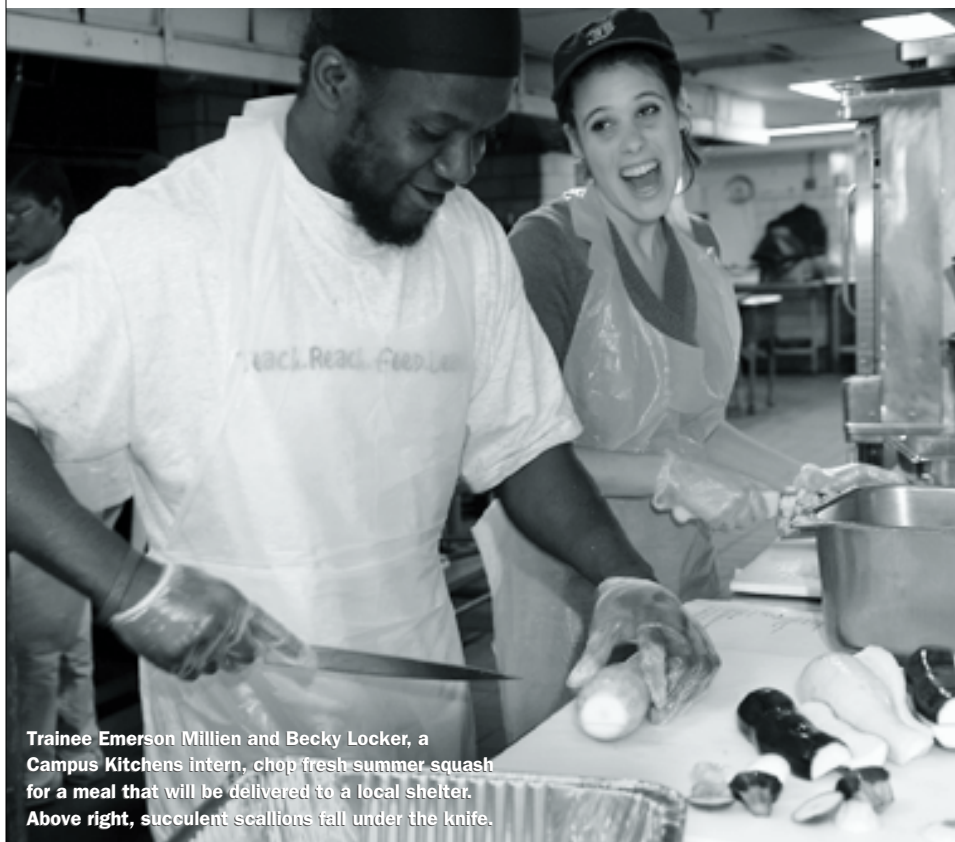


tionists from Frito Lay and Kraft as well as Sylvia Rowe.

"That's when I realized there were some really important people" at the symposium, she said. "I was impressed that the top people in their fields were willing to chat with me and give me their [business] cards."

"That's one thing I keep reading in the feedback [on the symposium]—that it was a lovely and unusual aspect to include the students," Kennedy, the school's dean, said. "It never would even occur to us not to involve students."

—Jacqueline Mitchell



Trainee Emerson Millien and Becky Locker, a Campus Kitchens intern, chop fresh summer squash for a meal that will be delivered to a local shelter. Above right, succulent scallions fall under the knife.

Culinary job-training program also feeds those in need

Double Duty

THE ENTHUSIASM IN THE KITCHEN AT CARMICHAEL DINING HALL IS BUBBLING as fiercely as the stockpot of water on the industrial-size stove as a small fleet of aspiring cooks sets about preparing dinner.

Alexander Diehl takes hold of a chef's knife and a large yellow onion. With careful, precise movements, he peels the papery skin and slices crosswise, gives a half-turn and slices again, the onion dissolving into a perfect dice.

Across the room, Will Hart examines a pyramid of summer-fresh vegetables. "Don't add too much water to the tomatoes and eggplant," said Eleanor Heidkamp-Young, A08. "Remember, they're going to give off a lot of water."

When it's done, this dinner—enough to feed about 75 people—won't be served at a campus dining hall. It will be delivered by volunteers to two shelters in Somerville and Cambridge. This meal isn't just about filling empty stomachs. The experience is bringing five job-training students that much closer to their goal of becoming certified food-service workers.

"This is a once-in-a-lifetime opportunity," said Emerson Millien, a young Haitian immigrant who lives in Medford, Mass.

PARTNERS FOR CHANGE

The five trainees were the first participants in a culinary job-training program that Tufts hosted for social-service clients this past summer. The program is a partnership between the Tisch College for Citizenship and Public Service at Tufts and the Somerville Homeless Coalition, with assistance from Campus Kitchens, a nonprofit organization that supports food-assistance activities at colleges across the country.

The goal was to prepare the trainees to pass a national exam, known as ServSafe, which certifies their knowledge of food safety and sanitation. "When you have ServSafe, you can go somewhere," said Diehl, who has worked in kitchens for several years but wants to move on to better-paying jobs within the industry.

