

Tufts

NUTRITION

POWER PLAY

GOING ALL OUT TO
SAVE MUSCLE

PLUS: GENES AND DIET ■ INNOVATIONS IN AFRICA ■ FEEDING YOUR PET

Tufts

NUTRITION

VOLUME 12 NO. 2 SUMMER 2011

Editor

Julie Flaherty

Editorial Director

Karen Bailey

Design Director

Margot Grisar

Designer

Betsy Hayes

Contributing Writers

Gail Bambrick, Herb Brody, Taylor McNeil, Jacqueline Mitchell, Danielle Nierenberg, Helene Ragovin, Mark Sullivan

Contributing Editor

Karen Kenny

Editorial Advisors

Eileen Kennedy, D.Sc., Dean
*Gerald J. and Dorothy R. Friedman
School of Nutrition Science and Policy*

Patrick Webb, Ph.D., Dean
Academic Affairs

Cindy Briggs Tobin, Senior Director
Development and Alumni Relations

Tufts Nutrition is a publication of the Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy at Tufts University for alumni, key university personnel, students, faculty, staff and others with an interest in the school.

The mission of the school is to provide an opportunity for talented and passionate individuals to lead science, education and public policy to improve nutrition and health.

We welcome your letters.

Send correspondence to:

Julie Flaherty, Tufts Nutrition,
Tufts University Office of Publications,
80 George Street, Medford, MA 02155
Tel: 617.627.4273 Fax: 617.627.3549
E-mail: julie.flaherty@tufts.edu

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



Tufts Prints Green
Printed on 25% post-consumer waste recycled paper. Please recycle.



Katie Houk, N11, enjoys a laugh after the symposium.

13th GERSHOFF SYMPOSIUM

THE 2011 GERSHOFF SYMPOSIUM EXPLORED the question "Optimizing Health: Does Nutrition Have the Right Tools?" The panelists for the April 4 event were, above, from left, Paul M. Coates, Ph.D., director of the Office of Dietary Supplements at the National Institutes of Health; Ann Yelmokas McDermott, Ph.D., N02, an associate professor of kinesiology at the California Polytechnic State University; Brian Wansink, Ph.D., a professor and director of the Food and Brand Lab at Cornell University; and Howard D. Sesso, Sc.D., an associate epidemiologist at Brigham and Women's Hospital and an assistant professor of medicine at Harvard Medical School.

TALK TO US

Tufts Nutrition welcomes letters with concerns, suggestions and story ideas from all its readers. Address your correspondence, which may be edited for space, to Julie Flaherty, Editor, **Tufts Nutrition**, Tufts University Office of Publications, 80 George Street, Medford, MA 02155. You can also fax us at 617.627.3549 or email julie.flaherty@tufts.edu.

On Nutrition Leadership



THE FRIEDMAN SCHOOL IS NOW IN ITS 30TH year and has much to celebrate. As the only independent school of nutrition in the United States, we have grown from the dream of then Tufts President Jean Mayer to become a national and international leader in policy and research. Among other accolades, the school was recently recognized by the National

Research Council as having one of the best doctoral programs among U.S. schools. It is, by any measure, a firm foundation upon which to build the next 5, 10 and 30 years of the Friedman School.

While this is a time of transition for the school, 30 years is an appropriate benchmark to take stock of the strengths that will keep us on our course of institutional excellence. As most of you know, I will be stepping down as dean at the end of June, and Dr. Robin Kanarek has agreed to serve as interim dean, effective July 1 [See story, page 27]. I have known Professor Kanarek for many years and am delighted that she has accepted the challenge of leading the Friedman School. An internationally renowned expert in the field of nutrition and behavior, Professor Kanarek is an exemplary university citizen and an outstanding scientist, teacher and leader. She joined the Tufts faculty as a member of the Department of Psychology in 1977, and has served as an adjunct professor at the Friedman School since 1989. Robin is not new to the Tufts community or the Friedman School family, and I look forward to working closely with her during the transition.

As we welcome our incoming interim dean, I'd like to recognize some of the up-and-coming leaders in nutrition who are advancing the school's mission to be a forum for talented and passionate individuals working to improve health. Last month, nearly 200 graduate students from Tufts and 30 other leading graduate programs across the U.S. and Canada convened here for the fifth annual Student Research Conference. This conference, wholly conceived and executed by our students, is a tribute to the curiosity, innovative spirit and dedication to research of both our students and all those who traveled to Tufts to participate. The quality of the research, professionalism of the presentations and the energy and excitement generated by the conference gave me great pride in our students and the exceptional faculty who serve as their instructors and mentors. I congratulate the student organizers and the many presenters who made this event possible.

As our students and faculty look to the future of nutrition education, we are all aided by three groups of volunteers who have worked to provide guidance to the school's leaders and financial support for our work: the Alumni Association Executive Council, led recently by Sai Das, N02, and currently by Abby Usen, N03; the Friends Council under the leadership of Doug Balentine and Anita Owen; and our Board of Overseers under the leadership of Ed Budd, A55, the late Joan Bergstrom, J62, and currently, Ellie Block, BSOT66. I cannot overstate what the breadth of knowledge and the support all of these dedicated people have meant to me, and in turn to the strength of the Friedman School, during my tenure.

Our current students, those who came before them and those who will follow them in the classrooms, in the laboratories and in the field have been, and will continue to

Our students have been and will continue to be our greatest strength and inspiration.

be, our greatest strength and inspiration. We are indeed fortunate to have many leaders to guide them. Dr. Kanarek will join a vibrant group committed to making positive change in the nutrition of individuals and communities around the world. It has been my distinct honor to have served the Friedman School, and I wish our current and future leaders continued success in our shared goals.

EILEEN KENNEDY, D.Sc.

Balancing Budgets and Tastes in School Meals

WHEN LIFE GIVES YOU LEMONS, MAKE lemonade. But if you're truly creative, when the government gives you black beans, you make chocolate cake. That's what lunchroom managers in the Chicopee, Mass., public school system did when they were challenged to create appealing and healthy meals and snacks for students using economical ingredients. They incorporated the commodity program beans in the cake, which the students enjoyed without even noticing the added protein and fiber.

This was just one of the inventive examples Associate Professor Christina Economos, Ph.D., N96, and Assistant Professor Jennifer Satchek, Ph.D., N01, came across while putting together *Dishing Out Healthy School Meals*, a report that details how three New England school districts managed to make healthy changes to cafeteria food in spite of tight budgets.

The authors studied Chicopee and two other school lunch all-stars and found that their success stemmed from creativity, innovation and strong leadership, particularly on the part of the school nutrition directors.

In Laconia, N.H., for example, fresh fruit is available every day. In addition, on the day they make lo mein from scratch, the food service staff offers canned pineapple chunks. Why? Because they frugally use the pineapple juice as an ingredient in their lo mein sauce.

The Maine School Administrative District 3, based in Unity, works with more than a dozen local farms to purchase fruit, vegetables, bread and

meat, and has conducted pilot projects to blanch and freeze local produce for use in fall and winter. This allows this northern rural school district to obtain more than 40 percent of its annual food from local sources.

The report was funded by the Harvard Pilgrim Health Care Foundation.



ANOTHER KIND OF SOFA TO AVOID

WHEN ASSOCIATE PROFESSOR MIRIAM NELSON, PH.D., N85, N87, BEGAN WORK ON THE SCIENTIFIC ADVISORY COMMITTEE for the 2010 Dietary Guidelines, she was all-too-familiar with the dire statistics about obesity. But even she was surprised to see that most Americans—young and old, male and female—get 35 percent of their calories from two ingredients: solid fats (saturated and trans) and added sugars, or SoFAS, not unlike the furniture we should all spend less time on. “SoFAS have been added in too high amounts to so many foods,” she said. Be wary of them lurking in unexpected places, like breakfast cereals, salad dressings and tomato sauces.

OVERHEARD

“It is a little bit like funding your local fire engine by rattling a tin on the street every time a fire breaks out.”

—PETER WALKER, PH.D.,
DIRECTOR OF THE FEINSTEIN INTERNATIONAL CENTER, DESCRIBING IN A
NEW YORK TIMES STORY HOW RELIEF AGENCIES TEND TO RAISE MONEY
MOST SUCCESSFULLY AFTER CATASTROPHES LIKE EARTHQUAKES

DITCH THE WHITE BREAD

EATING MORE WHOLE GRAINS AND FEWER REFINED ONES MAY HELP YOU AVOID dangerous visceral fat, the kind that surrounds organs deep in your belly, a new study finds. Visceral fat is much more hormonally active than the fat beneath your skin, and has been linked to heart disease and diabetes.

Researchers at the Jean Mayer USDA Human Nutrition Research Center on Aging (HNRC) saw 10 percent less visceral fat in people who reported eating three or more servings of whole grains and less than one serving of refined grains per day. This was even after accounting for other lifestyle factors, such as fruit and vegetable intake and physical activity.

The study, which looked at 2,834 men and women, ages 32 to 83, appeared in *The American Journal of Clinical Nutrition*.

The correlation didn't hold true, however, for people who ate whole grains as well as four or more servings of refined grains. “It is important to make substitutions in the diet, rather than simply adding whole-grain foods,” said the lead author, Nicola McKeown, Ph.D., director of the Nutritional Epidemiology

Program at the Friedman School.

Her advice? Trade in your white bread for whole wheat and cook brown rice instead of white.



Calmest Brew

At the end of a nerve-frazzling day, many people cuddle up with a cup of chamomile tea, well known for its soothing properties. But is that really so?

When Professor Jeffrey Blumberg, Ph.D., and Assistant Professor Diane McKay, Ph.D., J89, N97, N00, scientists in the HNRC's Antioxidants Research Laboratory, reviewed scientific literature on chamomile, they found no one had done a clinical trial on the herbal tea as a relaxation aid.

They did, however, find test-tube studies that show chamomile tea has moderate antioxidant and antimicrobial properties. Chamomile also showed potent anti-inflammatory action and some cholesterol-lowering activity in animal studies.

Another popular herbal infusion, peppermint, could be a contender for Most Tranquil Tea. When the researchers looked at studies of animals that were fed either peppermint leaves or extracts, they noted a relaxation effect on gastrointestinal tissue and an analgesic and anesthetic effect in the nervous system, although peppermint tea, too, is lacking human studies.

One tea, hibiscus, does seem to have a soothing effect, at least on blood pressure. In a study McKay conducted, a small group of people who drank three cups of hibiscus tea a day for six weeks dropped an average of 7.2 points from their systolic blood pressure (the top number).

To Better Society

**That's how Tufts' incoming president, Anthony Monaco—in his first interview—
defines the role of academia** BY TAYLOR McNEIL

THE NEXT PRESIDENT OF TUFTS HOLDS A PECULIARLY British title, pro-vice-chancellor, at that most British of institutions, the University of Oxford. But there is nothing staid or tradition-bound about either the man or his pioneering work in neuroscience. Anthony Monaco—Tony to friends and colleagues—grew up in Wilmington, Delaware. He attended Princeton University on a generous financial aid package and went on to receive an M.D. and a Ph.D. from Harvard Medical School, specializing in the genetics of neurological disorders.

Monaco's fascination with genetics took him to the U.K., then the hub of this burgeoning field. He worked on the human genome project at the Imperial Cancer Research Fund in London and started the human genetics laboratory at the Institute of Molecular Medicine in Oxford. At Oxford, he co-founded the Wellcome Trust Centre for Human Genetics, which identifies the genetic underpinnings of common human diseases. Monaco's own research has focused on the genetic basis of disorders such as autism, language impairment and dyslexia. Under his leadership, the Wellcome Trust Centre doubled in size: it is now the largest externally funded university-based research center in the U.K.

As Oxford's pro-vice-chancellor for planning and resources since 2007, Monaco developed strategies for academic, capital and student-enrollment planning; senior academic appointments; and budgeting and resource allocation for Oxford's academic divisions, libraries, museums, administration and colleges. He has worked to broaden access to Oxford, create and fund interdisciplinary research ventures and boost support for the humanities.

At 51, Monaco has acquired just the skills one would hope to find in the 13th president of Tufts University. Introducing him to the Tufts community in November, James A. Stern, E72, chair of the Board of Trustees, noted Monaco's "record of exceptional accomplishment as a university leader, biomedical researcher and teacher." He added, "Tony will bring to the presidency of Tufts deeply held commitments to academic excellence, diversity, a global perspective and the university's central role in society."

Tony Monaco—reader of historical novels, father of three active boys, ages nine to 12, who can't wait to sled down the hill behind the president's residence on the Medford/Somerville campus, and spouse of Zoia Monaco, a cell biologist who heads a research group at Oxford—will succeed President Lawrence S. Bacow on August 1.

While vacationing at his home in Delaware over the winter break, he spoke about his aspirations, his science and his family.

What's on your agenda for your first year as president of Tufts University?

