The University of Wisconsin-Madison is 11th among public institutions in U.S. News & World Report's latest college rankings and we are also proud to be one of the best graduate programs in the nation!

Please help us keep in touch with our alumni and friends by passing this newsletter along to others who may be interested in our work.

We also encourage you to share news about your career status or update your contact information by sending an email to: student-staff@nutrisci.wisc.edu
In this issue of our newsletter, I’d like to focus on a part of the educational experience at UW-Madison that is not often recognized for its importance in shaping the careers of our students, namely undergraduate research. Thirty percent of UW-Madison students in biological science fields have done research at some time during their undergraduate career. In Nutritional Sciences specifically, we have 20-30 undergraduates performing research projects in our labs at any one time. In addition, many of our students work in labs in other departments such as Biochemistry, Genetics, Physiology, and Medicine doing nutrition-related research. The impact of these experiences on our students is immeasurable.

Why is this topic of particular interest to me? It is because my own undergraduate research experience had such a big impact on my career. As a junior at the University of Minnesota, I was a pre-med major but without much real motivation for a career in medicine. It was at that time that I was invited by Dr. Martin Dworkin to work in his lab on a project related to the movement of the soil bacterium Myxococcus xanthus. After a few months in Marty’s lab, I was hooked on research and knew then that I wanted to pursue a career as a scientist. While I haven’t taken a formal poll, I am confident that most scientists, whether they are working in academics, industry, government, or other areas will tell you a similar story. Faculty-mentored undergraduate research has had an enormous impact on many of our lives.

So let’s fast forward a few years to what is happening now in the Department of Nutritional Sciences. In our department, we have a large number of undergraduate majors pursuing degrees in Dietetics or Nutritional Sciences. Education of these students occurs in a number of different ways: lectures, small group discussions, international experiences, and so on. Also, many of these students take part in undergraduate research. One example is Nutritional Sciences major Matt Hupy who is working in Dr. Eric Yen’s lab. Matt’s project is to look at how the MGAT2 enzyme acts in fat production and how it affects energy production—key issues in obesity. A second example is India Pungarcher, a Dietetics major, who is working with Sherry Tanumihardjo and PhD student Bryan Gannon to develop a simple method to assess provitamin A availability in corn. Accurately assessing vitamin A sources is important to combating nutrition deficiency in the world. A third example is Emma Lankey, a Dietetics-Nutritional Science double major working with Denise Ney, who is using mice to study the ability of the milk protein glycomacropeptide to prevent bone loss in patients with the genetic disease phenylketonuria (PKU). This work will benefit patients with PKU the world over.

The opportunity that these students and others like them have to assist in cutting edge research is one of the things that distinguishes our program from many other universities and colleges that don’t have as robust and exciting a research environment as we do. Through their research, these students can learn about nutrition while generating new knowledge at the same time. In addition, studies have shown that undergraduate research makes for better students; it increases independence, motivation to learn, and active participation in courses. I get excited just thinking about it.

One last point to I’d like to make. The research of many of these students is supported by the generosity of donors to UW-Madison (e.g. the Hilldale Fund) and to the Department of Nutritional Sciences (e.g. Cargill-Benevenga awards). If you would like to donate to undergraduate research, please visit our webpage http://nutrisci.wisc.edu/.
Notable Alumna: Andrea Garber

I earned my PhD at UW Madison in 1999 and was fortunate to have John W. Suttie as my advisor. In addition to pioneering the field of vitamin K and chairing the department, Dr. Suttie supported me in pursuing my career in clinical nutrition research. He encouraged me to complete the coursework in dietetics and even went so far as to let me do a study of vitamin K absorption in my classmates. I'll never forget chopping broccoli in the break room on the 6th floor of the Biochemistry building while eleven of my classmates ran back and forth between their labs and ours for hourly serum vitamin K sampling. (Yes, the study was IRB approved.)