The instructors were Heidkamp-Young and Becky Locker, a Campus Kitchens intern from the University of California at Santa Cruz. Both undergrads received their own ServSafe certification before the summer program began, and over the course of eight weeks, they taught thrice-weekly classes in food safety and sanitation.

Each week, the Carmichael team turned out about 200 meals as they practiced their kitchen skills. Those meals, in turn, were used to fulfill emergency food needs at local shelters.

“Hunger is a huge issue in Somerville,” said Heidkamp-Young. “That really intrigued me. It’s an area where I could make an immediate difference.” As an Active Citizen Summer Fellow, she was paired with the Somerville Homeless Coalition and worked with coalition Director Mark Alston-Follansbee to develop the Tufts program over the course of the 2005-06 academic year. (The program is also coordinated by a steering committee with representatives from Tufts and the coalition.)

“I always loved food, but I didn’t realize going into this that it would be so much about food and cooking,” Heidkamp-Young noted, referring not only to the hours spent in the kitchen, but the additional time to scour cookbooks for recipes and to plan menus. The program relied entirely on donated food, mainly from Food for Free, a Cambridge-based non-profit that distributes unused food from farmers’ markets; Tufts Dining Services and the Danish Pastry House on Boston Avenue in Medford.

The trainees also received “life skills” training—how to put together a resume, conduct a job search or perform at a job interview. The trainees live in Somerville, Medford or Cambridge and were all referred to the Tufts-Homeless Coalition program by social service agencies. “They’re all transitioning,” said Heidkamp-Young. “They could all benefit from a stable job. We’re giving them the skills to try to pursue that.”

Back in the Carmichael kitchen, Maria Sanchez and Murielle Mazaire, their hair tucked neatly into hairnets, scurry from counter to stove, preparing quantities of pasta and rice and ground meat. Over the course of the eight weeks, the trainees, their teachers and the other volunteers learned to work together smoothly and efficiently and to cheer each other on, whether with a kitchen project or other life challenges.

“The teachers have been great,” said Sanchez. “They make the material more interesting, and they motivate us ... and we work together as a team, which is the most important.”

—Helene Ragovin

ADVICE TO GRADUATES: PURSUE YOUR PASSIONS WITH A SENSE OF ACTION

THE FRIEDMAN SCHOOL’S CLASS OF 2006 WAS EASY TO SPOT, THANKS TO THOSE GRADUATES OF THE Agriculture, Food and Environment program who decorated their mortarboards with the distinctive black-and-white pattern of Holstein cows.

During the ceremonies on May 21 at the Somerville Theater in Davis Square, Dean Eileen Kennedy welcomed the 80 degree recipients, whom she has often called “the future leaders in nutrition.” She pointed out three characteristics of people who have succeeded in making a difference in the nutrition field: They take risks; they never stop learning, and they have an undying enthusiasm for the work they do.

“It doesn’t matter whether they have been doing it for five years or 60 years, the passion is still there,” she said.

In preparing for his commencement address, F. James Levinson, an associate professor and director of the International Food and Nutrition Center, said he had surveyed students about their most memorable moments at the Friedman School. Their responses ranged from “working with inner-city kids in Native American communities in Wisconsin” to “loving nutritional epi so much that I was disappointed when the final exam was over,” he said. He ended with a quote from the farmer and writer Wendell Berry: “Love the world. Work for nothing. Take all that you have and be poor. Love someone who does not deserve it...Ask the questions that have no answers.”

Aimee Witteman, who received an M.S. degree, drew upon one of the students’ favorite pastimes—gardening—in her class address: “We have waited out the dark winter months, dreaming of ripe heirloom tomatoes and vibrant, sweet carrots, and are poised to start planting seeds that, in a few months’ time, will yield such delights. Planting a garden, tending to it and harvesting do not involve hope as much as action. Committing oneself to social justice, nutrition science, food security and environmental health also requires us to act, not simply believe that better days will come. My purpose, then, is not to leave you with a sense of hope as much as a sense of action.”

At the all-university ceremony earlier in the day, seven-time Tour de France champion Lance Armstrong talked about his personal struggle in overcoming cancer and urged members of the Class of 2006 to be active citizens. Tufts University President Lawrence S. Bacow presented honorary degrees to Armstrong, philanthropist and entrepreneur William S. Cummings, A58; Gen. Joseph P. Hoar, U.S.M.C. (ret.), A56, whose 37-year military career included service in Kenya, Somalia and Iraq; evolutionist Lynn Margulis, whose revolutionary theory of inherited symbiotic bacteria and symbiosis in the evolution of life caused profound changes in thinking about the origin of species; and the Rev. Gloria E. White-Hammond, M76, pediatrician, pastor, medical missionary and humanitarian who is leading the Million Voices for Darfur campaign.



New center will help faculty teach to a diversity of learning styles by Marjorie Howard

Out of the box

WHEN ARTS & SCIENCES DEAN ROBERT STERNBERG TOOK HIS FIRST COLLEGE psychology course, he got a C—not an auspicious start for someone who eventually earned a Ph.D. in the field. The problem, he recalled more than 30 years later, was that his tests were all based on what students could memorize, and Sternberg is lousy at memorization. To add insult to injury, most of the material he had to learn isn't even being taught in psychology anymore.