Anthony Monaco: I'll be spending a lot of time meeting people and listening. One of my major goals is to understand the strategic issues facing each of the schools, and what the interdisciplinary issues are that knit the schools together into one Tufts. I'll spend time in each school with the deans and their faculty and students to understand what they do well, what things could be done better, and strategically what they would like to achieve. I will also spend much of my time going out and meeting with alumni and friends of Tufts.

How would you describe your leadership style?

I try to approach leadership through transparency and consensus building. I want to synthesize and bring together strategic approaches to develop innovative solutions to problems. For me, I need to do that from the ground up. It's about devising strategies and making choices. The most important ingredient is to work with people and listen to their views. That's where I spend a lot of time before making big decisions.

How do you see your research background serving you as president of Tufts?

At the Wellcome Trust Centre for Human Genetics, there were 30 different research groups, and I had to bring them together into a mission where the sum was greater than the parts. I used that approach when I became pro-vice-chancellor. At Oxford there are four divisions—mathematical, physical and life sciences; medical sciences; social sciences; and humanities. Each had its own strategic issues and its own funding problems. My job was to work together with the heads of those divisions, match their objectives with funding and get the four divisions to cooperate to bring the entire institution to a higher level. I think those experiences are essential to leading a major research university.

At Oxford, what has been your involvement with the humanities?

As pro-vice-chancellor, I spent a lot of time working with the humanities division. They had their funding cut by government,



Anthony Monaco on the Oxford campus, which he will soon leave behind.

and were struggling to break even. We are reviewing how we teach the humanities and trying to get a humanities center—which Tufts already has—to create an environment in which faculty can perform interdisciplinary research and graduate education. I spent a considerable amount of time trying to facilitate their top priorities and assembling the resources, facilities and fundraising programs so that they could have a more solid financial basis. More personally, my own research crosses into the humanities in a certain sense—I work on the genetics of language and communication and reading.

I think the humanities in particular foster an appreciation of the creativity of the human mind. Humanities scholars are always challenging and questioning established ideas and modes of thought. So in some ways, I don't see the aims of humanities scholars as that different from the aims of colleagues involved in science and math. Both disciplines try to challenge the current ways of thinking about an important issue. There are parallels between the sciences and humanities that maybe aren't appreciated as much as they should be.

What are some of the differences between student experiences in the U.K. and the U.S.?

At Oxford, the tutorial system is based on very small classroom teaching with leading academics in a college environment. That's very difficult to replicate elsewhere, because it does have its costs. But the practice of having more personal contact between faculty and undergraduate students in a small classroom setting or as advisers or mentors is something I value, and Tufts values as well.

I'm also very interested in developing the skills of graduate students beyond training in a particular discipline. Graduate students need to acquire other skills that are important to their personal and professional development. At Oxford and in the U.K. in general, there has been increasing emphasis over the last few years in building up transferable skills such as communication, presentation and writing, time management and team management, in addition to the supervision of graduate students on their individual projects. Being able to communicate your ideas and the excitement of scholarship and science—to the media and others—is vital. It's an area I've been involved in at Oxford for many years.

The other big difference is that undergraduate study in Oxford and most U.K. institutions is subject-specific. For example, if you are going to study chemistry at Oxford, you do not normally enroll in humanities and social sciences courses to round out your liberal arts education. So that system does create a different type of graduate at the end.

Is that better?

I prefer the American style. I think it is advantageous to give students a bit of time to decide what they want to focus on and enable them to experience a range of subjects in higher education.

Active citizenship is part and parcel of the Tufts identity. Is that idea of service to others important to you, too?

Absolutely. You're not just studying something to understand it better—you're trying to better society by demonstrating that your research has an impact beyond its essential findings. I think you can bring active citizenship to many different levels, ranging from people

performing research on K–12 educational issues or getting involved in their local communities to the big international issues, such as the international veterinary program at Tufts or the global health issues in which multiple schools at Tufts are involved. These are all important ways of being active citizens.

At Tufts, there's increasing interdisciplinary collaboration, such as between the engineering school and the medical school. Is that an approach you'd like to see more of?

Yes, absolutely. It certainly needs to be a faculty-supported initiative. For example, at Oxford, the biomedical engineers decided to work in the medical school, right in the midst of the medical researchers and some distance away from the rest of engineering. The biomedical engineers now have better access to clinicians and other medical research programs. It's an example of a great experiment in cross-disciplinary collaboration that is working well. Oxford also has a similar issue to Tufts: Our medical sciences division and the hospitals are on two separate campuses, two miles outside the center of Oxford. So you're always trying to deal with cross-campus practical issues as well as more strategic issues. That said, I think there are ways of integrating across campuses.

The Boston area has many research institutions. How do you see Tufts fitting into that mix?

I'd like to see Tufts build on its strengths as both a competitor and a collaborator with other universities and institutes. Tufts should focus on those areas in which it is identified as world-leading and then ensure that we have the facilities, resources and people in place to compete for external funding. Some of this can be accomplished by collaboration. For example, if there's an area where two institutions, by working together, can win grants from the National Institutes of Health, then the scientists will figure that out, and the central administration should facilitate that collaboration.

The life sciences are a niche area for Tufts, with the veterinary, nutrition, medical and dental schools, as well as the basic science research being performed on the Medford/Somerville campus. There are ways of organizing different programs in the life sciences that would build on the strengths of Tufts and involve other research institutions in the Boston area.

How will you foster diversity in the student body?

I obviously want to continue the great tradition that Larry Bacow has built up, trying to make need-blind admission at Tufts a reality. It's very close, but it's not quite there yet and will require further fundraising and engagement with alumni and friends of Tufts. It does seem that the admissions policies are quite robust at Tufts, and I want to continue to create opportunities to attract a diverse student body.

A HANDLE ON GENETICS

What drew you to genetics in the first place?

As an undergraduate at Princeton, I was really interested in neuroscience and behavior. When I was in the neuroscience program at Harvard, the geneticist Lou Kunkel gave us a talk on how he was going to take on Duchenne muscular dystrophy using a genetic

approach. It was just clear to me that this was going to work. I camped out on his doorstep, and when he came in the next morning, I said, “I have to do my Ph.D. with you.” He took me on—I was his first student. He had just started his own lab and had received a grant to try this genetic approach. We worked together for several years. It was great fun, and also challenging.

What have you discovered?

For the last 15 years, I’ve focused on learning disabilities and other neurodevelopmental problems in children—where language, the ability to read, and the right social skills don’t develop properly, as is the case with autism, for example. There’s a lot of overlap between these different areas. By studying all of them and taking a general, non-biased genetic approach, we’ve been able to identify genes that are specific to one disorder as well as some genes which are involved in multiple disorders.

Some of these genes can be involved in reading and language; some can be involved in language and autism. Our research, as well as the research of others, has shown that these genes do have effects across these different areas. The outcome can be autism or epilepsy or a language problem, depending on other factors. Once we get a handle on the genetics, we want to understand what those other factors are. If you can influence these other factors and the outcome, you can develop treatments or interventions that might help children compensate for their neurodevelopmental problems.

You kept your research group together at Oxford after you were appointed pro-vice-chancellor. Do you plan to continue with that at Tufts?

I’m certainly not going to set up a lab at Tufts, but for a transition period I’m going to try to supervise at a distance the students and postdoctoral fellows I have at Oxford, with senior people there who will be leading the group on a day-to-day basis. I will have to achieve it with Skype and other methods of communication—as I do now as pro-vice-chancellor. I have an obligation to those students and those research programs to stay involved as best I can. I think I’ve already shown that the group can be productive in this situation.

What are you most proud of besides your family?

I’m really proud of the members of my lab who, as I have taken a step back over the last three-and-a-half years, have risen to the challenge and have kept the lab at the cutting edge. They developed themselves as the next generation of scientists in this area of research and have been incredibly productive. They identified one of the first genes involved in dyslexia and described its mechanism of action in brain development. In addition, they have just identified one of the first genes involved in human handedness.

What’s the hardest thing you’ve ever done?

Identifying the gene for Duchenne muscular dystrophy with Lou Kunkel, and overcoming problems that researchers hadn’t had to face before. It was an intellectual challenge, and also a physical challenge, because of the way we performed molecular biology back then. It wasn’t a thought experiment: You had to get in the

lab and do lots and lots of repetitive things and isolate DNA using big centrifuges. Collecting pieces of DNA from human chromosomes in those days before the genome project started was quite a physical process.

RETURN TO BOSTON

How have your three sons reacted to the big move?

I think that they are quite excited because it’s a new opportunity. There will be new schools, new sports—no more cricket, not much rugby. They love soccer, so they will be trying that. Zoia and I keep them involved, and we try to stay involved in what they are doing. We support them and give them the opportunities, and they do the rest.

And they are moving into a home on a college campus.

It will be fun, with all the events going on at Gifford House, the president’s residence. My sons are pretty outgoing, so I don’t think they will shy away from meeting people. They certainly enjoyed the announcement weekend at Tufts.

They also can’t wait for that first big snow so they can sled down the hill behind Gifford House. Larry Bacow sent us some pictures of the blizzard on December 27 so the boys could see what it would be like.

What’s on your reading list?

I like reading historical novels such as *The Dancer Upstairs*, by Nicholas Shakespeare, and *An Instance of the Fingerpost*, by Iain Pears. For nonfiction, I like history, such as *The Greatest Benefit to Mankind*, a history of medicine by Roy Porter. I’ve also read *America, Empire of Liberty: A New History of the United States*, by David Reynolds, and *The Ascent of Money*, by Niall Ferguson. Also, I just read *An Entrepreneurial University: The Transformation of Tufts, 1976–2002*, by Sol Gittleman.

Have you and your family visited the U.S. much?

These last five years we’ve come over at Christmas, because we have a house in Delaware, and we usually come over at Easter. During the summer, we go to the beach near our home. The boys like swimming, and they tried surfing last year and took sailing lessons.

This won’t be the first time you’ve lived in Boston.

I spent seven years at Harvard Medical School, and I did my Ph.D. at Children’s Hospital with Lou Kunkel. I did my clinical rotations at different hospitals—Massachusetts General, Roxbury VA Hospital, Brigham and Women’s, and Children’s.

What did you miss most about Boston when you were at Oxford?

The soft pretzels they sell outside Fenway Park.

How do Boston and Oxford compare?

I would say the biggest difference is that Oxford has one major university. In Boston there is the excitement of having so many major universities in one city. That’s one thing I missed about Boston when I was in Oxford. When I leave Oxford, I am going to miss the city, its traditions, my colleagues and friends that we’ve built up over 20 years. **TN**



THE dna die

PHOTO ILLUSTRATION
BY VITO ALUIA

**Researchers unravel the
interplay of genes, food and health
by working together (for a change)**



BY GAIL BAMBRICK

t YOU INHERITED MORE THAN YOUR BLUE EYES, BROWN HAIR and long legs from mom and dad—you also got a set of genes that defines everything about you. Are you a morning person? Do you have the energy of a runner (or a couch potato)? Can you eat rich French cuisine and never gain weight? Most of these predilections are hardwired into your DNA.

Your genetic makeup may also portend more serious risks—for heart disease, diabetes, Alzheimer's and obesity, among other diseases. The good news is that the way these genes function is not etched in stone. Some can be turned on or off, depending on your lifestyle.

Even more heartening, the scientists who study the connection between our genes and how we live, a field known as

nutrigenomics, have adopted a revolutionary model for conducting research that has so quickened the pace of discovery that one day, a routine pediatrician's visit may include analyzing a child's genetic map to identify risk factors for disease and, most importantly, prescribing a specific diet, targeted exercise and in some cases tailor-made pharmaceuticals.

"What I hope is that during my lifetime, we will know that you have a gene that can make you obese or prone to diabetes—but it can't just end with a label," says José Ordovas, Ph.D., director of the Nutrition and Genomics Laboratory at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts. "We have found in cases studied so far that with the right dietary or behavioral change, we can cancel that

increased risk,” he says. “In my lifetime I want to see us put, perhaps not all, but enough of the pieces together for this to become a practical application and routine approach to therapy.”

Already, platitudes like “an apple a day keeps the doctor away” are giving way to more individualized recommendations for what kinds of work, play and dining we should partake in.

For example, broccoli is known to have chemicals that can help the body defend itself against cancer. But if you are one of the 20 to 50 percent of the population that is missing the gene GSMT1, your body excretes many of these chemicals before they have time to do any good. A 2005 study by the Institute of Food Research in Great Britain found that people who don’t have the gene need to eat extra servings of broccoli to get the benefit.

Whether your all-day coffee habit is good for you may also depend on whether you have the “fast” or “slow” version of the gene that controls how caffeine is broken down in the liver. Research from the University of Toronto found slow metabolizers who drank two to three cups of coffee each day were 36 percent more likely to have suffered a heart attack than single-cup drinkers. And slow metabolizers who consumed four or more cups were 64 percent more likely to have had a heart attack. By contrast, one to three cups seemed to protect those individuals whose genes made them fast metabolizers.