After graduation, I came to the University of California San Francisco (UCSF) to complete my dietetic internship. I arrived in San Francisco in the summer of 1999, during the height of the first dot com boom with a suitcase of rumpled clothes and nowhere to live. I was lucky to find a room in an apartment for $750 per month; the internship only paid about $700 per month but the hospital food was free! Toward the end of my internship, a faculty position opened up in the Division of Adolescent Medicine. Adolescent Medicine is a unique subspecialty within Pediatrics with an interdisciplinary faculty and, lucky for me, they were looking for someone with a PhD, RD and an interest in clinical research. I joined the faculty in 2000 as an instructor. Since I hadn't done a post-doc, I didn't have an independent research program so I started out by serving as the project manager for other colleagues’ clinical trials. I gained a wealth of experience in this role, working on a range of adolescent topics from condom use to obesity and eating disorders. I also took masters-level coursework in UCSF’s Training In Clinical Research program, taught by an all-star cast of UCSF faculty heading up large-scale clinical trials such as the Women’s Health Initiative.

In 2002, I began the Study of Hospitalized Adolescents with Anorexia Nervosa (SHAAN). With no protected time for research, I fostered the evolution of SHAAN by working with the physicians to continuously enroll participants and students to collect the data. By 2010, SHAAN had grown into the largest cohort of its kind. In 2012, we published our first findings showing these patients were losing weight in hospital. This finding confirmed long-standing clinical observation and showed for the first time that the weight loss was associated with underfeeding (not fluid shifts as previously assumed). The approach to refeeding in anorexia nervosa had been extremely conservative since the refeeding syndrome was documented around the time of World War II, with protocols beginning around 1000-1200 per day and advancing slowly by about 100-200 calories every other day. This paper created a stir in our small academic field of eating disorders and was widely reported in the lay-press, including the New York Times. In 2013, we published a follow-up study showing that the weight loss could be avoided using higher calorie refeeding. These findings have sparked interest—and funding for research—in an area that was stagnant for decades. We just received funding from the NICHD to perform a five-year randomized controlled trial directly comparing long-term recovery on differing refeeding protocols.

The combination of an RD with a PhD from the Nutritional Sciences Department at UW Madison has opened up tremendous opportunities for me. In addition to clinical research, I teach medical students in our Metabolism & Nutrition and residents and fellows in the clinic. I’ve also been involved in exciting childhood nutrition efforts in San Francisco and California, including initiatives by our former Mayor Newsom and Governor Schwartzenegger. I’m so grateful to the Nutritional Sciences faculty for starting me off on this exciting journey. Go Badgers!
Brian Parks: New Faculty Associate

This school year, Nutritional Sciences welcomed to the faculty, Dr. Brian Parks. Originally from Virginia, Dr. Parks graduated from University of Virginia’s College at Wise with a Biology degree in 2002. Later on, he attained his Ph. D at the University of Alabama-Birmingham.

Since his arrival, Dr. Parks has been busy with setting up his research lab. His research is focused on the genetics of obesity and diabetes. Through understanding genetics, Dr. Parks is trying to understand why some people are more predisposed to diabetes than others. His interest stems from fascination that some people can eat whatever they want and not gain a pound, while others will eat something like a Big Mac and easily gain five pounds. The human genome can be the controller of that effect. Dr. Parks hopes the long-term contribution will be that genes or identical pathways to treat obesity or diabetes will be identified.

On the other hand, Dr. Parks shows interest in moving into weight loss, i.e. the genetics and variability of weight loss. He says that while it has been researched, it has not be “exploited” as much. He would be looking into aspects such as the correlation between weight loss and improved diabetes. Dr. Parks will eventually be teaching Nutritional Biochemistry, and also a graduate level obesity class.

Undergraduate Highlight: Matthew Hupy

I have lived in Wisconsin for twenty-one years, and in that time I have been a runner for over eight years. Year-round I run, but come each fall and spring, I compete in cross country and track. Over the past year, I trained for my first marathon – the Madison Marathon, and raced to a fifth place finish. As you might have guessed, I take my running very seriously, and nutrition is one area I focus on to improve my running abilities. Shortly after I decided to attend UW-Madison, I declared Nutritional Sciences as my major. Nutrition combines my interests in biology and physiology, while focusing on a topic I can apply to my everyday life. Nutrition is especially important to me because I am applying to medical schools and hope to use some of the knowledge I gain now in my future career. In addition to my major, I have also elected to complete a global health certificate. With my final winter break, I will travel to Ethiopia to learn more about global health through nutrition, agriculture, and health systems.

