Dear Colleagues,

2012 has been a whirlwind of activity and I am pleased to say that moving on all cylinders has led to some exciting developments at the HNRCA. With the arrival of our new President at Tufts University, and the impending arrival of our new Provost, I see the work we do at the HNRCA remaining central to the scientific and research agenda at the University.

Our Research Clusters are making progress in their respective areas, and I have received four-month status reports from each, which show exciting ideas, collaboration and progress. I look forward to seeing what each will propose and accomplish throughout the remainder of this year.

This issue of the newsletter summarizes our exciting World Health Day event in April. I am pleased that we were able to put together such a high quality, high value program for the attendees, and that we have also formed a working group with the World Health Organization and the Pan American Health Organization to forge closer ties between our research, and global aging policy. Also please read our interview with Dr. Bess Dawson-Hughes who was recently honored by the International Osteoporosis Foundation for her significant work in the field.

Finally, I hope everyone has had an opportunity to review our new website http://hnrca.tufts.edu/, which was unveiled in early April. The updated, modern format and clearer navigation will make finding information about the many projects at the HNRCA simpler and cleaner for every visitor.

All the best,

Simin Nikbin Meydani, D.V.M., Ph.D.

Scientists Win Prestigious National and International Honors

Many HNRCA scientists have received top awards and honors from associations and organizations worldwide.

Some recent honors include:

- **Sarah Booth** - Dannon Mid-Career Leadership Institute Award
- **Sang Woon Choi** – Award from the Korean Nutrition Society
- **Oliver Chen** – American Society of Nutrition (ASN) Mary Swartz Rose Young Investigator Award
- **Bess Dawson-Hughes** – International Osteoporosis Foundation Pierre D. Delmas Award
- **Anita Ratnasari Iskandar** – ASN Graduate Student Research Award
- **Zhenhua Liu** - ASN Bio-Serv Award in Experimental Animal Nutrition
- **Mohsen Meydani** - ASN Fellow 2012
Congratulations HNRCA Award Winners

This year the HNRCA bestowed several awards to deserving scientists. The 2012 award winners are:

**Jean Mayer 25 Year Scientific Service Award:**
The following scientists received recognition for their 25 year scientific and service contributions to the HNRCA:
- Joel Mason, Director, Vitamins and Carcinogenesis Lab;
- Simin Nikbin Meydani, Director, HNRCA;
- Jacob Selhub, Director, Vitamin Metabolism Lab;
- Don Smith, Manager Comparative Biology Unit;
- Guangwen Tang, Director, Carotenoids and Health Lab.

**Robert M. Russell Scientific Achievement Award:**
Bess Dawson-Hughes - Bone Metabolism Lab,
Anastassios G. Pittas - Department of Medicine, Tufts Medical Center
For most cited publication published at HNRCA during 2009-2012 “Association Between Serum Osteocalcin and Markers of Metabolic Phenotype” (PMCID: PMC2681283)

**Hamish N. Munro Award for Excellence in Postdoctoral Research:**
Donato Rivas - Nutrition, Exercise Physiology, and Sarcopenia Lab
For his outstanding scholarship, collaboration, and innovative research in the field of Nutrition, Exercise Physiology, and Sarcopenia

**Irwin H. Rosenberg Award for Excellence in Predoctoral Research:**
Eric Ciappio - Vitamins & Carcinogenesis Lab
For research on the impact of maternal diet on cancer in offspring

**World Health Day 2012 Event Major Success**
The HNRCA hosted an unprecedented event addressing the global aging population and urbanization on April 11-12. Over 150 nutrition, policy, and urban planning experts gathered for an international dialogue on the needs of seniors in cities. Collaborative partners in the event included the World Health Organization, the Pan American Health Organization, Harvard Graduate School of Design, MIT AgeLab, and the Massachusetts Executive Office of Elder Affairs. Sponsoring organizations were Dannon, DSM Nutritional Products, the MIT AgeLab and Ocean Spray.
During the two-day meeting, Jacob Kumaresan, Executive Director of the WHO, gave a keynote address where he noted that the HNRCA event was the first time a World Health Day event has been celebrated in an academic institution, and ended with a request that the HNRCA “collaborate with us because there is a lot of work that you are doing which can influence our policies.” Kumaresan shared the WHO World Health Day theme, “Good Health Adds Life to your Years” and identified the four key actions that policy can influence to do this:

- Promote good health and behaviors at all ages including in utero;
- Minimize consequences of chronic diseases through early detection and quality of care;
- Create environments that foster healthy aging; and
- Change social attitudes so elderly are valued.