As for consuming fish oils to lower your cholesterol, it turns out that this is beneficial for the vast majority of us, but in those who have a particular version of the APOE gene (which generates the protein that helps remove excess cholesterol from the blood and carry it to the liver for processing) it actually has the opposite effect. According to a recent study at the Berkeley HeartLab in San Francisco, in the roughly 15 percent of people who have the APOE4 gene, fish oil caused the “bad” cholesterol, LDL, to rise by 15.9 percent.

BIGGER IS BETTER

What these new genetic studies are demonstrating is that broad dietary recommendations are not necessarily good for all people—and in some cases might even do harm. More effective diets will only come from understanding an individual’s entire genetic code, or genome, in combination with his or her lifestyle and environment.

Deciphering the influence of particular genes and their external triggers, nutrigenomics researchers have come to realize, can only happen through cooperative studies that involve larger populations as well as a wide breadth and depth of knowledge and expertise. That is why in just the past five years, many of these scientists have abandoned competition for grants or personal credit in favor of cooperating on broad multidimensional studies.

Ordovas has been a primary mover in this dramatic shift from the traditional this-is-my-research mindset to one of collaboration. Two years ago he co-founded the collaborative CHARGE (Cohorts for Heart and Aging Research in Genomic Epidemiology), which engages more than 600 researchers from large universities and research centers worldwide. He has also facilitated the founding or agendas of many other similarly sized nutrigenomics consortia in

the United States, Canada, Europe and Australia.

“We realized that if we want to make serious contributions to this field, we cannot continue to do it in isolation,” says Ordovas, a professor at the Friedman School of Nutrition Science and Policy. “Nutrigenomic researchers working on small population samples could do nothing. So now there are consortiums of individual labs and institutions to create the critical mass that was lacking from each of the individual studies.”

The point is that several hundred scientific heads are better than one, and thousands of test subjects more statistically significant than dozens. Further, by agreeing to use a common methodology—from survey questions to analysis standards—the researchers gather more robust data.

“Think about looking at just a small section of a painting—you don’t see the whole picture,” says Jennifer A. Nettleton, chair of CHARGE’s working group on nutrition and an assistant professor in the Division of Epidemiology, Human Genetics and Environmental Sciences at the University of Texas Health Science Center at Houston. “José and I work closely within CHARGE, and we are now collaborating on projects that include over 30 cohort studies from various regions of the U.S., northern Europe and the Mediterranean to study interaction between various dietary factors and genetic information. We pool expertise and resources to create common plans to approach a question.”

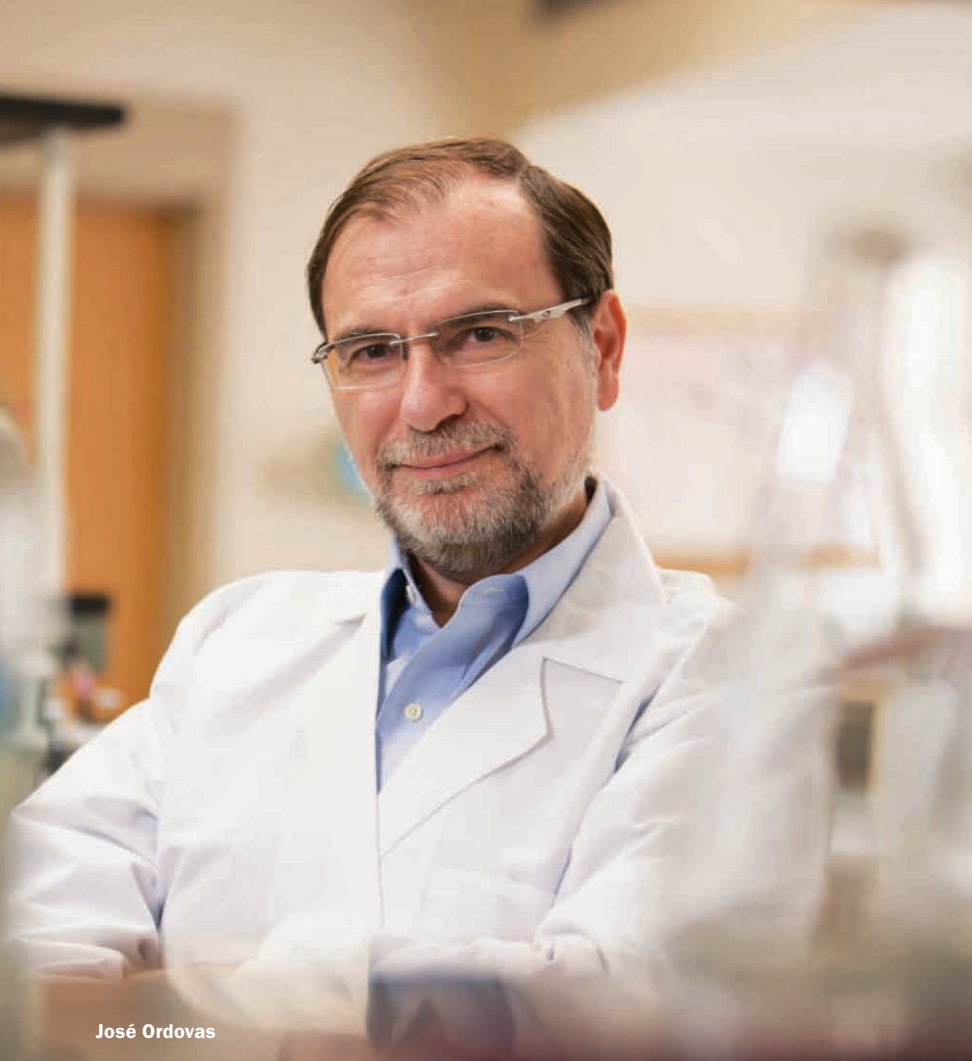
CHARGE was one of the groups that contributed to two ground-

“Humans have mutations in their genomes that have been with us for many, many generations. But their effects are evident only now due to the nature of the society and environment we live in.” —JOSÉ ORDOVAS

breaking Alzheimer studies completed in April that identified five new genes associated with the degenerative illness; the findings open up new avenues in the search for a cure. The work involved scientists from 44 universities and research institutions and an unprecedented 54,000 study participants.

Both Ordovas and Nettleton see this cooperative research model as one that could benefit not just nutrigenomics, but all medical research. Could adopting this approach also quicken the pace of, say, cancer research? Unequivocally yes, says Ordovas. And new alignments among pharmacogenomic researchers, who study how an individual’s genetic makeup affects the body’s response to drugs, have begun to take hold.

“When we were just waking up to the potential of genetics research in the late ’80s, I did a lot of pharmacogenetics,” Ordovas says. “After that there was a dark time in which things started to separate, but now things are starting to merge again because we see the commonalities.”



José Ordovas

The surge in nutrigenomics research has catalyzed this, according to many in the field.

“Ten years ago there were just a few passionate ‘hobbyists’. . . this year the Christmas issue of *Nature* had eight special articles on nutrigenomics,” noted Ben van Ommen, executive director of NuGO, the leviathan European-based nutrigenomics research consortium, in a March 2011 interview with *NutraIngredients*. “We have switched from a minority to a feature topic in only a few years,” said van Ommen, a close associate of Ordovas.

HARMFUL TRIGGERS

So how does our environment affect our genes in the short term? Through the ever-changing part of our genome, the epigenome. A series of tiny chemical tags attach to, or detach from, your DNA or proteins in the nucleus and flip genes on or off based on your diet and the pollutants, climate change and stresses your body encounters.

In fact, the way a gene reacts to a change in lifestyle can mean the difference between sickness and health.

“Humans have mutations in their genomes that have been with us for many, many generations,” says Ordovas. “But their effects are evident only now due to the nature of the society and environment we live in.”

To better understand how genomes react when transplanted to new environments, Ordovas is studying Hispanics in Boston to determine why their rate of illness is significantly higher than that of whites. Clinical depression, for example, affects up to 58 percent of elderly Puerto Rican women living in Boston, compared to 22

percent of their white neighbors—a fact Ordovas calls “totally amazing.”

“Each one of our genomes has been interacting with the environment for thousands of years,” he says. “This created an understanding between our genome and the environment. Imagine you take an orchid native to the tropics and move it to Toronto. It is the same if you take a Puerto Rican to Boston,” Ordovas says, pointing to big changes not only in climate, but in living conditions (close-packed, urban housing), work (indoor as opposed to outdoor) and what foods are available and affordable (processed rather than fresh). “The genome is not prepared for the environment. And this is why you have the increased morbidity.”

Many of the genetic markers associated with higher risk for heart disease, obesity and diabetes are more common in Hispanics. Ordovas theorizes that some of these markers might have worked well with a traditional Puerto Rican diet of rice, beans, fish and fruit, but the addition of starches and sugars—and a pattern of snacking common in the mainland U.S.—may overtax these same genes.

“In a place where you have stress due to economics or living conditions, poor diets and lack of physical activity, you trigger a negative genetic response,” Ordovas says. So whereas 10 percent of the white

population in Boston might be at risk for disease because of this same lifestyle, 40 percent of a minority group could be affected, he notes.

Ordovas is also looking at the ancient circadian rhythms observed in all plant and animal life. They affect our daily patterns of waking, sleeping, physical activity and even the rise and fall of our hormone levels over 24-hour periods.

In humans, these rhythms are controlled by about 20,000 cells in the hypothalamus region at the base of our brain, our so-called biological clock. This “master clock” also controls body temperature, hunger, thirst and our moods. While circadian rhythms are innate, the genes in cells throughout our bodies also have their own clocks that can be disrupted by environmental cues, potentially interfering with the body’s hormonal and metabolic systems.

Ordovas recently collaborated on a study of severely obese women that identified the presence of such peripheral circadian clocks in fat cell genes. They tested the activity of these fat cell clocks as well as triglyceride and cholesterol levels at six-hour intervals during a 24-hour period and found clear rising and falling patterns. The research offers a clue to how fat cell metabolism affects obesity and cardiovascular disease.

“Genetic factors alone do not put someone at risk,” Ordovas says. “You need the environmental trigger, and that is what we are trying to understand: the triggers of our genome so we can silence the mutations we all carry that have the risk of disease.” **TN**

Gail Bambrick, a senior writer in Tufts’ Office of Publications, can be reached at gail.bambrick@tufts.edu.





The search for ways to
prevent muscle loss as we age
goes to the very fiber of the problem

POWER PLAY

BY JULIE FLAHERTY

PHOTOGRAPHS BY EVAN SAINT CLAIR

T

HINK OF IT AS THE MUSCLE EQUIVALENT OF OSTEOPOROSIS. JUST AS OUR BONES TEND TO become weaker and more brittle as we get older, our muscles are predisposed to wither with age. Starting as early as age 30, muscle mass begins to decline by about 1 percent—about a third of a pound—a year.

If you haven't heard much talk of sarcopenia before, it's likely you will soon. Physicians, caregivers and even drug companies "are realizing that muscle loss is something they really need to pay attention to," said Professor Roger Fielding, Ph.D., N93, who studies muscle and its mysteries at the Jean Mayer USDA Human Nutrition Research Center on Aging (HNRCA) at Tufts.

The flood of retiring baby boomers has lent some of that urgency. The fastest-growing segment of the older population is people over the age of 85, and more of them are living independently. Yet a significant number of older adults lack the muscle strength to get up out of a chair, climb a flight of stairs or walk a quarter mile. Not only does that limit their ability to get around, it places them at an increased risk of falling, which can lead to hip fractures, long hospital stays and a cascade of health problems. One estimate put the direct health costs of disabilities caused by sarcopenia at \$18.5 billion in 2000. No wonder the president of the International Association of Gerontology and Geriatrics recently told the *New York Times*, "In the future, sarcopenia will be known as much as osteoporosis is now."

Fielding, who directs the Nutrition, Exercise Physiology and Sarcopenia Laboratory at the HNRCA, estimates that roughly 10 to 20 percent of seniors are at risk of losing some of their independence because of sarcopenia. While some amount of muscle loss is inevitable and even acceptable as we age, he believes that many disabilities could be prevented if older people were able to hold on to their muscle mass, and more specifically, their muscle function.

MASS VS. STRENGTH

Our bodies are constantly breaking down old muscle and building new muscle. But as we get older, something seems to slow down the assembly process; even highly trained athletes are less able to develop new muscle as they age. By the time they are 80 years old, marathon runners and weight lifters see their peak levels of performance cut in half.