Outside of class, I have been active in many areas. I have been fortunate enough to delve deeper into nutrition through Dr. Eric Yen’s research lab, where I am currently investigating the role of an acyltransferase enzyme as it relates to energy balance and glucose homeostasis. I also enjoy being a volunteer tutor for chemistry students through the Greater University Tutoring Services. To further my exposure to a future career in medicine I volunteer at the Meriter Emergency Department. At the end of the day, I continue to satisfy my running cravings with the Wisconsin Track Club – GO COWS! With the rest of my free time, I enjoy playing the piano, the ancient board game "Go", drawing, reading books, watching HBO, and traveling to new places.
Three of Nutritional Sciences' very own participated at the Wisconsin Science Festival in Madison, held in October. Graduate students Adrienne Cheng and Gretchen Seim, along with Post-doctoral fellow, Robyn Amos-kroohs organized a booth for the festival.

The science festival, produced by the Wisconsin Alumni Research Foundation (WARF), University of Wisconsin-Madison, and Morgridge Institute for Research, was open to the public as a celebration of a wide range of sciences. The festival was held at the Wisconsin Institute of Discovery, and consisted of booths, demonstrations, workshops, and more.

Through Wisconsin Idea STEM Fellows, Amos-kroohs, Cheng, and Seim went through two training sessions about science outreach and teaching. The group state that outreach is “awesome” and “important,” especially with the loss of scientific knowledge in the younger generations. WI STEM Fellows also helped with funding and gave the team necessary equipment.

Even with their busy schedules, the three Nutritional Sciences participants, organized a booth for the event within a week or two. Their “exploration station” focused on blood, its different components, and their functions. They used four types of candy to create representative blood. They used corn syrup to represent plasma, red hots as red blood cells, white jelly beans as white blood cells, and sprinkles as platelets. They already had five blood samples made in different states, such as one representing anemia. Kids came by the booth were able to create their own blood sample, compare it to the original five, and diagnose their blood.

Amos-kroohs, Cheng, and Seim feel great about the outcome of the event. Their booth engaged not only kids, but the parents as well. They enjoyed seeing parents talk to their kids and relate to their kids about science; and beyond that, they enjoyed talking to people with blood disorders.

Amos-kroohs, Cheng, and Seim will be a part of the Science Festival again next year. They have no major changes planned, but hope to have two different set-ups next year, one being more nutrition oriented. Wisconsin Idea STEM Fellows is part of a larger outreach program, and they can ultimately get a national certificate that is highly recognized in institutions across the country.
Yen Lab Hosts Students Through WCATY

This past summer, the Yen Lab hosted high school students through the Wisconsin Center for Academically Talented Youth (WCATY), which is part of the Accelerated Learning Program (ALP). The Yen Lab focuses on understanding fat intake and energy storage to prevent obesity and other metabolic diseases. The selective ALP program allows gifted high school students to spend three weeks together, learning and collaborating. The University of Wisconsin-Madison hosts the students on campus, with 105 hours of class time.

In the shown photo, students reviewed the last step of a polymerase reaction chain (PCR), looking for an amplified gene through gel electrophoresis. Dependent on the location and amount of bands shown in the gel, it is possible to determine whether or not the subject, mice, carried the selective gene. Moreover, students were able to distinguish genotypes based on the presence or absence of a band.

Dr. Eric Yen, along with all the members of his lab, taught and engaged the students in the program. The lab supported the students in their The Human Body and Diseases class, while pushing the students to think critically and explore real world concepts. The Yen Lab has been hosting students in his lab for the past four summers, giving back to the academic community and inspiring high school students that come to campus.

Dr. Ney Invited to Talk on PKU in Europe

Nutritional Sciences Professor Denise Ney was invited to share her research experience using glycomacropeptide (GMP) in the nutritional management of phenylketonuria (PKU) at the XI Spanish National Congress of Congenital Errors of Metabolism in Pamplona, Spain in October. PKU is a rare genetic disease of amino acid metabolism, specifically phenylalanine, which is managed with a lifelong diet restricted in natural protein content. GMP is a unique protein produced during cheese making which contains only a trace of the amino acid phenylalanine. GMP provides a new dietary option for those with PKU. Dr. Ney’s research group has pioneered the development of GMP medical foods as an alternative to synthetic amino acids formula in the PKU diet. There are currently approximately 1000 PKU families in North American that use GMP medical foods with growing interest in Europe. The southern European countries of Italy and Portugal have approved GMP for use in PKU and approval in Spain is expected in 2015. Dr. Ney’s PKU research has been supported by NIH, FDA, USDA Hatch, WARF, and contributions from private foundations.
1. **It’s not just a sweetener.** The plant genus Stevia includes more than 200 species of herbs and shrubs native to South America and Mexico. Yet only two species, Stevia rebaudiana and Stevia phlebophylla, produce steviol glycosides in their leaves. These glycosides are the source of the plant’s sweet compounds.