The WHO and its regional affiliate, the Pan American Health Organization (PAHO) will continue collaborating with the HNRCA through a working group established at the meeting.

**HNRCA Leadership at EB2012 Conference**

HNRCA and the Friedman School co-hosted a very popular reception for about 200 alumni, supporters and friends of Tufts on April 22 in conjunction with the American Society for Nutrition’s (ASN) annual meeting, Experimental Biology (EB), held in San Diego. HNRCA scientists received numerous honors from ASN, see previous article.

Twenty-two posters were presented by HNRCA labs during EB, and more than thirty sessions featured HNRCA speakers or chairs. This is the premier annual event for the nutrition science community.

In 2013 Experimental Biology will be held in Boston, April 20-23.

**HNRCA Gives Back to Local Community**

Six HNRCA team members took part in Project Bread’s Walk for Hunger on May 6th in Boston. The group walked 20 miles. The people who walked with Team HNRCA were:

- Ally Gotsell
- Molly Schleicher
- Sai Krupa Das
- Ebony Green
- Chante Upchurch
- Colby Upchurch

The Employee Recreation Association (ERA) intends to coordinate similar activities that are in line with the mission of the HNRCA in the future. Committee members say they are open to suggestions and hope that people consider joining the ERA either as a member or as a participant in events or activities.

Team members Ally Gotsell and Molly Schleicher at a Walk for Hunger checkpoint.
Additionally, as part of World Health Day, the HNRCA is making a donation to a local elder group, the Chinese Golden Age Center.

New Pilot Grant Awards Announced

The following researchers or clusters of researchers received HNRCA pilot grant funding in the most recent round, announced in April:

**Cardiovascular and Cognitive Cluster:** “Effect of whole grain on statin pharmacokinetics and cardiovascular disease risk factors”

**Cancer Cluster:** “The effect of microbial metabolites of polyphenols on innate immunity – Cancer Cluster Initiative”

**Dr. Joseph Kehayias:** “Zinc Status assessment in the elderly”

**Dr. Mohsen Meydani:** “Oat-based diet with high levels of avenanthramides suppresses atherosclerosis in LDLr/-/- mice”

**Dr. Donato Rivas:** “The effects of de novo ceramide inhibition on age-associated skeletal muscle loss”

**Dr. Jean-Marc Zingg:** “Molecular mechanisms of hypolipidemic effects of curcumin.”

HNRCA in the Popular Press

Since January 2012, HNRCA research and scientists have been featured in at least 77 unique news articles, many of which have run in multiple publications and outlets.


Promotions and New Hires

We welcome the following new employees to the HNRCA:

**John Heine**, Assistant to the Center Director

**Kristen Hodge**, Part-time Staff Assistant, Energy Metabolism Lab

**Sheldon Rowan**, Scientist III, Nutrition and Vision Lab

**Allison Swan**, Research Coordinator, Bone Metabolism Lab

And we offer congratulation the following recipients of promotions:

**Chung-Jung Chiu**, Scientist II, Nutrition and Vision Lab

**Jessica Davis**, Administrative Assistant, Core/Service Support

**Jean Galluccio**, Senior Research Technician, Cardiovascular Lab

**Evan Pasha**, Senior Research Technician, Physiology Lab

**Stephanie-Jo Peterson**, Senior Research Coordinator, Dietary Assessment Unit

**Molly Schleicher**, Budget & Administrative Assistant, Core/Service Support

**Guangwen Tang**, Research Senior Scientist, Carotenoids Lab
Scientist Spotlight:

Bess Dawson-Hughes, Bone Metabolism Lab

Dr. Bess Dawson-Hughes recently received the Pierre Delmas President’s Award from the International Osteoporosis Foundation for her significant work in the field.

Q: What are you working on in the Bone Metabolism Lab currently?

A: We are working in two main projects areas, each looking at different nutritional approaches to improving bone and muscle health with aging. The first area is vitamin D, where we are conducting a number of studies in order to get a better understanding of how we can use vitamin D more effectively. A clinical challenge with vitamin D is that different individuals taking the same dose can have very different blood level responses to it. D is a fat soluble vitamin, so you’d think that if one were to take it with fat it might improve responses and absorption. We should have a better understanding of the role of the amount and type of fat in vitamin D absorption, but we don’t.

We’ve recently published evidence that suggests that the ratio of Monounsaturated Fatty Acids (MUFA) to Polyunsaturated Fatty Acids (PUFA) in the diet may influence the response to vitamin D supplementation and blood level achieved. In fact, people with diets with a high MUFA / PUFA ratio had better responses to supplements than those with low ratios. Diets of these healthy men and women had about 30% of calories as fat. We are currently directly testing the hypothesis that the MUFA/PUFA ratio is important in another study. The meals are prepared by the Metabolic Research Unit’s kitchen and contain either a high or low MUFA/PUFA ratio. We used a stable isotope methodology to assess vitamin D absorption on the different diets. Many factors influence blood vitamin D levels. It’s not just absorption but the breakdown of the vitamin once it’s stored. That’s even less explored and an area that would be of interest.