Fielding believes there may be a disordered response to the stimuli that induce muscle growth, and has been looking carefully at a group of signaling proteins that may be involved in the confusion. Muscle cells also seem to get fatter with age. Not only do they tend to store more lipids—which would make sense if they are less adept at burning fat for energy—they actually start to synthesize more of it. The Tufts researchers have even found genetic triggers for the process.

“It means that there is a very distinct program that is activated with aging that causes the muscle to have a greater ability to make more lipid,” Fielding said. He suspects that having all that fat sitting around could be wreaking havoc with the muscle-building system.

But muscle building is only part of the picture. Although muscle mass—the actual size of those biceps, quads and other skeletal muscles that move us through our lives—begins to decline in the third decade of life, our muscle strength actually holds up pretty well, until about age 50.

“When we are young we probably have more muscle than we really need,” Fielding explained. “There is probably enough reserve for a while.”

The bad news is that after age 50, strength really begins to ebb so that over the course of a lifetime, the loss of muscle strength far outpaces the loss of muscle mass.

Not surprisingly, people who exercise do a better job of retaining both the size and strength of their muscles as they age; the adage “use it or lose it” has plenty of evidence behind it. And even if you do lose it, there is hope of getting some of it back.

In the mid-1980s, researchers at the HNRCA broke new ground when they showed that a small group of men, ages 60 to 72, improved their muscle strength by 120 percent when they did high-intensity strength training for 12 weeks. In the 1990s, Miriam Nelson, Ph.D., N85, N87 now director of the John Hancock Research Center on Physical Activity, Nutrition and Obesity Prevention, followed a larger group of 50- to 70-year-old sedentary women for one year. The women lifted free weights twice a week for 40 minutes a session. By the end of the study, their strength had increased an average of 75 percent. Additional studies left researchers satisfied that starting even older people on a resistance-training regimen does increase their muscle mass and strength.

But several questions remain: Can preserving muscle prevent or delay the kind of functional losses that hamper a person’s ability to live independently? And if so, what specific exercises work best?

STRENGTH VS. POWER

Mass and strength, while important, don’t interest Fielding nearly as much as muscle power. Power takes into account not only how much force a muscle can muster, but how fast it can generate it. Some studies have shown that older people who have problems getting around are more likely to have low muscle power than their younger or more mobile counterparts. In practical terms, an older person with poor muscle power might not be able to walk with confidence, or quickly prevent himself from falling down when he trips. “Loss of muscle performance seems to be a stronger predictor of loss of function, and possibly even disability, than loss of muscle mass per se,” Fielding said.

In studies conducted in the Nutrition, Exercise Physiology and Sarcopenia Laboratory, the speed component of muscle power seems to be an Achilles’ heel for seniors. The researchers measure power by having test subjects kick out while a torque-assessing machine, called an isokinetic dynamometer, provides resistance.

“You can measure the power at really slow speeds, when people are contracting their muscles very slowly, or you can dial it up and measure the power output at very fast speeds, so they are really kicking out very quickly,” Fielding said.

As expected, the older test subjects trailed behind the power output of their young or middle-aged counterparts at the slowest speeds. “But what’s really interesting,” Fielding said, “is if you ask them to move faster, the difference in power output is much more dramatic,” with the older test subjects producing almost no power at the highest speeds.

Does reduced muscle size explain the loss of power? Not the case. Even accounting for the seniors’ reduced muscle mass, which the scientists calculated from CT scans, the older subjects were disproportionately weak when they had to move quickly.

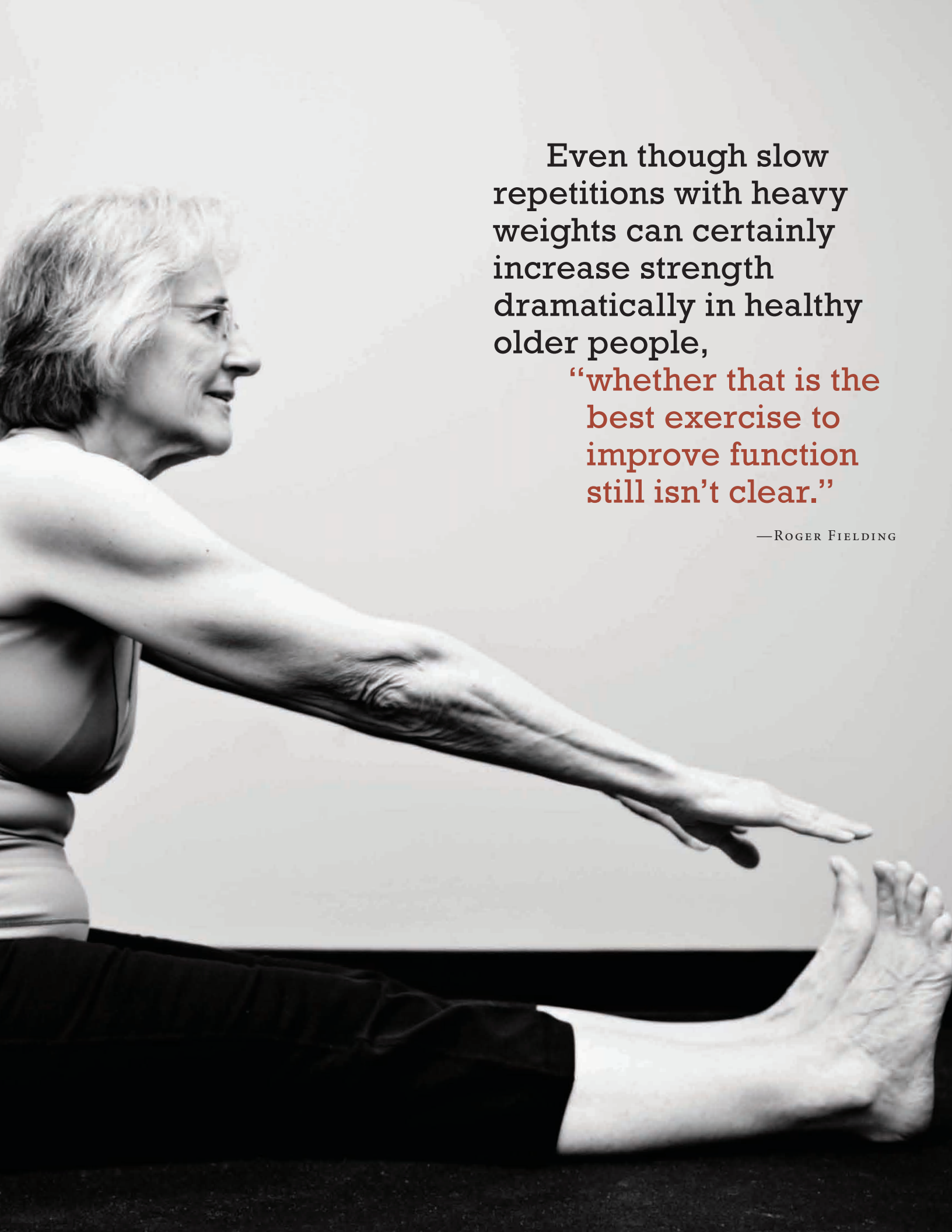
The researchers then took a look at muscle at the cellular level. Human muscles are made up of different kinds of fibers, known as fast twitch and slow twitch. Slow-twitch fibers are experts at slow, sustained efforts, such as holding a yoga pose, while fast-twitch fibers are called into play for quick, forceful actions, like kicking. Some muscles, like the tibialis anterior in the front of the leg, which stabilizes your ankle when you walk on uneven ground, are mostly fast-twitch fibers. Others, like the soleus muscle in the back of your calf, which helps support you when you are standing, are almost 100 percent slow twitch. Many muscles are a mixture of both, giving humans the dynamic range they need to stand in line at the checkout but also dodge a wayward shopping cart.

To see whether it is those fleet, fast-twitch fibers that might get weaker with age, the researchers turned to the microscopic equivalent of a Nautilus weight-training machine. Taking individual, millimeters-long muscle fibers—both fast- and slow-twitch—biopsied from older volunteers, they sutured the ends to plates in the tiny machine to measure force. They then flooded the fibers with calcium ions—the same way the body signals a muscle to work—and the fibers contracted, pulling on the plates. The researchers then repeated the test a decade later, using new muscle fibers from the



IN 1988, PROFESSOR IRWIN ROSENBERG, M.D.,

then director of the HNRCA, said it was time to put a name to the noticeable decline in lean muscle mass that affects almost all people as they age. He suggested sarcopenia, taken from the Greek words *sarx* (flesh) and *penia* (loss). Is withering muscle just a normal part of getting older, he asked, or is it a disease? And if it is a disease, how bad does it have to get before it is diagnosed and treated?



Even though slow repetitions with heavy weights can certainly increase strength dramatically in healthy older people,

“whether that is the best exercise to improve function still isn’t clear.”

—ROGER FIELDING

same test subjects. The results were virtually identical.

“Over 10 years of aging, there was no change in either the slow-twitch or fast fibers in how much force they can generate,” Fielding said.

THE NERVE OF SOME MUSCLES

If the muscle fibers themselves aren’t losing their pep, Fielding surmised, perhaps the problem is a communication breakdown. The brain transmits its commands to the muscles (pick up the fork, swat that fly) through neurons, cells that pass along messages through chemical and electrical signals. Fast-twitch muscles are controlled by a specific kind of large motor neuron, while slow-twitch muscles get their cues from their own, smaller motor neurons. Both types of neurons are located in the spinal cord and send out missives to the muscles through long, hair-like extensions.

Fielding points out that the big motor neurons are more susceptible to the oxidative stress that injures cells with aging, and tend to die off faster than the small motor neurons. Thus, older people have fewer of the fast motor neurons than younger people do.

To see whether it is this lack of fast-twitch neurons that leads to disability, the HNRCA researchers again had test subjects perform knee extension exercises, but this time they also monitored the electrical impulses in the muscles with an electromyograph. Younger test subjects showed a rise in electrical activity as they kicked out at higher and higher speeds, while the electrical impulses in the mobility-limited seniors stayed flat. It’s a clue that their fast-twitch muscles might not be receiving their messages.

The findings have led researchers to revisit the traditional strength-training routine—marked by drawn-out dumbbell raises and slow-mo leg curls. Even though slow repetitions with heavy weights can certainly increase strength dramatically in healthy older people, “whether that is the best exercise to improve function still isn’t clear,” Fielding said. “You certainly get more improvements in power if you do things faster.”

Could the antidote for slower muscles be faster exercises? Fielding’s lab conducted a small study of 57 women over age 65 with limited mobility; they performed high-speed leg-press and knee-extension exercises on an exercise machine three times a week for 12 months. There were not robust changes in their muscle power. But the researchers are working on another version of the experiment, this time looking at the same exercises done quickly with high resistance and quickly with light resistance. “We think maybe it’s the high velocity and not the force that is necessarily important,” Fielding said. Research continues to hone in on the ideal intensity, speed and frequency of exercises to keep older people functioning longer.

NUTRITIONAL SYNERGIES

Fielding’s lab is also exploring the synergies between strength training and nutrition, particularly when it comes to protein, an essential building block of muscle. Although most Americans eat more than the Recommended Daily Allowance of protein (0.8 grams per kilogram of body weight for adults), some data suggest that 20 to 25 percent of seniors consume less than they should—perhaps a side effect of the “tea-and-toast” diet some older people fall into because of diminished appetite, tooth loss or difficulty preparing meals.

The solution may not be as simple as telling seniors to drink more milk or eat more eggs. When it comes to building muscle, not all proteins are created equal. “There may be specific types of protein or specific amino acids in proteins that may have very strong pro-anabolic [muscle-building] potential in muscle,” Fielding said. He points to substantial evidence in animal and human studies that branched-chain amino acids, which are abundant in whey protein, can actually stimulate muscle development, especially when they are consumed right after exercise.

With that in mind, the sarcopenia lab is studying several dozen men and women, ages 70 to 85, who are taking either a whey protein pill or placebo after strength training. Researchers will be assessing muscle mass and function changes over six months.

Pharmaceuticals may also play a role in future treatment of sarcopenia. Drug companies that once paid little heed to muscle loss are investing in sarcopenia research, looking for a product that can serve the burgeoning consumer base of aging baby boomers. Fielding, for one, has welcomed their interest, noting that some elderly people, either due to heart disease, arthritis or other illnesses, simply won’t be able to get all the help they need from exercise.

“It could be exercise in combination with the right [drug] therapy that could optimize outcomes,” he said. “I think that this very much needs to be a partnership.”

As part of the global ramp up in sarcopenia research, the National Institute on Aging is funding the largest and longest study to date on physical activity in older adults. The Lifestyle Interventions and Independence for Elders (LIFE) study, being conducted at Tufts and seven other institutions across the country, will follow 1,600 mostly sedentary people ages 70 to 89 for two to four years. In addition to determining the effects exercise and health education have on mobility, cognitive function and heart health, the study will look specifically at whether exercise can prevent falls and keep people from losing their ability to generally care for themselves.

