Dear Friends and Alumni,

Improving health and overall quality of life has become a prominent focus at Purdue with the creation of the College of Health and Human Sciences, the establishment of the Indiana Clinical and Translational Sciences Institute, which partners Purdue with Indiana University School of Medicine and the University of Notre Dame, and the launch of the Women’s Global Health Institute.

As President Mitch Daniels leads Purdue closer to the goal for the best education for the value, Nutrition Science is poised to be a campus leader. The department has been at the top for external grants per faculty for more than five years. A preeminent review team profiled Nutrition Science as competent, collegial, collaborative and rigorous. We have three distinguished professors, four University scholars, a member of the Institute of Medicine of the National Academies, and the department proudly claims this year’s research award winners for both the College of Health and Human Sciences and the University.

Purdue is strengthening its capacity through competitive cluster hires. Of the six themes selected for faculty growth, the Department of Nutrition Science is part of two: 1) epigenetics and chromatin biology and 2) public health and chronic disease. We also were given a faculty position to build our Nutrition Science major. At the same time, the department has acquired more space and the University selected the department for several renovation projects out of the few available from committed state dollars. Thus, we are feeling very appreciated in this difficult economic era.

The Department of Nutrition Science will announce next year its first general fund raising campaign aimed at positioning ourselves as an exceptional place for learning, discovery and engagement in nutrition science. We’ve planned a series of three newsletters to show you Nutrition Science at Purdue is a good place to invest. This first newsletter emphasizes discovery and engagement through our signature areas. The second highlights the talented people and their leadership in centers including our internationally known Ingestive Behavior Research Center. The third features our training programs.

The Nutrition Science Department, one of the top departments in the country and the first dietetics program in the state in 1905, has a long history of excellence. As we approach the 110th anniversary of the program in 2015, we aspire to maintain and grow this excellence by increasing named professorships, graduate student support, undergraduate scholarships, and support for our programs and centers. Watch for the announcement later in 2014.

Introducing the Nutrition and Exercise Clinical Research Center

Phase 1 of 3 Completed (old HTM Café Space)
CALCIUM, VITAMIN D AND BONE HEALTH

Topics related to calcium and vitamin D are two of the most funded research areas because of the broad relationship of these nutrients to health and the prevalence of deficiencies in the United States and around the world. Our expertise in calcium and vitamin D spans more than two decades, and started with their traditional role in bone health but now extends to other areas such as cancer, hypertension, weight control and diabetes.

With the aging population, evidence of fracture continues to grow. Half of women over age 50 will experience a fracture. Half of peak bone mass is acquired during puberty making that an important period for lifestyle intervention to help avoid later-in-life problems. Although current calcium and vitamin D requirements are based on bone outcomes, there is also growing support for their relation to other organs and diseases.

Judging from the one-size-fits-all children’s multivitamins that have been on the market for years, it’s easy for parents to assume all children need the same amount of calcium. In reality, children at various ages and races require different amounts of calcium to build optimal peak bone mass.

For more than two decades, adolescents participating in Camp Calcium have helped Connie Weaver and her team study calcium metabolism during puberty. In between sports and educational activities, the children have eaten carefully designed diets. By controlling the youngsters’ calcium intake, the team has determined how calcium requirements are affected by race, gender, age and salt intake. The Institute of Medicine of the United States National Academy of Sciences used this research as a foundation for setting dietary calcium requirements for adolescents. Now, instead of simply reminiscing on their summer camp fun, youngsters can say they helped shape the health of future generations. Assistant Professor, Katie Hill Gallant brings us into the world of nutrition in patient populations to expand our studies of healthy populations.

The racial difference in calcium needs motivated James Fleet, Distinguished Professor of Nutrition Science, to study the role of genetics to determine dietary calcium needs. One large barrier to meeting calcium needs is that many people avoid calcium-rich dairy foods because they can’t digest the milk sugar lactose. This problem, called lactose malabsorption, affects one-quarter of the population in the U.S. and three-quarters of the world population. Professor of Nutrition Science Dennis Savaiano’s laboratory has identified ways that lactose malabsorbers can include calcium-rich dairy foods into their diet, including developing a microbial enzyme that assists lactose digestion when added to yogurt.
SIGNATURE AREA

APPETITE, METABOLISM AND OBESITY

Overweight and obesity are arguably the most pressing nutrition-related public health problems in the United States and globally. The problem is complex; and it requires multifaceted and probably individual-based approaches to address. Multiple faculty researchers in this signature area are especially interested in how the environment, behavior and physiology interact to determine energy balance.

Dietary approaches to prevent and manage body weight are often unsuccessful, in large part because they fail to address issues that compromise diet compliance such as hunger, satiety and the desire to eat. The importance of exercise in weight management and optimal health has only recently gained attention and remains poorly characterized. A critical deficiency in knowledge and practice is how appetite and exercise interact to influence food choice, metabolism and energy balance. While it is now widely accepted that energy balance determines body weight, it is also clear that food choice to manage body weight also influences health and quality of life. Researchers in the Appetite, Metabolism and Obesity signature area seek to understand the integration of these factors.