Sternberg may not have fared well on tests that relied on good memorization skills, but he did do well on tests that involved creativity or verbal ability. "I can tend to be very good in writing, but I'm relatively poor in spatial visualization, so in my life, I capitalize on my verbal skills: I write a lot of articles, read a lot, give a lot of talks," he said. "But I bought a GPS system for my car, and I always make sure that I have verbal directions when I go to a place because I don't read maps that well. Nobody is good at everything, and people have to learn how to make the most of their strengths and get by—either by compensating for or correcting weaknesses."

Sternberg's longstanding interest in different styles of learning result-

ed in his founding the PACE Center at Yale University, where he taught before coming to Tufts a year ago. PACE, which stands for Psychology of Abilities, Competencies and Expertise, advances the notion of abilities as modifiable and capable of development over a lifetime.

Now Sternberg is taking his scholarship one step further. He has brought PACE to Tufts and has augmented it with a new university-wide program: the Center for the Enhancement of Learning and Teaching (CELT), which will draw on research at PACE.

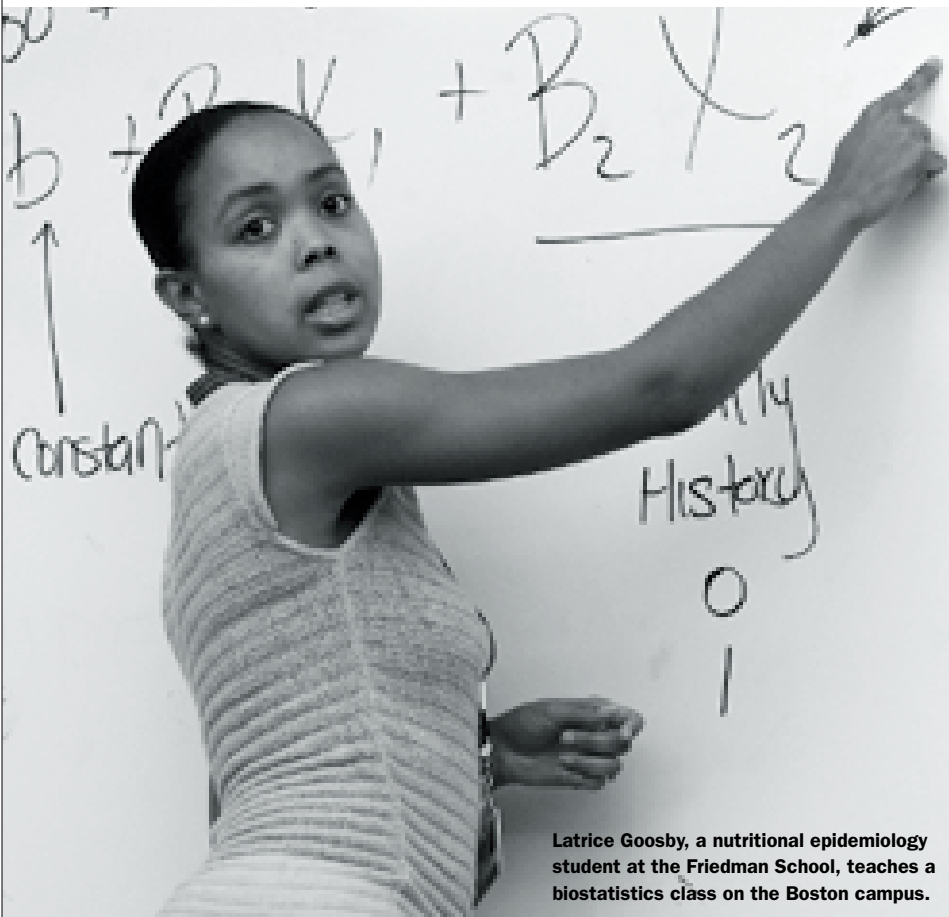
THE FIRST 12 FELLOWS

CELT will help faculty members become better teachers through seminars, newsletters, discussions and workshops. "It's not that we are saying people here don't know how to teach," said Sternberg, who is CELT's director. "The goal is to enhance already good or even excellent teaching skills. We're saying no matter how good you are, you can always be better."

The signature program of the new center will be a weekly seminar for faculty fellows led by Molly Mead, the Lincoln Filene Professor at Tisch College, and Linda Jarvin, CELT's deputy director, who did research in psychology and education at Yale before coming to Tufts. A group of 12 fellows from across the university will participate in the first seminar, starting in January. Participants either will be granted a stipend or given a one-course reduction in their teaching loads.

Jennifer Sacheck, an assistant professor at the Friedman School, is among the first group of fellows, chosen from a university-wide pool of 36 applicants who described challenges they are facing in the classroom. One faculty member wrote that he'd like help in making a dry, fact-based, introductory course more interesting; a second is planning to team teach and wants help in establishing the course.