In the meantime, Fielding is helping lead an academic-industry task force that is proposing a clinical definition of sarcopenia, one that will help physicians make diagnoses and develop treatment plans. It recommends testing whether a person can walk four meters, or about 13 feet, in four seconds, an assessment that can be done easily in any doctor’s office.

Ultimately, the impact of muscle loss is hard to sort out from the other illnesses that tend to come with aging. Chronic kidney disease, Type 2 diabetes and congestive heart failure can all speed up sarcopenia, while obesity and arthritis are themselves risk factors for loss of function.

But Fielding, who has worked closely with elderly volunteers throughout his career, needs no convincing about the pain and frustration sarcopenia causes.

“What I see is that there are a lot of older people for whom muscle weakness and loss of muscle mass really are a root cause of their lack of independence, their lack of mobility, their increased likelihood of becoming disabled,” he said. “I believe that.” **TN**

Julie Flaherty, the editor of this magazine, can be reached at julie.flaherty@tufts.edu.



My Year in Afr

A 25-country journey yields hundreds of ideas for ending hunger and poverty

BY DANIELLE NIERENBERG, N01 PHOTOGRAPHS BY BERNARD POLLACK

ALONG THE SHORELINE OF THE GAMBIA River, a group of women have reduced hunger for their families with the help of a certain briny mollusk. To do this, the 15 communities in the Women's Oyster Harvesting Association—a total of nearly 6,000 people—had to agree to close one tributary in their oyster territories for an entire year and to lengthen the “closed” season in other areas.

These steps were difficult in the short term. But by the following season, the oysters were larger, and so was the price they commanded. So far, customers have been willing to pay a little bit more. Meanwhile, the harvesters—many of them immigrants from surrounding nations and the poorest of the poor in Gambia—are building hatcheries to

further boost the wild stocks, eyeing upscale markets such as hotels and restaurants that cater to tourists and putting on educational plays about preserving the mangrove trees that serve as shellfish habitats.

Oysters may not come to mind when you think about eliminating hunger and poverty. And it's true that oysters alone cannot address the tragedy of an estimated 925 million people worldwide who are undernourished.

What can? Typically experts cite higher-yielding seed varieties, dams to irrigate vast tracts of land and mountains of fertilizer to rejuvenate depleted soil. Yet seafood provides about 15 percent of the calories and a third of the protein that people consume—and more than that in poorer nations, including much

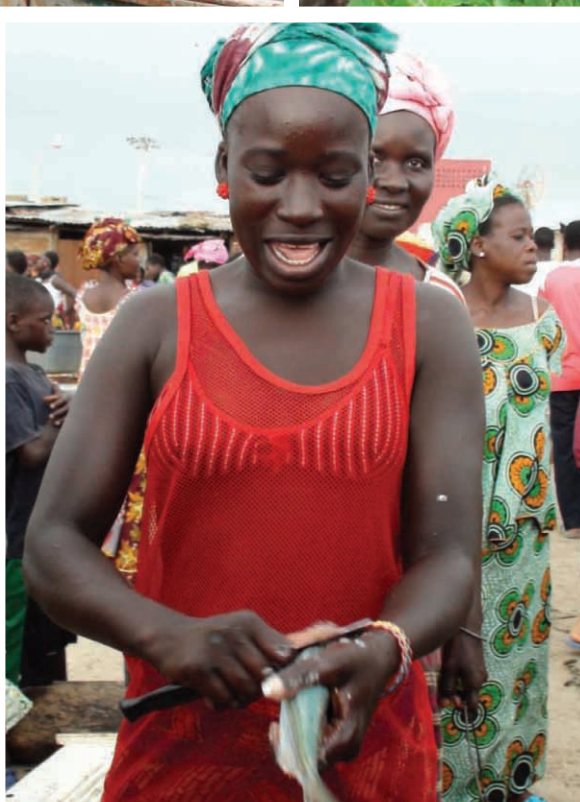
of West Africa. So fisheries will, in many regions, be lasting sources of food and income for poor communities.

It was on a journey to find such overlooked solutions to hunger that we came upon this group of oyster harvesters. In 2009 and 2010, as part of a Worldwatch Institute project called Nourishing the Planet, photographer Bernard Pollack and I traveled to 25 sub-Saharan African nations to hear people's stories of hope and success in agriculture.

This journey has paid off in a trove of innovation. On dozens of farms in Malawi we saw yield-boosting techniques used by more than 120,000 farmers, such as planting nitrogen-fixing trees that enrich the soil for corn crops and that increase harvests fourfold, with



Danielle Nierenberg visits with Rwandan farmers who use the methane from decomposing cow manure to cook for their families; fishing boats in Nouakchott, Mauritania; cleaning the day's catch in a market outside Banjul, Gambia; spinach and kale grow in dirt-filled sacks in Kibera, a slum of Nairobi, Kenya.



ica

no added fertilizer. Across West Africa, we met farmers and shopkeepers who are using simple storage systems to prevent cowpeas, a major crop in the region, from rotting. If half of the area's cowpea harvest were stored this way, it would be worth \$255 million annually to some of the poorest people in the world.

We were also interested in models that have applications outside of Africa. A rooftop gardening cooperative that is feeding people in Dakar, Senegal, offers guidance for neighborhoods struggling with food shortages in inner-city New York. Individually, the hundreds of millions of small-scale farmers and their families who are the majority of the world's poor would appear to possess little power in the face of global issues like hunger, climate change and the availability of water. But if each of their innovations were scaled up to bring food to the tables of not one farmer but 100 million or more, as well as to the consumers who depend on them, it could change

the entire global food system.

Here are just a handful of the hundreds of stories we heard:

SACKS OF HOPE

It's nearly impossible to describe how many people live in the crowded streets of Kibera, a neighborhood in Nairobi, Kenya. Everywhere you look there are people walking, working, selling food or tennis shoes, sorting trash, herding goats. Anywhere from 700,000 to a million people live mostly in wooden shacks with tin roofs in an area just over half the size of Central Park in Manhattan.

Kibera looks and smells like the most hopeless place on the planet. But the women farmers I met there are actually thriving by raising vegetables on what they call "vertical farms." Using tall sacks or old cement bags filled with dirt, the women grow crops in the sacks by poking holes at different levels and planting seeds. They're not only growing

food to eat and to sell, they're helping dispel the myth that urban agriculture only feeds the poor and hungry in cities. By growing organic seeds of traditional African vegetables, like spider plant and African eggplant, the Kibera farmers are becoming a source of seed for rural farmers. There aren't many local seed companies in eastern Africa, so the Kibera farmers are providing a much-needed resource.

The women told us that more than 1,000 of their neighbors are growing food in a similar way—something that Red Cross International recognized during 2007 and 2008, when there was conflict in the slums of Nairobi. No food could come into these areas, but most residents didn't go hungry because so many of them were growing crops—in sacks, on vacant land or elsewhere.

All the women told us that they saved money because they no longer had to buy vegetables at the store. They claimed the food



Nierenberg tours the urban farms in Kibera; briquettes for cooking made by a farmer in Nairobi; eggplant harvested by the Bakau Women's Garden Project in Banjul, Gambia; an Ethiopian farmer who created his own water pumping system.



tastes better because it was grown organically—but it also might result from the pride of growing something themselves.

WATER HARVEST

We met Kes Malede Abreha on his farm near Aksum, Ethiopia. Roughly eight years ago, this small, wiry, soft-spoken man with a neatly trimmed beard started digging for water on his very dry land. His neighbors thought he was crazy, telling him he would never find water. His wife left him, moving their children into town.

But about 16 meters down, Kes Malede hit water. After his wife returned, he began sketching ways that would make it easier to “push” that water to the surface. He developed a series of pumps. The one he’s using now is built from inexpensive wood, iron and metal piping, all available locally. Not only does this simple pump push or lift water to the surface, it irrigates his fruit trees and crops, including teff, sorghum, tomatoes and other vegetables, through a system of hoses.

Before he developed his water-management system, Kes Malede and his family lived in a one-room house and could grow only enough staples to feed the household. Today, the family lives in a bigger house, grows a diversity of crops and raises chickens, cattle, goats and bees. Kes Malede’s investment in

more beehives has not only provided income from honey production, but helps pollinate his fruit and vegetable crops. He’s now helping other farmers—the same ones who thought he was crazy—by teaching them about his water-lifting system and by selling modern, box-style beehives that allow farmers to manage the bees better and harvest more honey.

BRIQUETTE BY BRIQUETTE

Charles Onyoni Onyando picked up several briquettes made out of paper, potato and banana peels, dry leaves and newsprint, which he made at his home in Nairobi, Kenya. “We have all these resources around us,” he told us, “but no one knows how to use them.”

Onyando does. He collects organic waste from his neighbors, combines it with paper, and shreds it with a crank-powered shredder to form circular briquettes that are longer lasting—and more environmentally friendly—than charcoal.

Through trial and error, Onyando learned what combination of organic waste and water made the best-burning briquette with the least smoke. Each briquette lasts from six to seven hours and produces the equivalent of seven kilowatts of electricity—enough to cook two kilograms of dried beans.

He sells his briquettes and teaches other farmers how to make them. He’s been asked

to hold workshops as far away as Cameroon. He sells the briquettes for roughly twice what they cost him to make.

GREEN GOLD OF GHANA

In Anamaase, Ghana, the New Frontier Farmers and Processor group is led by the village’s chief, Osbararima Mana Tibi II. He said he took it upon himself to help revive farmland and improve the lives of the farmers in his village of about 5,000 people.

To help restore the soil, they’ve started growing nitrogen-fixing trees, including moringa, the so-called “green gold of Ghana.” When processed into powder, the moringa leaves are very high in protein and can be manufactured into formula to feed malnourished children. Because the moringa processing “generates a lot of trash,” says Chief Tibi, the stalks and other leftover parts of the plant can be used as animal fodder. New Frontier is also providing moringa seedlings to a group of 40 people living with HIV/AIDS, who use moringa as a nutritional supplement and grow it to earn income.

The group is doing some of its own community-based research by testing the effect moringa has on livestock. According to their studies, feeding sheep moringa leaves has reduced fat in the meat dramatically, “making it taste more like bush meat,” Tibi said.



It lasts longer than regular mutton when it is preserved. They've also found that goats that eat moringa are healthier.

FUEL FROM COWS

Helen Bahikwe, a farmer in the Gicumbi District of Rwanda, began working with Heifer International in 2002. She now has five cows—and an excess of manure. With a subsidy from the government as part of the National Biogas Program, Helen built a biogas collection tank, which allows her to use the methane from decomposing manure to cook for the 10 members of her family. She no longer has to collect or buy firewood, which saves time and money and protects the environment. The fuel also burns cleaner.

And, according to Mukerema Donatilla, another farmer we met, biogas “helps with hygiene” on the farm because they can use hot water to clean cow udders before milking as well as the milk containers.

A NEW MIRACLE FOR MALAWI

Most Malawians think of traditional foods, such as amaranth and African eggplant, as poor-people foods grown by “bad” farmers. But these crops might hold the key to solving hunger, malnutrition and poverty in Malawi—and in other African countries.

Those are just two of the crops that Stacia

and Kristof Nordin grow on their small plot of land. They came to Malawi in 1997 as Peace Corps volunteers. They now call the country home, and use their garden as a demonstration plot for composting, water harvesting, intercropping and other methods that help build organic matter in soils, conserve water and ensure agricultural diversity.

Nowhere is this kind of help needed more than in Malawi, a nation of 14 million in southeast Africa that is among the least developed and most densely populated on earth. The country might be best known for the so-called “Malawi Miracle.” Five years ago, the government decided to provide fertilizer subsidies to farmers to grow maize. Since then, maize production has tripled, and Malawi has been touted as an agricultural success story.

But the way the corn is refined, says Kristof, makes it “kind of like Wonder Bread,” leaving it with just two or three nutrients.

“Forty-eight percent of the country’s children are still nutritionally stunted, even with the so-called miracle,” Kristof says. Rather than focusing on maize, a crop that is not native to Africa, the Nordins advise farmers that there is “no miracle plant—just plant them all.” Malawi has more than 600 indigenous and naturalized food plants to choose from. Maize, ironically, is one of the least-suited to this region because it’s highly susceptible to pests, disease and erratic rainfall.

Unfortunately, the “fixation on just one crop,” says Kristof, means that traditional varieties of foods are going extinct—crops that already are adapted to drought and heat, traits that become especially important as agriculture copes with climate change.

Everything from garden beds to the edible fish in the pond to the composting toilet has an important role on the Nordins’ property. And although the neighbors have been skeptical, they’re impressed by the more than 200 fruits and vegetables grown on this small plot, providing a year-round supply of food for the Nordins and their neighbors.