Rick Mattes, Distinguished Professor of Nutrition Science, focuses on the role of oral fat detection on lipid processing in humans. Research increasingly supports that dietary fat is detected not just by its textural and olfactory properties, but by the taste system itself. If true, this work raises the possibility that the sense of taste is defined by a wider array of primaries (not just sweet, salty, sour, bitter and umami), challenging conventional wisdom. However, more to the point of nutrition, this work has documented that simply detecting fat in the mouth alters how ingested fat is digested and used in the body.

Megan McCrory, Assistant Professor of Nutrition Science, does meal pattern research and explores how different eating patterns and diet composition contribute to overeating and weight gain and how they may best be managed for weight loss and keeping the weight off.

Assistant Professor Tara Henagan’s laboratory conducts carefully controlled nutrition and exercise interventions looking at factors with the potential to attenuate the development of insulin resistance, decrease chronic inflammation and reduce the risk of developing cardiovascular disease risk and metabolic syndrome. She plans to clarify the epigenetic mechanisms whereby nutrition and physical activity may yield insights to aid the understanding, treatment and prevention of obesity and type 2 diabetes.

Kimberly Buhman, Associate Professor of Nutrition Science, is seeking to understand how diet, genetics and drugs influence the absorption of dietary fat. Dietary fat contributes to health problems such as obesity, diabetes and heart disease by providing energy, affecting insulin sensitivity, and regulating blood lipid concentrations.

Wayne Campbell, Professor of Nutrition Science, has a special emphasis in geriatric nutrition, muscle strength and muscle function. His work focuses on protein needs and the impact of strength training to combat muscle wasting as we age.

Nana Gletsu-Miller, Assistant Professor of Nutrition Science, focuses on long-term nutritional consequences of bariatric surgery, the most effective way to lose weight for those who are severely obese. Many patients also become free of Type 2 diabetes and other obesity-related health issues after surgery. Nutrition becomes compromised in many gastric bypass patients. Deficiencies in iron, vitamin D and calcium are common (with prevalence estimated at 30% and 50%, respectively).
While not exactly promising to be the famed fountain of youth, many herbal supplements claim to help prolong our life by preventing and treating age-related diseases. Americans buy into the dream at the rate of $5 billion a year on dietary supplements. Despite the popularity of herbal supplements, the efficacy and effectiveness is an evolving study.

Oxidative stress is a component of age-related diseases such as diabetes and Alzheimer’s disease. Elsa Janle, Associate Research Professor, is investigating the potential of green tea and other bioactive-containing products on modulating the effects of oxidative stress on protein damage. Determining the potential of compounds, which might be beneficial in prevention of Alzheimer’s disease, to cross the blood-brain barrier is a major focus of this investigation in animal models.

Mario Ferruzzi, Professor of Nutrition and Food Science, investigates food and dietary factors that impact polyphenol bioavailability and metabolism. Both epidemiological and preclinical evidence support the notion that select grape derived polyphenol forms may be protective against Alzheimer’s disease (AD). A key consideration for exploring these associations and translating preclinical findings is defining specific biologically relevant polyphenol forms with Alzheimer’s modifying activities. Interestingly, almost all of the bioactive polyphenol forms found in the body are not directly available through our food supply, but are derived from metabolism of precursor dietary polyphenol “backbones.”

Jay Burgess, Associate Professor of Nutrition Science, studies oxidative stress adaptation, phytochemical antioxidants, oxidative stress and essential fatty acids in behavioral disorders, and the role of antioxidants in mitigating the complications of diabetes in his laboratory.
CANCER PREVENTION

Cancer is now the leading cause of death for those under 85 years of age in the United States. Many adults know they can help reduce their risk of heart attack through changes to their diet and exercise, yet they feel helpless to stop cancer. But thanks to a growing body of knowledge that nutrition science researchers are helping to develop, cancer prevention may be possible in the future.

Qing Jiang, Associate Professor of Nutrition Science, and her lab are focused on chronic inflammation-related diseases, including cancer. She studies the molecular mechanism of inflammation-associated diseases as well as explores prevention and therapy of these diseases using nutrition factors, including natural forms of vitamin E and combinations of vitamin E forms and other antioxidants.

Professor of Nutrition Science Dorothy Teegarden’s work shows that vitamin D prevents breast cancer by inhibiting the shift in energy metabolism that occurs in cancer cells that allows them to grow out of control. A unique mouse model, developed in Distinguished Professor of Nutrition Science James Fleet's laboratory will greatly enhance the ability to study prevention of colon cancer, particularly by environmental influences, such as diet.

Silvia Stan, Assistant Professor of Nutrition Science, is extending her work with dietary compounds, such as those in garlic that may prevent pancreatic cancer, one of the most deadly of all cancers. She is also exploring the basic mechanisms of how garlic works.

Barbara Stefanska, Assistant Professor of Nutrition Science, looks at the epigenetic effects of polyphenols and vitamins in cancer prevention and therapy with an emphasis on epigenetic biomarkers for human cancer. She was hired as part of a University initiative to grow epigenetic research across campus.