Sternberg said that while some students learn analytically, others may learn more practically or creatively. The idea, he said, is to "teach kids in varied ways so that at any given time, some are capitalizing on strengths and others are remediating weak-



Latrice Goosby, a nutritional epidemiology student at the Friedman School, teaches a biostatistics class on the Boston campus.

nesses. The fellows will be encouraged to use this principle in at least one course they teach. They will bring actual teaching materials to the seminars and see how they can be improved to reach a diversity of learners.”

“We’re not offering remedial training,” Jarvin said. “We’re not saying people don’t know how to teach and that we have to revamp the system. But we want to offer opportunities to faculty to think about their teaching and to enhance their teaching.”

DUAL MISSION

While PACE has been funded primarily with grants, CELT’s funding comes from a seed grant from the Office of the Provost as well as a \$250,000 grant from the Davis Education Foundation of Maine.

“Our dual mission as a university is teaching and scholarship,” said Jamshed Bharucha, provost and senior vice president. “At Tufts we pride ourselves on valuing both. Even as we advance our research and scholarship, we must continue to strive for excellence in teaching and renew ourselves as teachers in light of new research on the process of learning, rapid developments in the fields we teach, changing demographics of our students and new technology.” Bharucha said Associate Provost Mary Lee will work on behalf of his office to encourage all campuses to participate in the new center.

Anne Gardulski, associate professor and chair of geology and one of the first fellows, said she sometimes teaches courses of 70 to 125 students and is trying to find ways to better assess students in such a large course.

“One of the huge challenges in such courses is to construct exams or other assessment tools that indeed test what the students have learned,” Gardulski said. “Some students can respond well to essay questions, others to short answer tests, and others may have completely different ways of learning that traditional exams cannot evaluate.”

CLASSROOM CREATIVITY

“I am looking for ways to be more creative in devising exams, although there are time

ROBUST ENDOWMENT GROWTH

TUFTS UNIVERSITY’S ENDOWMENT GROWTH SIGNIFICANTLY OUTPACED ALL OF THE OTHER major schools in Massachusetts, bolstered in part by two large donations, according to a report in the September 22 edition of the *Boston Business Journal*.

The Tufts endowment broke the billion-dollar mark during the 2006 fiscal year, increasing by 34 percent to \$1.2 billion. Tufts’ investments earned \$90 million, or 13.9 percent, better than the median return of 10.8 percent of the Wilshire Trust Universe Comparison Service, the newspaper reported.

The change in school endowments is the net result of three factors: new donations, withdrawals and investment gains. Overall, endowments at the state’s major universities grew 14.9 percent, according to the business newspaper. The growth in Tufts’ endowment exceeded that of MIT (25 percent) and Harvard (12.7 percent), according to the newspaper.

Tufts’ gains resulted from \$166 million in cash gifts given to the university, including a \$100 million gift from eBay founder Pierre Omidyar, A88, and his wife Pam, J89, and a \$40 million gift by Loews Corp. chairman and CEO Jonathan Tisch, A76, to create the Tisch College of Citizenship and Public Service.

“This is a period of tremendous excitement and momentum,” Brian Lee, vice president for university advancement, told the *Boston Business Journal*. “This is a university poised.” Tufts generally spends 5 percent of its endowment on programs and scholarships, Lee said.

constraints imposed by the fact that I do not have teaching assistant or grad student help for grading, thus I cannot offer essay exams,” she said. “I also want to ensure that I am requiring students to think about the science. Graphs, maps, charts and other representations of data are an integral part of science, so I feel I need to include these mechanisms for data work on exams. Ultimately, I suspect I will want to modify how I teach so that I can be more creative and develop new ways to assess how students are synthesizing the material.”

Louise Maranda, who teaches biostatistics at the Cummings School of Veterinary Medicine, applied for a fellowship, in part, she wrote in her application, to try to find ways to reach students who come into her course with different backgrounds and at different levels. An assistant professor in the Department of Environmental and

Population Health, Maranda wrote in her application, “I am constantly grappling with the issue of either losing my students because I assume they know more than they really do or boring my audience to tears by explaining concepts they already understand.”

She said she hopes to learn how to assess her students’ prior knowledge, how to better develop lecture topics, and “understand the learning process to better develop fun, meaningful and efficient examples, homework and exams.”

Jarvin said the center also will serve as a central clearinghouse for information about teaching initiatives. “There really isn’t a space for faculty members, especially those who are very committed to their teaching, to reflect on these practices and meet with other faculty to discuss them,” she said.



**When it comes to micronutrients,
how much is just right? by Julie Flaherty**

The Goldilocks Conundrum

“EVERY SINGLE FORTIFICATION DECISION THE FDA HAS EVER MADE WAS made with great controversy,” said Elizabeth Yetley, a senior nutrition research scientist at the National Institutes of Health. “And the controversy evolves from the fact that the decisions are always made with huge gaps in our information database.” Although such decisions are based as much as possible on wise scientific judgment, she said, there never seems to be enough evidence to completely avoid reservations.