CHANGES FOR THE MAASAI

We met with the group of Maasai pastoralists in the community primary school. It was humbling to see so many people—many wearing the traditional brightly woven clothes, beads and elaborate earrings—come through the door to greet us.

Over the years, livestock keepers like the Maasai in Kenya have been pushed out of their traditional grazing lands to more arid regions. Governments are increasingly promoting cross-breeding of native breeds with exotic breeds—breeds that were designed to gain more weight and produce more milk. The problem is that these breeds have a hard time adapting to sub-Saharan Africa’s dry conditions, as well its pests and diseases. As a result, pastoralists who adopt these breeds have to spend more on pesticides and antibiotics to keep cattle healthy. According to one of the community elders, the “old breeds could go 40 kilometers (for food and water) and come back,” but the new breeds can’t tolerate the distance or the heat.

That’s one reason why different pastoralist communities sometimes clash: When cattle can’t travel far for water, livestock keepers have to find it elsewhere, often at sites that are traditionally used by other communities. A man wearing a Harley-Davidson hat along with his Maasai shawl acknowledged that although they fight with other communities over resources, “they’re just like us,” trying to survive with very little support from the government or NGOs.

What surprised me most about these livestock keepers is their understanding that the world is changing. Although most of these people don’t have access to cable TV or even radios, they are aware that climate change is likely responsible for the drought plaguing much of East Africa, killing thousands of livestock over the last few months.

They know that many of their children won’t have the same lives that their ancestors have had for centuries. Many will choose to go to the cities, but they said if their children become “landed,” they want them to maintain links to the pastoralist way of life. And they said that for some of them, livestock is what they do best and what they have a passion for—and that they should be allowed to continue doing it. **TN**

Danielle Nierenberg, N01, an expert on sustainable agriculture, is a project director for the Worldwatch Institute, a Washington, D.C.-based environmental think tank. This article was adapted from State of World 2011: Innovations that Nourish the Planet (www.nourishingtheplanet.org) and her trip blog.

In a nation of tubby tabbies and plump pooches, Tufts experts give the scoop on good nutrition for our pets

kibble confusion

BY JACQUELINE MITCHELL ILLUSTRATION BY HADLEY HOOPER

WHEN THE 8-MONTH-OLD PUPPY ARRIVED AT THE Cummings School of Veterinary Medicine at Tufts, he wasn't bouncing around the waiting room like most healthy pups do. The dog was limping and began having seizures. Working with surgeons and critical care specialists, Dana Hutchinson, a resident in veterinary clinical nutrition, also discovered the pooch had low bone density.

It turned out the dog's devoted owner, intending to feed the pup a healthy diet to help control episodes of diarrhea, had been giving him home-cooked meals of hamburger, rice, broccoli, eggshells and vitamin supplements. But the diet, like most homemade ones, wasn't balanced, and the dog had become severely calcium deficient, probably getting 25 percent of what a growing pooch needs. The diet also lacked myriad other nutrients.

"The owner had no idea. She thought she was doing the right thing," says Hutchinson.

If we're confused about our own nutrition, we're even more uncertain about what to feed our canine and feline companions. The obesity epidemic that is affecting human health has spread to our pets, which, like many of us, are eating more and exercising less. And as Americans increasingly choose local, organic and unprocessed foods for their own tables, some animal owners have become wary of mass-produced pet foods and are looking for other options.

So what's a conscientious pet owner to do? Veterinarians working in a relatively new specialty, veterinary clinical nutrition, are providing owners and other clinicians with science-based advice about diets that will keep their pets healthy and fit. Lisa Freeman, a Tufts-educated veterinarian who earned her Ph.D. from the Friedman School in 1996, and the residents she has trained at the Nutrition Service at Tufts' Foster Hospital for Small Animals, have done some groundbreaking work on the role of nutrition in preventing and treating disease in animals.

BATTLE OF THE BULGE

Obesity carries many of the same health risks for companion animals as it does for humans: diabetes, arthritis and potentially, a shortened lifespan. Research in the United States and the United Kingdom puts 25 to 40 percent of middle-aged cats and dogs in the overweight or obese category. Some scientists say the rate is even higher: A recent Cummings School study found that 70 percent of otherwise-healthy cats were overweight or obese.

Don't think that applies to your cat? That might be part of the problem. Veterinary nutritionists suspect that in wealthier countries like the United States, we may have forgotten what a healthy animal should look like.

Freeman says there is an easy way to do a weight reality check. Hold your hand out, palm up. Feel your



palm just below your fingers. If that feels something like the side of your dog or cat, your pet needs to shed some pounds. Now flip your hand over and make a fist. Run your other hand along your knuckles. A dog or cat whose ribs feel like that is too thin. Finally, hold out your open hand, palm down, and feel those knuckles again. That's what a fit pet feels like. If you're not sure how your pet measures up, consult your veterinarian.

Our dogs and cats don't go to restaurants or make impulse junk-food purchases at the supermarket, so how did they get so pudgy?

Like us, animals today expend less energy than their ancestors did, and they're spending more time indoors, with ready access to food. But some of the reasons our pets are plump are unique to them.

"We've really gotten good in veterinary medicine at advocating neutering," says Kathryn E. Michel, V83, an associate professor of nutrition at the University of Pennsylvania School of Veterinary Medicine. "But neutering does increase the risk of weight gain."

And thanks to the pet food industry's extensive taste tests, dog and cat food is yummier than ever, prompting pets to keep nibbling kibble even after their hunger is satiated. "Ten years ago, dogs used to stop eating when they were full," says Freeman, J86, V91, N96. "Now dog food tastes really good, so pets often continue eating even after they're full."

For a more insidious reason behind pet obesity, take a look at pet treats, "the fastest-growing segment of the pet food industry," says Hutchinson. Shaped like bones or fire hydrants, fish or mice, pet treats appeal to the human shopper, but can pack a caloric punch many owners don't even realize.

"Often, people are feeding their pets the right amount of food [at mealtime], but the pets are just getting too many extras," says Michel.

Given that a cat or a small 10-pound dog needs as few as 250 calories a day, even a couple of extra treats can pack on pounds. "A treat may seem small to us," says Freeman, "but if you think about the calories, it might be a big percentage [of a pet's caloric requirement]. It might be like us eating a Big Mac."

Dog biscuits range from 5 to more than

300 calories, and some "dental bones" contain more than 1,000 calories. Even rawhide strips can have a hefty number of calories. A general rule is that owners should aim for treats to comprise 10 percent or less of a pet's daily caloric intake. For a small dog or cat, that means limiting treats (and table food) to less than 25 calories each day.



"A treat may seem small to us, but if you think about the calories... it might be like us eating a Big Mac." —LISA FREEMAN, J86, V91, N96

"More and more pets are viewed as members of the family, so when you have that orientation, you are predisposed to indulge the pet," says Michel. On top of that, owners tend to misinterpret their pets' behavior around treats, especially dogs, which can appear incredibly ravenous at mealtime. "Pets beg, regardless of being hungry," says Debbie Linder, V09, a resident in veterinary clinical nutrition at the Cummings School. "They develop patterns, and they train us."

FIT FOR LIFE

So how do you get your cat off the couch? One strategy for blending exercise with portion control is to put your pet's entire meal inside a treat ball, or hide portions of his meal all over the house. For very food-motivated animals, try opening a can of wet food, then walking up and down a flight of stairs and having your pet follow you. Take your dog for an extra walk around the block or trick your cat into getting exercise with toys like lasers and feathers.

But don't rely too much on exercise to trim the tabby down. "It's important to realize that if a cat needs to lose weight, you're not going to get that loss just from exercise," says Hutchinson. "Exercise is great. It helps increase lean body mass. But to actually lose weight, you have to restrict calories."

Some, but not all, pet food manufacturers list the calories on the package, although that's only required for foods labeled as "light," "low calorie" or "reduced calorie," says Freeman. If your brand doesn't list the calories, look for that information on the

company's website or by calling or writing the manufacturer.

Even foods labeled as light or marketed for weight control can vary tremendously in calories. "You may buy a pet food that is marketed as a weight-loss diet, and it may have twice as many calories [as another brand]," says Linder.

In a study published in the January 1, 2010, issue of the *Journal of the American Veterinary Medical Association*, Freeman and Linder examined 93 commercial dog and cat foods marketed as weight-management diets. They found that dry dog foods ranged from 217 to 440 calories per cup and also varied wildly in price—from 4 cents to more than \$1.10 per 100 calories. The study also concluded that "the vast majority of foods' directions would result in no weight loss or even weight gain," says Freeman.

As for skipping the pet food aisle altogether, while human nutritionists extol the virtues of fresh foods and home-cooked meals to avoid the high salt and fat content in processed foods, when it comes to your pet, "it's not better to cook for them," Freeman says.

"Unless they've been formulated by a veterinary nutritionist," Freeman says, "almost all of the homemade diets I see owners feeding are very nutritionally unbalanced."

Even a tiny change "can easily make a balanced diet unbalanced," says Hutchinson, noting that "just substituting white for brown rice can completely alter the diet."

So while you can cook for your pet, Freeman says, "in many ways it's probably less desirable. People are often surprised to hear that. They say, 'In that case, I'd rather open a can.'" **TN**

A version of this story first appeared in the Winter 2010 Tufts Veterinary Medicine magazine. Jacqueline Mitchell can be reached at jacqueline.mitchell@tufts.edu.



Robin Kanarek

Interim Dean

Nutritional behaviorist Robin Kanarek to take the helm July 1

THE TUFTS UNIVERSITY PSYCHOLOGIST ROBIN KANAREK, WHO HAS gained international acclaim for her work in nutrition and behavior, has been appointed interim dean of the Friedman School of Nutrition Science and Policy, effective July 1. A member of the faculty for 34 years, Kanarek is a former dean of the Graduate School of Arts and Sciences.

Dean Eileen T. Kennedy announced earlier this year that she would step down June 30 after leading the Friedman School for seven years.

Kanarek, the John Wade Professor in the School of Arts and Sciences, joined the psychology department in 1977 and has been an adjunct professor at the Friedman School since 1989.

"I am very honored to be chosen as the interim dean of the Gerald J. and Dorothy R. Friedman School of Nutrition," says Kanarek. "In the last 30 years, I have had the pleasure of watching nutrition at Tufts grow from an interest of a few people to a full-fledged school of international renown. I look forward to working with all of the members of the Friedman School community."

Throughout her career at Tufts, Kanarek has been active in undergraduate and graduate education. In 2000, the undergraduate student senate named her Professor of the Year, and she was honored by the Graduate School of Arts and Sciences in 2009 for outstanding contributions to graduate education. Kanarek chaired the Department of Psychology from 1996 to 2002, when she was appointed dean of the Graduate School of Arts and Sciences, a position she held until 2006.

In her research, Kanarek has investigated a range of issues in nutrition, including the effects of nutritional variables on the development of obesity and diabetes; the physiological and behavioral factors influencing diet selection in experimental animals and humans; and the roles of nutrients and physical activity in determining the consequences of psychoactive drugs. Most recently, she has been studying the effects of obesity and diabetes on cognitive behavior, and the relationship between nutritional variables and cognitive behavior in children and adults.

She is an author of more than 100 publications, and has presented her research at conferences in this country and abroad. Kanarek is a member of the editorial boards of the *Tufts University Health and Nutrition Newsletter*, *Physiology and Behavior* and *Nutritional Neuroscience*; she is a former editor-in-chief of *Nutrition and Behavior*.

She has served as a member of the Committee on Military Nutrition Research for the National Academy of Sciences and on review committees for the National Institutes of Health, the U.S. Department of Agriculture and the National Science Foundation.

Kanarek holds a B.A. in biology from Antioch College and an M.S. and a Ph.D. in psychology from Rutgers University. She was a postdoctoral fellow in the Department of Nutrition at Harvard University and a research fellow in the division of endocrinology at UCLA.



Lost in Translation

A new movement is helping health care professionals communicate better and improve outcomes by Helene Ragovin

WHEN SOME TUFTS DENTAL students were learning how to communicate better with their patients, one repeatedly used the term “caries” to describe a common oral health problem. The teacher kept correcting him.

“Who uses the term ‘caries’ for ‘cavity’? No one. Only dentists,” said the instructor, Sabrina Kurtz-Rossi. “They were so involved in their own field and their own learning that they had forgotten how people outside the field talk.”

The use of discipline-specific language isn’t limited to dentistry. For health care students and practitioners, there is too often a gap between what the provider is intending to say and how their patients interpret and act on that information. Bridging that terminology gap is one goal of the growing field of health literacy, a movement designed to increase communication and understanding in health care.

“You’d think it would be so obvious, but health literacy has only recently been recognized on a national level by the surgeon general and the Institute of Medicine,” says Kurtz-Rossi, an adjunct clinical instructor who teaches a seminar on health literacy as part of the School of Medicine’s health communications program. The course, one of only a handful on the topic taught at medical schools across the country, draws students from the medical and dental schools, the Friedman School and other public health programs at Tufts.