2. **But as a sweetener, it’s nothing new.** Stevia rebaudiana has been used for more than 1,500 years by various indigenous peoples in South America both to treat diabetes, obesity and hypertension and to provide a sweetening effect for food and drink. Commercial use of stevia took off when sweeteners such as cyclamate and saccharin were identified as possible carcinogens. Japan became the first country to introduce commercial use of stevia in the early 1970s and still consumes more of it than any other nation. Stevia has been available for several decades in natural food stores but in recent years has increased greatly in popularity as a sweetener for processed foods. Today, stevia can be found in many U.S. supermarkets under a variety of brand names, such as Truvia and PureVia.

3. **Why use stevia instead of sugar or other sweeteners?** Stevia is significantly sweeter than table sugar, and comparable in sweetness to products such as aspartame, saccharin and sucralose, but it is metabolized differently. Stevia is perceived as sweet but does not cause a rise in blood glucose like sugar, making it a promising food for diabetics. It is a natural rather than an artificial sweetener.

4. **How is stevia processed within the body?** The glycosides in stevia are primarily known as rebaudioside (or rebiana) and stevioside. They have some bitterness associated with them and can be blended with other compounds to minimize this effect. Once consumed, the glycosides break down into steviol, which is simply excreted; and glucose, which is used by intestinal bacteria and does not go into the bloodstream. So eating foods sweetened with stevia means a sweet taste without added calories.

5. **Can I grow stevia in Wisconsin?** Stevia plants are not adapted to cold conditions but may be grown as annual plants in temperate regions (including in Wisconsin). However, growing plants from seed as an annual crop generally does not result in satisfactory results. Stem cuttings from mature stevia plants may be rooted and used to propagate stevia for growth in spring and summer.

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**5 Things Everyone Should Know About... Stevia**

By Irwin Goldman

This article was obtained through the College of Agricultural and Life Sciences from the Spring 2015 issue of *Grow*, Wisconsin’s Magazine for the Life Sciences.
The STEP-UP (Short-Term Research Experience for Underrepresented Persons) Program provides a unique opportunity for undergraduate students from all over the nation to explore research careers. The STEP-UP Program is federally funded and supported by the Office of Minority Health Research Coordination (OMHRC) in the National Institute of Diabetes and Digestive and Kidney (NIDDK) at the National Institutes of Health (NIH). The goal of STEP-UP is to increase participation of students from backgrounds underrepresented in biomedical research that includes individuals from disadvantaged backgrounds, from underrepresented racial and ethnic groups, and with disabilities. Students have the opportunity to engage in 8-12 weeks of full-time research supported with a summer research stipend. Each student is paired with an experienced research mentor at different institutions throughout the nation; however, the student is encouraged to choose a research institution near their summer residence to avoid relocation. At the end of the summer, students have the opportunity to present an oral and poster presentation at the Annual STEP-UP Research Symposium held on the NIH’s main campus in Bethesda, Maryland with all travel expenses paid for.

Nathalie Ly, an undergraduate student working in Dr. Guy Groblewski’s Lab, was selected as a STEP-UP participant for the summer of 2015. Nathalie’s goal for her research was to gain a better understanding of pancreatic disease progression by studying proteins D52 and Rab5, as well as TGFβ signaling in the endosomal system. She did her research using cell tissue culture, working specifically with Panc1 cells, which is an epithelial cell line with pancreatic cancer. Her project was titled “The Role of Endosomal Trafficking on Cell Fate Decisions.”

Nathalie spent her summer doing full-time research with Dr. Guy Groblewski and graduate student Elaina Jones. In August 2015, she received an all-expenses paid opportunity to present an oral and poster presentation at the Annual STEP-UP Research Symposium held on the NIH’s main campus in Bethesda, Maryland.