Making sure Americans get their daily doses of important micronutrients—either through mandatory fortification, government recommendation or industry efforts—is not exactly straightforward. Experts discussed some of the questions that linger around even the most established vitamin and mineral policies during the 2006 Gershoff Symposium. This year’s topic: “Toward a Healthier Nation: Complexities of Optimizing Micronutrient Intakes in the U.S. Diet.”

Yetley, who spent more than 20 years at the FDA and served as the agency’s lead scientist for nutrition, said that a national fortification program has to be both effective for the consumers who need the fortification the most and safe for everyone else.

“These become competing demands,” she said. “You can never achieve 100 percent effectiveness for your target without somehow, perhaps,

Front row, from left, Dr. Irwin H. Rosenberg, the Jean Mayer University Professor of Nutrition; Alice H. Lichtenstein, the Stanley N. Gershoff Professor of Nutrition Science and Policy; and Stanley Gershoff, dean emeritus.

affecting safety. The two never come together in a nice, clean relationship.”

Folic acid fortification, for example, raises questions for Barry Shane, professor and chair of the Department of Nutrition Sciences and Toxicology at the University of California at Berkeley. Recognizing that adequate folic acid intake in women of child-bearing age could significantly cut the occurrence of neural tube defects in babies, the FDA required that enriched cereal grains be fortified with the vitamin, also known as B9, by 1998. It had been known for some time that folate could mask B12 deficiency, and vitamins with large doses of folic acid in them had been unavailable. “For 50 years, there were never any studies to look for adverse effects,” Shane said. “If you don’t look for anything, you don’t find anything.”

“Once you start treating 270 million people, I think you have to make some effort to study if it really safe?” he added.

Scientists are now looking at whether folic acid may cause epigenetic changes—those that don’t affect the gene’s DNA sequence but can change the gene, and its interactions, in other ways.

Connie Weaver, Distinguished Professor and head of the Department of Food and Nutrition at Purdue University, turned the discussion to calcium, which Americans are now finding in all sorts of fortified foods—from orange juice to chocolate syrup. Traditionally, of course, consumers have gotten most of their calcium from dairy products, which also provide vitamin D, magnesium, riboflavin, vitamin A, phosphorus and potassium. Weaver pointed out that it is particularly hard for people to meet their potassium requirement in a diet without dairy.

“Fortified foods have been introduced in large numbers to try to fill the gap for calcium, but are they filling the gap for all these other things?” she asked.

Weaver also addressed previous research that showed a high calcium intake can cause

kidney stones and interfere with the absorption of other minerals, particularly iron. More recent studies have found that calcium is not connected with kidney stones and that while calcium initially may interfere with iron absorption, in the long run, calcium supplements have no effect on iron status in healthy adults.

Calcium's complement, vitamin D, has been the career's work of Bruce Hollis, a professor in the departments of Pediatrics and Biochemistry and Molecular Biology at the Medical University of South Carolina. The unfortunate bottom line: "We all need more, a lot more, than we are getting right now," he said.

The current "adequate intake" for vitamin D is 200 International Units per day, which Hollis calls "absolutely insignificant." That amount may be enough to pre-

vent rickets, the disease that causes fragile and deformed bones, but there are indications that vitamin D may play a significant role in keeping the immune system healthy.

"The skeleton seems to be OK at these lower levels," he said. "That doesn't mean that these other systems are. You have to think beyond skeletal effects when you think about vitamin D."

Hollis also talked about sun exposure—the "elegant system nature gave us to create vitamin D." But geography and habit prevent many people from taking advantage of it. "In a place like Boston, from October to March, even if you were outside with no clothes on a bright sunny day, the energy of the sun is not enough to initiate" the production of vitamin D, Hollis said. "And that's in a Caucasian. If you're African American, it's much worse."

This year's Gershoff Symposium speakers and the Gershoff Scholars join Dean Emeritus Stanley Gershoff and Gershoff Professor Alice Lichtenstein. Front row from left: Gershoff, Lichtenstein, Elizabeth Yetley, Connie Weaver, Toshiko Tanaka, Heather Mernitz, Wendy Johnnecheck and Sarah Anderson. Back row from left: Barry Shane, Bruce Hollis, Latrice Goosby, Josiemer Mattei, Hilde Petersen, Sam Cadena and Maina Muthee.



Alumni recount the many roads taken to that perfect job by Julie Flaherty

Career Coaching

THEIR CAREER PATHS HAVE LED THEM TO DIFFERENT parts of the country and divergent settings, from Capitol Hill to a university classroom to the Red Sox clubhouse. But when they came back to share their experiences with the next generation of nutrition leaders at the 2006 alumni career panel, they all had similar lessons to pass along.

Sarah Ash, N82, N86, a member of the school's first graduating class, is now an associate professor of nutrition at North Carolina State University. But the road to academia was not a straight one. Shortly after graduating, she moved to North Carolina with her husband and two children. Eventually, she took a biochemistry job at the university.

"I wasn't sure I wanted to stay in bench [science] work, but it got me out of the house," she said. Then she met a faculty member who was teaching a human nutrition class. "I said, 'If you ever want to leave your job, call me up,'" Ash recalled. The call came three months later.