Another interest, pursued in collaboration with Dr. Anastassios Pittas at Tufts Medical Center, is defining the role of vitamin D in regulating glucose metabolism and risk of developing diabetes. Our working hypotheses is that vitamin D adequacy will help slow the progression from pre-diabetes to full-fledged diabetes. He is taking the lead in planning a large study designed to assess the effect of vitamin D on risk of progressing from pre-diabetes to full-fledged diabetes. With regard to vitamin D and muscle, Dr. Lisa Ceglia is conducting animal and human studies in our laboratory to look at mechanisms by which vitamin D influences muscle at the tissue level.

Q: In addition to studying vitamin D, what is your other primary area of focus?

A: We are studying the impact of the acid / base balance of the diet on bone and muscle health in older individuals. The hypothesis is that a mild metabolic acidosis, which develops as we age, has a negative effect on bone and muscle and causes the breakdown of both. Foods that contribute acid are proteins and cereal grains; whereas alkali sources include fruits and vegetables. In the large, healthy
older population we recruited a couple of years ago, 96% were consuming diets that produced a net acid load, as measured by urinary net acid excretion, indicating that they were not consuming enough fruits and vegetables to offset the acid load they were consuming. We know that elders need a fair amount of protein, probably as much as 1.1 g per kg (a level that is higher than the current RDA of 0.8 g per kg per day). A good way to improve acid base balance (that is, lower the acid load) is to reduce intake of cereal grains rather than to reduce protein intake. Such an approach would also favor a lower caloric intake – something that many should seek.

Q: What have you learned so far?

A: We published results of a large NIH trial in 2010. We chose a fixed alkali (bicarbonate) dose as the intervention and showed that taking bicarbonate supplements lowered nitrogen excretion – an indicator of muscle wasting. In women, we saw improvement in muscle performance over the 3-month supplementation period. The biochemical markers of bone turnover improved, suggesting less bone loss. We submitted an application to NIH to do a dose-finding trial to test multiple doses and were awarded that grant. The study started in February, 2012 and will go on for several years. The goal is to identify the dose with the best effect over a 3-month period, and then to test that dose over a longer time frame to assess its effect on rates of bone loss and changes in muscle mass and performance. It's a step-by-step process to try to define how we may benefit from neutralizing the acid load we are consuming.

In this trial, we are doing diet recalls – it’s one of the more accurate ways of assessing what people eat. The subjects are instructed by a dietician to record everything they eat over a 3-day period. On the third day, they make 24 urine collections which are analyzed for nitrogen, an indicator of muscle breakdown (and also an indicator of the amount of protein you ate that day). Correcting for differences in protein intake makes the nitrogen excretion a better reflection of true muscle change. Our ultimate goal is to make some specific recommendations for dietary approaches to improving bone and muscle health, mobility, and independence as we age.

Q: What do you do for fun?

A: While I wouldn’t precisely describe it as fun, I am very involved in community of science service work through the National and International Osteoporosis Foundations. I am a big reader and also enjoy several sports - golf, tennis, and biking. Gardening season is upon us so that keeps me busy as well.
Recent Publications from HNRCA Scientists

The publications listed below reflect submissions to the Director's office as of January 2012. We will continue to collect new publications from all labs and include them in future newsletters. Thank you!


metabolites during teriparatide treatment. Bone 2011; Submitted.


Lichtenstein AH et al. Changes in cholesterol homeostasis modify the response of F1B hamsters to dietary very long chain n-3 and n-6 polyunsaturated fatty acids. Lipids in Health and Disease. 2011;10:186.


Taylor, A. Insulin-like Growth Factor (IGF)-axis Genes and Risk for Age-Related Macular Degeneration in the Age-Related Eye Disease Study. Invest Ophthalmol and Vis. Sci. in press


Taylor, A. Nutritional Modulation of Cataract and Age-Related Macular Degeneration. Manuscript submitted

Shang, F, (including HNRCA scientist A. Taylor) A High Glycemic Index Diet Alters Glucose Metabolism and Increases Cellular Stress (under review)

Shang, F, et al (including HNRCA scientist A. Taylor.) A Natural History of AMD-Like Lesions in Mice Fed High or Low Glycemic Index Diets Invest Ophthalmol Vis Sci IN PRESS