The U.S. Department of Health and Human Services defines “health literacy” as the ability to read, understand and act on health information. “Within the field, we see it as much broader than that,” Kurtz-Rossi says. “Health literacy is a two-way street. It’s not only the skills the patient brings to the clinical encounter, but the skills of the health care provider and ability of the system to communicate health care information.”

The patients at greatest risk for not understanding what is being communicated include the elderly, those who haven’t completed high school, the poor and those for whom English is not the first language.

But they are not the only ones. “If you have a Ph.D. but know nothing about heart disease, and your doctor starts talking about angioplasty, you may not understand,” she says.

That leads to another element of expanding health literacy: promoting a shame-free environment when communicating with patients. “You don’t know who doesn’t understand and who may be too embarrassed to say so,” Kurtz-Rossi says.

During the past decade, more medical schools and schools of public health have recognized health literacy as a core competency for students. That wasn’t always the case. “One physician told me that 20 years ago when he was in training, he got marked down for using common language rather than medical terminology” when talking to a patient, Kurtz-Rossi says. “That’s changing now, but doctors need to almost unlearn what they’ve learned” when they talk to their patients.

“In medical school, you communicate with your students and colleagues in one way,” she says. “When you’re working with patients, you need to speak about health in ‘living room language.’”

It isn’t as simple as it sounds. “Sit down and try to write in everyday language about a health-care topic—it’s not so easy,” Kurtz-Rossi says.

For example, she says, “think about communicating risk. It’s a fairly complex concept. When you’re counseling patients about cancer treatment or other treatments, we expect people to understand the concept of risk and make life decisions based upon the information provided to them. Communicating the concepts is just as important as communicating the vocabulary.”

Culture also has a bearing on health literacy, Kurtz-Rossi says, and there are times when health care concepts and vocabulary literally don’t translate. “For example, in Navajo there is no word for chemotherapy,” she says. “If you’re working with an interpreter, not only the word, but the whole concept has to be explained.”

Eat Your Medicine

The science behind turmeric and oats by Herb Brody

TURMERIC, THE STUFF THAT GIVES curry its earthy flavor, has been credited with all manner of health benefits—from aiding digestion to relieving inflammation. It was the perfect candidate for study in the Vascular Biology Laboratory at Tufts' Jean Mayer USDA Human Nutrition Research Center on Aging, which investigates the therapeutic properties of different foods. "We know that certain things are good for your health—fruits and vegetables, nuts, and whole wheat," says the lab's director, Mohsen Meydani, DVM, Ph.D. "But why? How do certain foods help us be healthy and live longer? That's what we're trying to answer." The lab focuses on the role of foods in two areas in particular: the formation of blood vessels and the development of cardiovascular disease.

The lowdown on turmeric is that its main bioactive component—curcumin—may indeed promote good health. In fact, Meydani has discovered some new

properties. First, curcumin may help people lose weight. That's based on studies of mice, in which a curcumin-rich diet appeared to have a significant slimming effect. And second, the substance appears to help keep arteries healthy.

The idea of testing curcumin for weight control was a matter of putting two and two together. Meydani knew that curcumin inhibits angiogenesis, the growth of blood vessels. In cancer research, the effect has been exploited to impede tumors. He also knew that mice genetically engineered for obesity can avoid getting fat if they are injected when young with an anti-angiogenic drug, as has been shown in research at Harvard. "We figured we could make a connection here," says Meydani. "We know that curcumin is anti-angiogenic. So let's see what effect it has on weight gain." After all, he says, fat cells, like tumors, need blood to grow.

He and his team gathered up some 4-week-old lab mice and had them eat

a veritable McDonald's diet of fat-laden meals. Half the mice also consumed small amounts of curcumin—the human equivalent of a spoonful or two of turmeric daily. After 12 weeks, the curcumin-fed mice weighed, on average, some 10 percent less than the others.

While he knew that anti-angiogenesis played a part in slowing the growth of fat cells in the curcumin-fed mice, Meydani suspected there was more to the story. After all, the mice had been consuming a huge amount of calories. Were they simply excreting unused fat? On inspection, their droppings proved less fatty than the other mice's, so there had to be some other explanation. Meydani was forced to conclude that the curcumin had amped up their metabolism: "The mice were burning the fat more quickly," he says.

Should weight-conscious Americans start loading up on Indian spice? Not yet, says Meydani (though he confesses that turmeric is flavoring more and more dishes in the Meydani household). For one thing, he has yet to demonstrate the weight-control effect of curcumin on older mice that are already overweight.

Meanwhile, Meydani's lab is investigating curcumin as a hedge against atherosclerosis, the inflammatory disease of arteries that restricts blood flow and can cause heart attacks. Meydani believes curcumin may suppress the production of a protein that plays a key role in the disease, binding fatty acid molecules to vascular tissue. His experiments on cells cultured in a petri dish back him up. Now he wants to see if curcumin can prevent atherosclerosis in mice eating a high-fat diet.

On the opposite end of the blandness spectrum, Meydani has good news about oats. The grain is already widely promoted for health—it is the only food for which the Food and Drug Administration allows the claim of a cholesterol-lowering effect. Now the lab has discovered that a component of oats called avenanthramide, or AVEN, inhibits the proliferation of smooth muscles in the linings of blood vessels—proliferation that is a factor in atherosclerosis. AVEN also enables cells to produce nitric oxide, which helps relax the smooth muscles, further lessening the chance of a heart attack.



Mohsen Meydani

Health Works

Bacow Scholarship honors outgoing Tufts president by Mark Sullivan

FITNESS AND NUTRITION ARE CAUSES CLOSE TO LAWRENCE S. BACOW, whose President's Marathon Challenge has raised millions for the university's teaching and research in support of healthy living.

That's why the creation of an endowed scholarship fund in Bacow's name at the Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy is especially fitting. The scholarship has been made possible through the generous gifts of members of the Friedman School's Board of Overseers.

The Bacow Scholarship will provide support to educate the next generation of leaders focused on improving the health of individuals and communities across the country: the doctoral students studying with faculty at the school's John Hancock Research Center on Physical Activity, Nutrition and Obesity Prevention.

"I am touched to have this scholarship created in my name," Bacow says. "Research and education at the Friedman School are focused on encouraging everyone to lead healthier lifestyles. I am delighted that, through the generosity of the overseers, another terrific student will have a chance to pursue such a noble and important agenda."

Elizabeth Cochary Gross, N82, N88, a Friedman School overseer and vice chair of the school's Beyond Boundaries campaign, says the scholarship acknowledges the "incredible support" the president has given the Friedman School during his 10 years at the helm of the university.

"I got to know Larry well through the Friedman School naming festivities, and through the President's Marathon Challenge, which went from 25 runners in 2003 to 200 runners every year since," says Cochary Gross, who founded the school's alumni association and established its admissions office while a member of the faculty.

"His dedication of funds from each Marathon Challenge to the programs at Friedman, his work to help secure funds for the Hancock Center and his personal passion for a healthy lifestyle are all instrumental in his engagement at Friedman," she says. "I know funding for scholarships is a priority of his. It is also a priority for the Friedman School and, more specifically, for the Hancock Center at Friedman."

The director of the Hancock Center, Miriam Nelson, said she is delighted that the school will now have Bacow Scholars. "We're so excited—you have no idea," says Nelson, whose research and policy work has promoted healthy eating and regular physical activity in communities around the country.

"From the moment Larry Bacow came to Tufts, he has been such a champion of our work here at the center," Nelson says. "We started out with two people, and now we have a thriving international research center with more than 30 faculty, staff and students.

Larry has had a lasting impact on our work and on our trajectory."

Nelson continued, "I've been fortunate to spend many hours running with him, and have seen his personal commitment to student mentoring and teaching. I can't think of anything more fitting than to have a student at the Hancock Center who is a Bacow Scholar. It's the absolute perfect tribute to Larry Bacow's legacy."



President Bacow offers a congratulatory hug to Tess Guttadauro, A11, at the finish line of the 2011 Boston Marathon. She completed the 26.2-mile course in 3 hours, 58 minutes and 1 second.

What Your School Can Do For You



AFTER THREE WONDERFUL YEARS SERVING AS YOUR Executive Council president, I look forward to the energy and leadership of our new president, Abby Usen, N03. I am so proud to be a Friedman alumna and part of a network of people who are advancing nutritional well-being worldwide.

During my time as president, I have often been asked, "Why should I get involved, why should I give back, or what's in it for me?" Thinking about this, I've come up with a few reasons why you should get involved with the Friedman School Alumni Association:

Career Mentoring and Advancement: We have 729 Friedman School alumni registered for the Tufts Online Community (www.tuftsalumni.org) who are ready to network with you. Friedman School alumni are always looking to hire and promote other alumni.

Connecting: The alumni association has made an effort to connect with current Friedman students. Alumni can meet their future colleagues and help steer them into appropriate employment opportunities.

Reconnecting: There's nothing better than catching up with classmates, former advisors and favorite faculty members.

Educational Opportunities: All alumni are welcome to attend the school's Wednesday Seminar Series, also available online, in addition to various lectures throughout the year. Alumni are also eligible to take one class per semester at the school free of charge and have access to the Tisch Library through www.tuftsalumni.org.

Publications/Invitations: Let us know where you are so that we can send you this magazine, our newsletters and invitations to our receptions and events around the world.

Please contact me (sai.das@tufts.edu) or Abby (akusen@hotmail.com) if you are interested in being involved.

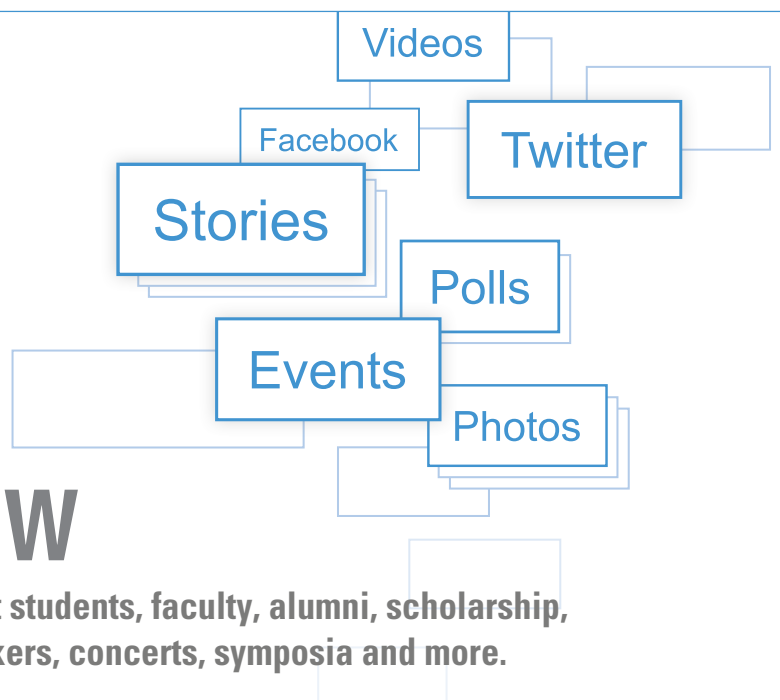
SAI KRUPA DAS, PH.D., N02
PRESIDENT, FRIEDMAN SCHOOL
ALUMNI ASSOCIATION

One place. Right now.

TuftsNow

Your source for news about students, faculty, alumni, scholarship, science, campus life, speakers, concerts, symposia and more.

<http://now.tufts.edu>



A Rocky Road to Success

AS A STUDENT IN THE AGRICULTURE, Food and Environment program, Asta Schuette, N10, studied companies that seamlessly weave environmental responsibility and local resources into their business models, reducing and recycling their way to a utopia of sustainability.

"You read these case studies and you think 'This is great; this is awesome!'" Schuette said. "To put it into practice, it's a whole other story."

Schuette has been puzzling over these issues ever since she and her partners, Alison Fong and Patrick Lynch, won a City of Boston competition last year to operate a food truck on City Hall Plaza. The judges were won over by their plan for Bon Me, a play on both the *bánh mì* Vietnamese sandwiches that are the center of their menu and the inherent goodness of the locally grown ingredients they hoped to feature.

But as their April 4 start date drew near, the trio had to face the cold, winter-weary facts of opening a food truck in Boston in the dead of spring, when nary a locally grown carrot, much less a daikon, can be found. "There is nothing left," Schuette said, "and nothing is growing yet."

Leaving a dainty environmental footprint will take some work, too. They talked briefly about putting solar panels on their bright yellow truck (a converted DHL van), until they realized it would spend most of its time parked in the shade. Composting would require hauling scraps back to their commercial kitchen in Malden and hoping to piggyback on someone else's pick up, since the volume of food scraps they would generate would be so low. And those biodegradable plastic forks that some of the big chain restaurants now feature? Fong was shocked to see that they cost six times the price of garden-variety throwaways, which could decompose their attempts at competitive pricing.