"One of the lessons I learned—and that I try to tell my own students—is that sometimes you take that job that's not necessarily the job you thought you were going to have when you first went to graduate school," Ash said. "Sometimes what you just need to do is get out there. Then you have those experiences that just work—or you make them happen."

Tara Mardigan, N02, MPH02, has a knack for making things happen in her career. While working as a dietitian at the Dana Farber Cancer Institute, she attended an event where she wound up sitting next to



Sarah Ash, N82, N86

Stacey Lucchino, wife of Red Sox chief executive Larry Lucchino. She put together a proposal to consult for the team about nutrition. Although they turned her down at first ("They said, 'We think nutrition is nice, but we don't think it's essential.'"), she eventually won them over. She's now the team's nutritionist in addition to her work with cancer patients.

"For me, cancer nutrition is very similar to sports nutrition," Mardigan said. "There is a lot about how you can fuel your body the best and get through a challenging time."

Kate Houston, N99, knew that she wanted to work in Washington, D.C., on domestic policy even before she became interested in nutrition. She spent four years at the Council for Responsible Nutrition before enrolling at the Friedman School. After graduation, she moved back to D.C. and worked for the American Dietetic Association for almost two years. Then she got a call that a policy advisor position with the House Committee on Education and the Workforce was opening. She jumped at it. She sees herself as an internal advocate for change. "There's a tremendous need for people with nutrition expertise in a number of places in government."

All three panelists pursued more than their coursework during their time at Friedman. Houston did a summer policy internship at the National Academy of Sciences in D.C. "I thought that was a fantastic opportunity—to go to where you want to go location-wise in the field—to just immerse yourself and get to know as many people as you can." Ash ghost-wrote columns for what was then the *Tufts Diet and Nutrition Letter*. "It made me feel more involved in the field itself, and I've used a lot of those writing skills to help my own students." Mardigan, ever the self-starter, created and manned a nutrition information booth at a Cambridge gym. "That was just getting my feet wet in sports nutrition," she said. "It wasn't paid, but I got a free membership."



Tara Mardigan, N02, MPH02, and Kate Houston, N99, offer career advice to Friedman School students.



1



3



2



4

SCENES FROM REUNION 2006

1 Karen Palmer, N03; Kim Dong, N02; Kara Becker, N02; Vanessa Cavallaro, N03; Abby Usen, N03; and Mary-Jon Ludy, N04

2 Two accomplished graduates were presented with the 2006 alumni awards: Ram Shrestha, N90, left, and Susan Holman, N83, second from left, shown here with Dean Eileen Kennedy and Reunion Chair Ann McDermott, N02. Shrestha received the Frontline Award for his work in improving the vitamin A status of Nepalese citizens. Holman received the Service to the Profession Award for her studies of poverty and their connections to nutrition.

3 This year's reunion featured an educational program on the "Latest and Greatest in Nutrition." Virginia Chomitz, N85, N92, a senior scientist at the Cambridge Health Alliance, was one of the alumni presenters.

4 On Saturday, April 22, alumni and students enjoyed a cocktail reception and performance by comedian Jimmy Tingle.

5 Haewook Han, N86, N00; Andrew Shao, N00; and Karen Palmer, N03, with Stanley Gershoff, second from left, dean emeritus, at the career panel during reunion weekend.



5

G59

Elizabeth Pellegrino traveled with the Tufts Travel-Learn Program to Italy's Lake District in May. She and her husband, Nicholas Pellegrino, D59, enjoyed a nine-day journey that included a visit to Milan and a walking tour of Pallanza.

G71

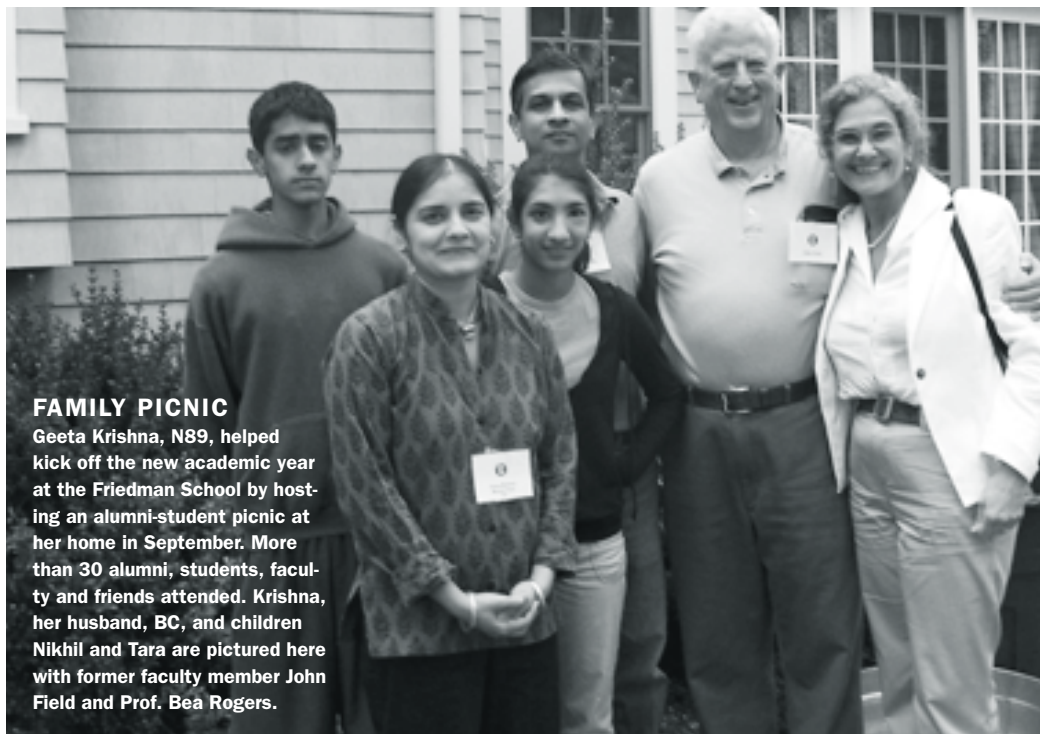
Patricia Plummer has been named the interim chancellor of the Massachusetts Board of Higher Education, overseeing 29 public schools and a budget of nearly \$1 billion.