ENGAGEMENT

From lab bench to community is the model for engagement in the Department of Nutrition Science. How does this work? A recent translation example from our Calcium, Vitamin D and Bone Health signature area demonstrates just how. Our faculty members are national leaders in discoveries related to vitamin D, so when the new dietary reference intakes for vitamin D were released in 2010, the department readily responded with a fact sheet and corresponding video clips for consumers. The materials address basic questions about the new vitamin D recommendations. The content was written by James C. Fleet, Distinguished Professor of Nutrition Science, who is a respected basic science researcher in calcium, vitamin D and genomics, and Lisa Graves, Extension Specialist. It was reviewed by an expert panel of Purdue faculty, extension staff and faculty from other academic institutions (the resources are accessible at www.enjoyfoodbeactive.org).

Purdue’s talented exhibit staff has taken departmental expertise on the road with two state fair exhibits. The Bone Zone carnival of healthy choices, a reflection of our Calcium, Vitamin D and Bone Health signature area, was a hit at the 2008 state fair. A smaller version of the exhibit traveled to Capitol Hill for the agricultural science and education exhibition, where it received the Serving the Nation People’s Choice Award. Another exhibit, “To My Plate and Beyond,” was created for the 2012 and 2013 state fairs. This engaging exhibit will follow the Bone Zone and travel to museums and other children’s venues, thus, continuing to educate for years to come.

There seems to be an app for everything these days. Though that might not actually be true, there is an app for pregnant women who eat locally caught fish! Charlie Santerre, Professor of Nutrition Science, has used Web 2.0 technologies to deliver information on seafood safety and nutrition to women of childbearing age. A free iPhone app and a Droid app (fish4health) have been released which include a seafood calculator that women can use to maintain a log of their seafood consumption and monitor their intake of mercury, PCBs and omega-3 fatty acids. The apps can be accessed in English, Spanish and Chinese (Simplified and Traditional). The iPhone version was recognized as one of Babble’s Top 25 iPhone apps for Pregnancy in 2011.

We have also created a website (www.fish4health.net) to provide fish consumption advisories for recreationally caught fish and YouTube videos demonstrating seafood preparation by a chef. The website was developed in a cooperative effort between Purdue and state/federal agencies. To reach women who don’t have access to apps, we produce a seafood-safety wallet card which has been widely distributed across the United States (well more than 1/2 million copies distributed in Florida, California, Rhode Island, Indiana, Texas and Connecticut), and we have delivered numerous presentations across the United States and around the world (i.e., Philippines, Honduras, Norway, Belgium, Chile and Canada).
Create Your Legacy

Inspire tomorrow’s leaders through a planned gift, just as John Purdue did more than one hundred and forty years ago.

Contact the Office of Planned Giving to:

- Give assets and receive lifetime income and current tax benefits.
- Discover how long-term planning and bequests can create a lasting legacy for you and future students.

Call us at 800-677-8780
Email us at plangift@purdue.edu
Visit purdue.giftlegacy.com

'Like' Purdue Planned Giving on Facebook

Purdue University
Dear Friends and Alumni,

Improving health and overall quality of life has become a prominent focus at Purdue with the creation of the College of Health and Human Sciences, the establishment of the Indiana Clinical and Translational Sciences Institute, which partners Purdue with Indiana University School of Medicine and the University of Notre Dame, and the launch of the Women’s Global Health Institute.

As President Mitch Daniels leads Purdue closer to the goal for the best education for the value, Nutrition Science is poised to be a campus leader. The department has been at the top for external grants per faculty for more than five years. A preeminent review team profiled Nutrition Science as competent, collegial, collaborative and rigorous. We have three distinguished professors, four University scholars, a member of the Institute of Medicine of the National Academies, and the department proudly claims this year’s research award winners for both the College of Health and Human Sciences and the University.

Purdue is strengthening its capacity through competitive cluster hires. Of the six themes selected for faculty growth, the Department of Nutrition Science is part of two: 1) epigenetics and chromatin biology and 2) public health and chronic disease. We also were given a faculty position to build our Nutrition Science major. At the same time, the department has acquired more space and the University selected the department for several renovation projects out of the few available from committed state dollars. Thus, we are feeling very appreciated in this difficult economic era.

The Department of Nutrition Science will announce next year its first general fund raising campaign aimed at positioning ourselves as an exceptional place for learning, discovery and engagement in nutrition science. We’ve planned a series of three newsletters to show you Nutrition Science at Purdue is a good place to invest. This first newsletter emphasizes discovery and engagement through our signature areas. The second highlights the talented people and their leadership in centers including our internationally known Ingestive Behavior Research Center. The third features our training programs.

The Nutrition Science Department, one of the top departments in the country and the first dietetics program in the state in 1905, has a long history of excellence. As we approach the 110th anniversary of the program in 2015, we aspire to maintain and grow this excellence by increasing named professorships, graduate student support, undergraduate scholarships, and support for our programs and centers. Watch for the announcement later in 2014.

Connie Weaver

Introducing the Nutrition and Exercise Clinical Research Center

Phase 1 of 3 Completed (old HTM Café Space)