In short, they have had some tough discussions around their sustainability goals. The bottom line: "Sometimes you have to realign and rethink things. And I think

us all being young and being optimistic has been great for those conversations," Schuette said, recalling an internship at a smoothie chain where she had limited success persuading set-in-their-ways corporate executives to make changes to their supply chains.

As a start, Bon Me will have a one-at-a-time napkin dispenser, bags only on request and baking instead of grilling to save energy. The bread, tofu and liver (for the fresh-made paté) all come from local sources. "As summer comes along, we are certainly going to add specials that feature

local produce," said Fong, the chef, who plans sides like corn with miso butter and scallions and bok choy with onion oil and soy drizzle.

With dispositions as sunny as their van, they are confident they will overcome all the other obstacles with experience—and increasing sandwich sales, since placing standing orders with local farms and absorbing the cost of bio-forks become more feasible with volume. Just a few weeks into their run, Bon Me was doing brisk business, with a line that dwarfed those of the other two food trucks on the plaza.

Asta Schuette, N10



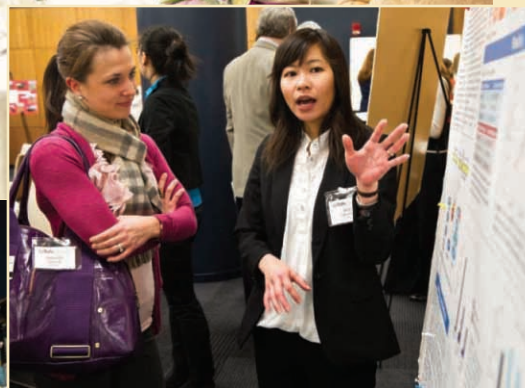
Reunion Moments

THIS YEAR'S ALUMNI ASSOCIATION AWARDS were presented at the reunion brunch on April 3. Dean Eileen Kennedy, D.Sc., received an award for Service to the School. Professor Carole Palmer, Ed.D., G69, director of the master's program for the Combined Dietetic Internship/Master's program, accepted the Leadership and Expertise Award. The Innovation and/or "Up and Coming" Alumni Award went to Gabrielle Serra, N05. Sasha Chanoff, N04, F04, executive director of Mapendo International, an agency that advocates for at-risk refugees in Africa, received the Leah Horowitz Humanitarian Award. The keynote speaker, Michael Holick, Ph.D., M.D., a professor at Boston University School of Medicine and a vitamin D expert, put the Institute of Medicine's recent report on that micronutrient into perspective.

Right, Dean Eileen Kennedy, keynote speaker Michael Holick and Professor Carole Palmer



Award-winning alumni Gabrielle Serra, N05, left, and Sasha Chanoff, N04, F04, above



Center, enjoying conversation at the reunion brunch. Above, Anita Iskandar, N09, N12, discusses her poster presentation with Amanda Antczak, N12.

CELEBRATING 30 YEARS

As the Friedman School enters its fourth decade, we're looking back and gazing ahead on a special website developed in honor of the occasion: <http://thirty.nutrition.tufts.edu>. Featuring profiles and memories of Friedman School community members, the site celebrates the history and accomplishments of the school and highlights its global impact. Be sure to visit throughout the year for updates.

G69 **Carole Palmer** received the Leadership and Expertise Award from the Friedman School Alumni Association during the reunion brunch in April.

N85 **Randa Wilkinson-Bouvier**, training director for the Positive Deviance Initiative, held a brown bag lunch seminar for Friedman School students in March and co-led a Friedman School Wednesday Seminar in February titled "Positive Deviance: The Cutting Edge of Common Sense."

N90 **Gaston P. Bathalon, N98**, see N08.

N92 Friedman School Professor **Xiang-Dong Wang**, director of the Nutrition and Cancer Biology Laboratory at the Jean Mayer USDA Human Nutrition Research Center on Aging, received an honorary visiting professorship from one of the top universities in China, Zhejiang University. At the ceremony, he gave a presentation titled "Biological Actions of Carotenoids: Implications for Human Health and Diseases."

N97 **Gerard Kennedy**, see N09.

N00 **Andrew Shao** left the Council for Responsible Nutrition in Washington, D.C., and was named a vice president for global

product science and safety with Herbalife in southern California.

N01 **Silvina Choumenkovitch**, see N08.

N02 **Deepa Lakshmi Shanadi, MPH02**, and Govind Shanadi are proud to announce the birth of their son, Jay Krishna Shanadi, on February 21, 2011.

Ann McDermott received the Innovation Award at the 2010 Healthy Eating Active Living Summit, "Healing our Community: Turning the Tide of Obesity." She also received a certificate of recognition from California State Sen. Sam Blakeslee for her work as director

of Science through Translational Research in Diet and Exercise (STRIDE) at California Polytechnic State University, where she is an associate professor of kinesiology. In April, she spoke at the Friedman School's annual Gershoff Symposium; the title of her talk was "Are Healthy Messages Working?"

N04 **Sasha Chanoff, F04**, founder and executive director of Mapendo International, which protects and cares for at-risk refugees in Africa, received the Leah Horowitz Humanitarian Award from the Friedman School Alumni Association during the reunion brunch in April.

N05 **Xiang Gao**, an assistant professor of medicine at Harvard Medical School and a research scientist at the Harvard School of Public Health, received the 2011 Wayne A. Hening Sleep Medicine Investigator Award from the American Academy of Neurology (AAN) in recognition of his contributions to the field of sleep medicine. The award is designated for young investigators who have completed their most recent training within the past 10 years. The AAN and Harvard School of Public Health also issued news releases for two of his recent studies, which found that flavonoids, berries and ibuprofen may lower the risk of developing Parkinson's disease.

Stacey King, see N08.

Shauna Sadowski and Louis Bennett, A02, welcomed their daughter, Mika Sage, on February 2, 2011.

Gabrielle Serra received the Up and Coming/Innovation Award

Keep in Touch with the Friedman School

VISIT US ON THE WEB

Stop by our web pages for information on upcoming events, ways to get involved, profiles of Friedman School alumni and an update on the Beyond Boundaries capital campaign.

Are you
on Facebook or
LinkedIn?

If you are an alum, faculty member or student, join the Friedman School Alumni Association group pages on www.facebook.com and www.linkedin.com. And be sure to "like" the Friedman School page on Facebook.

We want
to hear from you!

Have a new job? Is your family growing? Are you getting together with classmates? Keep fellow graduates up to date by sharing your news at alumni.nutrition.tufts.edu.

Alumni

ALUMNI.NUTRITION.TUFTS.EDU

Friends

NUTRITION.TUFTS.EDU/FRIENDS

from the Friedman School Alumni Association during the reunion brunch in April.

N06 Willow Jarosh and **Stephanie Clarke** of C&J Nutrition were guest bloggers about nutrition for fashion designer and former reality TV star Whitney Port from MTV's *The City* and *The Hills*. The blogs were written primarily for college students, and included suggestions on quick and inexpensive meals, tips for staying healthy while you're busy and advice on alcohol and nutrition, among other topics. Both Jarosh and Clarke have also accepted positions as contributing editors to *SELF* magazine. Their first column appeared in the November 2010 issue.

Kerri Hawkins, see **N09**.

N07 Jennifer Layne took a new job as senior medical affairs specialist with Hologic, a leading developer, manufacturer and supplier of premium diagnostic products,

medical imaging systems and surgical products designed to serve the health-care needs of women throughout the world.

N08 Friedman School Alumni Association members **Rachel Cheatham**, vice president of nutrition communications for Weber Shandwick Worldwide, and **Silvina Choumenkovitch, N01**, a researcher for Children in Balance at the John Hancock Research Center on Physical Activity, Nutrition and Obesity Prevention at the Friedman School, organized a career panel on April 4 titled "Scientific Variability—Career Options for Nutrition." The panelists were Col. **Gaston P. Bathalon, N90, N98**, commander of the U.S. Army Research Institute of Environmental Medicine; **Virendar Kaushik, N09**, an investigator with the Novartis Institutes for BioMedical Research Inc. and an adjunct assistant professor at the Friedman School; and **Stacey King, N05**, health promotion and

marketing manager and interim director of community health programs at the Cambridge (Mass.) Department of Public Health.

N09 Cassandra (Adu-Asare) Ackatia-Armah writes, "I joined my husband in Dioila, Mali, in June of 2010. He is a research coordinator with Helen Keller International and currently involved in a study on the community-based management of acute malnutrition. The data is also for his Ph.D. thesis back at BU. I go to the field with him sometimes, and I must admit living out here is quite an experience."

The Friedman School Alumni Association hosted a career panel titled "From School Lunch to Agricultural Policy: The Path from Friedman to the Professional Field." The panelists were **Lisa Damon**, Farmers Market Nutrition Program coordinator for the Massachusetts Department of Agricultural Resources; **Sonya Elder**, director of food services for the Brookline Public Schools;

and **Gerard Kennedy, N97**, director of agriculture technical assistance for the Massachusetts Department of Agricultural Resources. The event was organized and moderated by Alumni Association Executive Council members **Kerri Hawkins, N06**, and **Shauna Sadowski, N05**.

Virendar Kaushik, see **N08**.

N10 Tara Anastasi is the program manager for Seeds For Learning Foundations Inc., based in Philadelphia.

Corrine Dobbis is the author of a nutrition and healthy living blog, the Green Grapes Blog (<http://greengrapesblog.com>), on which she provides information and tips on nutrition, exercise, cooking and simple lifestyle changes, among other topics.

Shailee Pradhan just started a doctoral program in economics at the University of St. Gallen in Switzerland.

HERE'S TO ACHIEVING PERSONAL BESTS.

John Hancock is proud to support the Friedman School of Nutrition Science and Policy and all that it means to the lives of our community.

John Hancock
the future is yours

Investments | Insurance | Retirement

Eat Against the Clock

"Sure, you may want to eat better, lose weight or set a better example for your kids, but those noble goals fall by the wayside when you're dealing with an iPhone that chirps every two minutes." So writes Patricia Bannan, N99, on the opening page of her new book *Eat Right When Time Is Tight* (NorLightPress, 2010), a nutrition guide for people who are too "overbooked, overloaded and overwhelmed" to figure out a healthy eating plan.


Bannan, an L.A.-based registered dietitian and health reporter, boils down her best advice for snacks to stash in your briefcase and lesser-evil options at the hotel breakfast buffet. Is Wendy's your only quick lunch choice today? Order the large chili. Incapable of sitting down for breakfast at home? Bring along a soy, fruit and nut energy bar and a can of low-sodium 100 percent vegetable juice.

Fast food, she acknowledges, isn't the ideal, "but eating right when time is tight isn't about perfection—it's about making better choices and eating a healthful balance of foods over time." Even if your stomach is demanding pizza for lunch, she writes, the menu item makes a difference: A slice of thin-crust veggie pizza is about 200 calories and 7 grams of fat, while a slice of deep-dish pizza packs 480 calories and 26 grams of fat.

She provides a number of everyday strategies, such as including fiber and protein in your breakfast to keep you feeling full, and eating every three to five hours to keep blood sugar stable and avoid overeating at dinner, as most people do. But she also offers meal plans for those atypical days that can really sabotage a diet groove. Who hasn't wished for a "Blown-It-at-Brunch" meal plan, for when you've used up your calorie allotment for the day, and it's not even noon? Finally, advice on how to recover with grace...and salad.

—JULIE FLAHERTY





13 young men,
10 months,
970 miles...

One stride at a time



When Daniel Hatfield, N11, first met the boys of the East Boston Neighborhood Health Center, it took the average

student more than 15 minutes to run one mile. Ten months later—thanks to their own hard work and Dan's guidance and encouragement—the boys have shaved an average of six minutes off their mile time, completed a collective 37 marathons, and gained the momentum to succeed.

YOUR GIFT SUPPORTS

students like Dan who tackle childhood obesity head-on and change lives with education about nutrition and fitness.

Please make your gift to the Friedman School today using the envelope in this issue or online at nutrition.tufts.edu/givenow2.

Tufts
UNIVERSITY

Gerald J. and Dorothy R.
Friedman School of
Nutrition Science and Policy



PHOTO: BERNARD POLLACK

WATER FROM THE SUN

In Tanka village in Niger, 50 women are using solar-powered pumps to irrigate their vegetable crops and fruit trees. The women each manage their own plots, but share tools, water and farming skills with each other, and contribute to a group savings account to pay for things like fertilizer and hoses. By selling their produce at nearby markets, most of the women have tripled their incomes. Danielle Nierenberg, N01, came across hundreds of similarly innovative solutions for hunger and poverty in her year-long journey across sub-Saharan Africa. Read her story on page 20.