N81

Aviva Must, N92, J01P, A03P, is the recipient of the 2006 Milton O. and Natalie V. Zucker Prize from Tufts University School of Medicine. The award is given to a woman scientist for outstanding research. She served as co-chair of the 2006 scientific meeting of NASSO/The Obesity Society. Must is an associate professor in the Department of Public Health and Family Medicine at the School of Medicine and at the Friedman School of Nutrition Science and Policy. She is also a scientist in the Nutritional Epidemiology Program at the Jean Mayer USDA Human Nutrition Research Center on Aging (HNRCA) at Tufts.

N92

Kavita Sethuraman co-authored the article, "Women's Empowerment and Domestic Violence: The Role of Sociocultural Determinants in Maternal and Child Undernutrition in Tribal and



FAMILY PICNIC

Geeta Krishna, N89, helped kick off the new academic year at the Friedman School by hosting an alumni-student picnic at her home in September. More than 30 alumni, students, faculty and friends attended. Krishna, her husband, BC, and children Nikhil and Tara are pictured here with former faculty member John Field and Prof. Bea Rogers.

Rural Communities in South India," which was published in the June 2006 edition of the *Food and Nutrition Bulletin*. Her research found that malnutrition in mothers and children is linked to domestic violence against women. She is a nutritionist at the International Center for Research on Women.

Xiang-Dong Wang, a professor at the Friedman School and director of the HNRCA Nutrition and Cancer Biology Laboratory at Tufts, presented the invited Elkin Lecture on "Carotenoid Paradox in Cancer Prevention" at the Winship Cancer Institute at Emory University on June 30. He gave a talk on "Alcohol, Retinoids and Hepatocellular Cancer" during the International Society for Biomedical Research on Alcoholism 2006 World Congress September 10–13 in Sydney, Australia.

N95

Lauri Jacobs co-authored the book *The Light Life Program*, a 31-lesson workbook for families with overweight children.

N96

Lisa M. Freeman, J86, V91, associate professor of clinical sciences at the Cummings School of Veterinary Medicine at Tufts, was chosen as the 2006 recipient of the Outstanding Alumna Award at the veterinary school's reunion on September 7. A triple Jumbo, Freeman received her B.S. from Tufts, her D.V.M. from the Cummings School and her Ph.D. in nutrition from the Friedman School. She completed a small animal internship at North Carolina State University before doing a residency in clinical nutrition at Tufts. She was board-certified by the American College of Veterinary Nutrition in

1997 and has been on the faculty at the Cummings School since 1996. Her research focus has been on the nutritional modulation of cardiac disease in dogs and cats.

N99

Patricia Bannan was featured on NBC's "Today" show in June in a segment about Starbucks selling fruity drinks for kids.

N02

Yasmin A. Almubarak Altwajri was featured in an Associated Press article in May about the obesity rates of women in Saudi Arabia and the obstacles women and girls face to working out as a result of cultural norms. Altwajri works in the Epidemiology Research Unit at the King Faisal Specialist Hospital and Research Center in Riyadh, Saudi Arabia.

Malia Wagner Curran, M02, has started a nutrition consulting business, Malia's Wholesome Health (www.MaliasWholesomeHealth.com) She teaches families how to shop and cook in healthy ways.

Ann Yelmokas McDermott, project director for the Boston Obesity, Genetics and Lifestyle Study at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts, competed in the XI FINA World Masters Swim Championships, which took place August 4–13 in the Olympic-sized pool at Stanford University in Palo Alto, Calif. More than 7,300 swimmers, water polo players, synchronized swimmers and divers, ages 25 to 100, from 75 countries participated, including more than 100 former Olympians. "It was quite inspirational to see world records fall right and left at all ages," McDermott said, noting that 161 world records were broken at the

international meet. To compete, swimmers had to achieve time qualifying standards based on their age, which "led to a very tight and competitive field of swimmers," said McDermott, who trains with the New England Masters Swim Club. McDermott competed in five individual events—100- and 200-meter breaststroke and 50-, 200- and 800-meter freestyle—and on three relays. She finished 20th overall in the 200-meter breaststroke, and her times also earned her second or third place in the New England Masters Long Course Meters records for women ages 50 to 54.