From this experience, Nathalie gained more than just a high quality research experience. She was able to meet and network with intelligent students, researchers, and faculty from all over the nation. STEP-UP provided her with an opportunity to research at a high quality lab close to home, and then go on to present her research among her peers and other researchers. Nathalie states that STEP-UP granted her more practice in presenting research, allowed her to connect with medical doctors and researchers, and helped her solidify her career goals.

For more information: [http://www.niddk.nih.gov/research-funding/process/diversity/research-and-training-for-students/short-term-research-experience-underrepresented-persons/Pages/default.aspx](http://www.niddk.nih.gov/research-funding/process/diversity/research-and-training-for-students/short-term-research-experience-underrepresented-persons/Pages/default.aspx)
DNC Updates

The Dietetics and Nutrition Club (DNC) at UW-Madison provides students many opportunities to pile their plates with experiences in outreach, networking, and career planning. It is composed of the Club, Campus, and Community Committees, which work together to bring those interested in health and nutrition together. Along the way, strong networks are formed through volunteer opportunities, socials, and professional development events. DNC members also encourage others to eat healthier by planning events and presentations for a wide variety of audiences.

DNC works with REAP Food Group to bring fresh and locally produced food to Madison classrooms and works with Personal Health Partners to partner with pharmacy students from UW and offer nutrition tips to people at Porchlight, a homeless shelter, in Madison. The DNC campus committee updates a bulletin board at the SERF a couple times a semester to give helpful nutrition tips for students.

On November 7th, DNC had a table for Science Saturday at the Discovery Building and the theme was to “Unlock the Secrets of Food,” which highlighted all of the amazing and surprising ways living things relate to food, get energy from food, engineer, produce, and process food.

Recently, a study group was set up on opposite weeks of our meetings so DNC members can get together and work on academics while getting to know each other and networking.

In our first meeting of November, DNC asked Alpha Kappa Psi, a business fraternity, to host a Resume Writing Workshop for the members, and they also brought in Connect Fotos to take professional head shots for the members to use on their LinkedIn profiles, portfolios, etc.
2015 CALS Nutritional Sciences Awards Recipients

Ada Holt Lorenz Award: Rachel Mersberger  
Albert J. & Adelaide E. Riker Scholarship: Alison Gruen  
Anna L. Rowe Scholarship: Sierra Kirby  
Beulah Dahle Scholarship: Alison Gruen; Tori Kusiak  
CALS Centennial Academic Merit Award: Maddie Wilinski  
Cora I. Jayne Academic Merit Award: Isabel Markowski; Katherine Miller  
Daughters of Demeter Outstanding Junior Scholarship: Sara Ann Herzog  
Dorothy Strong Scholarship: Megan Breckheimer; Jayne-Norah Ntambi; India Pungarcher; Camille Swan  
Hattie B. Goessling Nutritional Science Scholarship: Faith Blair, Danielle Felber, Gabe Grindrod, Caitlin Guell, India Pungarcher, Deanna Ronne, Makiko Thomas Omori  
Henry Steenbock Academic Merit Award: Lauren Fahmy, Melaney Van Spankeren, Dominica Wardell  
Jacob Scharpf Family Scholarship: Rachel Mersberger  
Karen Spector Memorial Scholarship: Emily Held  
Kathleen E. McCarthy Dietetics Scholarship: Kelsey Huntington  
Kitty Clark Cole Scholarship: Sierra Kirby  
Lawrence M. Weyker Career Development Scholarship: Macy Barnes, Naomi Boldon  
Peter Young Student Assistance Grant: Natalie Hogan, Jackson Moran, Cristian Vasiliev  
Roger Biddick Quest Scholarship: Gabe Grindrod, Sabrina Kabakov  
Ruth & Carl Miller Academic Merit Award: Faith Blair, Katherine Craemer, Jennifer Danilek, Maci Louwagie, Lexi Macmillan Uribe, Katelyn Schobert, Jordan Stuppnig  
Sadie & Richard Delwiche Scholarship: Camille Swan  
Wisconsin Rural Opportunities Foundation Award: Emily Held  
Wisconsin Rural Youth Scholarship: Caitlin Guell, Tori Kusiak

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