NO4

Jennifer (Freitas) Carter is an outpatient dietitian at the Faulkner Hospital in Jamaica Plain, Mass.

Mary-Jon Ludy married David Proulx on July 1, 2006. She is

a clinical dietitian at the Massachusetts General Hospital.

NO5

Erin Michele Boyd worked in Ethiopia as an emergency nutritionist in 2005–06. She recently worked as a consultant to UNICEF on humanitarian response in Kosovo and is conducting a nutrition survey in the Sudan this fall for UNICEF.

After graduation, **Catherine Culleton** worked as a nutrition consultant for California's WIC Program. Culleton just got a new position as the clinic/community nutritionist at the Native American Health Center in Sacramento, Calif.

Howard Goldstein completed his dietetic internship at the University of California at San Francisco.

Fanfan Han is part of the food safety program for the Beijing 2008 Olympic Games, working with the Beijing Administration for Food Safety and the Beijing Administration for Industry and Commerce in China.

Anna Herforth married Daniel Kim on June 30, 2006. She is pursuing a doctoral degree at Cornell University.

Kelly Horton completed her dietetic internship at Simmons College and then consulted for Concern Worldwide on its Urban Nutrition and Household Food Security Program in Bangladesh.

Zeina Maalouf is pursuing a doctoral degree at the University of California at Davis.

Isabelita Mendoza, M05, completed her dietetic internship at the Brigham and Women's Hospital in Boston.

KEEP YOU CLASSMATES UP TO DATE

We want to hear from you! Have you changed jobs? Experienced life changes? Fulfilled a dream? Keep Tufts and your fellow alums up to date by sharing your news.

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Send to:

Cindy Briggs Tobin, Tufts Friedman Nutrition Fund and Alumni Relations, 136 Harrison Avenue, Boston, MA 02111 or send to the alumni section of the school's website at www.nutrition.tufts.edu



CLASS NOTES DEADLINE FOR NEXT ISSUE IS MARCH 1, 2007

Grace Phelan is working as a clinical dietitian at Tufts–New England Medical Center.

Patrick Racs is pursuing a second master’s degree, this one in international economics, at Baylor University in Waco, Texas.

Abigail Kaplan Ramage is a food security specialist with Save the Children in Medan, Indonesia.

Kendrick Repko is an associate account executive with Schwartz Communications, a public relations firm in Waltham, Mass., that specializes in technology and health care.

Nicole Richardson is a program manager at Global Food & Nutrition Inc. in Washington, D.C. She recently traveled on assignment to Haiti and Zambia.

Shauna Sadowski married Louis Bennett, A02, the former Friedman School webmaster, in spring 2006. Sadowski is a consultant/manager in the Food and Agriculture Division at Business for Social Responsibility in San Francisco.

Gabrielle Serra is a child nutrition database staff member with the Special Nutrition Program Division of the USDA’s Food and Nutrition Service in Washington, D.C.

Jennifer Weston is a clinical dietitian at Tufts–New England Medical Center.

NO6

Charlotte Block is working at Mercy Corps, helping to design its World Hunger Education Center in New York.

SAVE THE DATE

ALL-ALUMNI REUNION April 21–23, 2007

Join us at this year’s All-Alumni Reunion on April 21–23, 2007. Enjoy re-connecting with friends and mentors, as well as annual events, including the Gershoff Symposium.

The Alumni Association’s Alumni Awards are presented during reunion. Your nominations are needed! To nominate a worthy graduate or to find out more information about the awards or reunion, visit the alumni section of <http://nutrition.tufts.edu>.

Jennifer Bourbeau is a dietitian at Community Servings, a non-profit organization that provides free home-delivered meals throughout eastern Massachusetts to those homebound with HIV/AIDS and other life-threatening illnesses.

Melissa Marko defended her thesis on “Vitamin E-induced Enhancement of T Cell Receptor Proximal Signal Transduction Events in CD4+ T cells from Old Mice” at the HNRCA on July 28. Her advisor was Simin N.

Meydani. She is now a postdoc in the HNRCA Nutritional Immunology Laboratory.

Heather Mernitz gave her thesis presentation on “The Chemopreventive Effects of 9-cis Retinoic Acid and 1alpha, 25-dihydroxyvitamin D3 against NNK-Induced Lung Carcinogenesis in A/J Mice” at the HNRCA on July 17. Xiang-Dong Wang was her advisor. She is working as a postdoctoral associate in the HNRCA Nutrition and Cancer Biology Laboratory.

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PHOTO BY MELODY KO

FIRED UP FOR FITNESS

The life of a firefighter is unpredictable, to say the least. One minute you're sitting around. The next, you're racing up a flight of stairs lugging 100 pounds of equipment. To prepare to go from the sedentary to the swift, the Somerville Fire Department underwent a health and wellness makeover. For more on the story, turn to page 15.



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