



College of Agricultural Sciences

# INTERNATIONAL PROGRAMS

Summer 2012 E-Newsletter

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### 1. Penn State Researchers Receive Gates Foundation Grant

Adapted from PSU Live <http://live.psu.edu/story/59684#nw69>  
<http://live.psu.edu/story/59877#nw69>

Three researchers in Penn State's College of Agricultural Sciences have been awarded a grant through the Grand Challenges Explorations program, an initiative funded by the Bill & Melinda Gates Foundation.

Andrew Patterson, assistant professor of molecular toxicology, and Gary Perdew, John T. and Paige S. Smith Professor in Agricultural Sciences, will pursue an innovative global health and development research project, titled "Modulation of Aryl Hydrocarbon Receptor (AHR) Activity for Establishing and Maintaining Gut Immune Function and Overall Intestinal Health." David Hughes, assistant professor of entomology and biology, will pursue an innovative global health and development research project, titled "Taking Out the Bodyguards: A Novel Solution to Ag Disease."

Grand Challenges Explorations (GCE) funds individuals worldwide to explore ideas that can break the mold in how we solve persistent global health and development challenges. Patterson's, Perdew's and Hughes' projects are two of 107 Grand Challenges Explorations Round 8 grants announced this month by the Bill & Melinda Gates Foundation.

"Grand Challenges Explorations encourages individuals worldwide to expand the pipeline of ideas where creative, unorthodox thinking is most urgently needed," said Chris Wilson, director of Global Health Discovery and Translational Sciences at the Bill & Melinda Gates Foundation. "We're excited to provide additional funding for select grantees so that they can continue to advance their idea towards global impact."

To receive funding, Grand Challenges Explorations Round 8 winners demonstrated in a two-page, online application a bold idea in one of five critical global health and development topic areas that included agriculture development, immunization and nutrition.

Patterson and Perdeu will lead a team of scientists to explore whether dietary modification or supplementation can produce nutrients in a mother's breast milk that will enhance immune function in the gut of her children, with an eye toward reducing deaths and illnesses from gastrointestinal diseases.



*Penn State researchers will develop an approach to fortifying mothers' breast milk, with an eye toward reducing illnesses and deaths in regions where intestinal disorders in infants and children are common, such as in sub-Saharan Africa*

"We believe that the aryl hydrocarbon receptor (AHR) is an untapped target for modulating intestinal inflammation and general intestine health -- one that will likely have far-reaching therapeutic implications," the researchers said in their grant application.

"We hypothesize that the delivery of natural AHR activators via breast milk will promote intestinal development and repair in newborns and young children, and bolster overall intestinal health in regions of the world where diarrhea and

its associated complications are the second leading causes of mortality and morbidity."

The researchers explained that recent evidence strongly indicates that the AHR serves as a critical regulator of the gut immune function by maintaining the balance between immune suppressive regulatory T cells and immune response promoting Th17 cells. In addition, they said, their unpublished data firmly indicates that the AHR plays a key role in the maintenance of barrier function, which influences the ability of bacteria to permeate the gut.

"A wide variety of AHR activators and precursors exist, including diet-derived nutrients, such as the essential amino acid tryptophan and various compounds that are obtained from green leafy vegetables," the researchers wrote. "These simple dietary modifications will likely result in maximum nutrient uptake and resistance to intestinal diseases for both the mother and child."

The grant will enable the researchers to prove their hypothesis first in a mouse model. In the future, they plan to extend the concept to human newborns and young children, eventually conducting intervention studies in settings where intestinal disorders in infants and children are common, such as in sub-Saharan Africa.

"Our approach represents an inexpensive, nontoxic and natural dietary means by which to pharmacologically target the AHR, the activation of which in the gut is critical for maximum immune surveillance and the promotion of improved intestinal barrier function," the researchers said.

Hughes' project aims to reduce the incidence of plant diseases -- and consequently crop losses -- by reducing the population of ants that act as protectors for various crop pests. His research team would accomplish this by modifying plants to express genetic material that would pass through the plant

feeders and be ingested by ants, effectively sterilizing ant queens and causing a rapid breakdown of ant colonies.

"Insects such as aphids, whiteflies and mealybugs spread viral, bacterial and fungal plant diseases that can lead to significant crop losses," Hughes said. "When feeding, they excrete a sugary substance known as honeydew, which ants then use to feed themselves, the queen and her offspring.

"In return, ants provide a protective service to the plant-suckers, permanently guarding them and even building tents of soil or plant material over them so they can remain unmolested by predators, parasitic wasps or insecticides."

By reducing the number of ants, Hughes explained, the plant-feeding insects would become more exposed to pesticide treatments or would succumb quickly to natural enemies already in the environment. He noted that ants' relatively long generation time makes the evolution of resistance less



*Ants that act as bodyguards to tend disease-spreading crop pests (as depicted here) can prevent effective control, leading to significant yield losses. Supported by a Gates Foundation grant, a team led by Penn State researcher David Hughes will develop a novel approach for*

likely, adding that this approach would target only local ant-colony control without impact on the ant ecosystem as a whole.

As its model, the team will use cassava, which provides the bulk of calorie intake for more than 250 million people in Africa. "Mealybug and whitefly are major pests of cassava and lead to substantial crops losses," Hughes said. "The whitefly transmits cassava mosaic disease virus, which can wipe out entire yields."

Hughes said researchers hope the knowledge gained through this upstream

research could lead to more environmentally friendly options for a variety of agricultural pest-management situations. "We believe this concept has transformative potential and could have a major impact on solving some of the world's most important issues, such as food production and agricultural productivity, in a relatively short period of time."

Hughes, who holds a joint appointment in the College of Agricultural Sciences and the Eberly College of Science, is an affiliate of Penn State's Center for Infectious Disease Dynamics and the Huck Institutes of the Life Sciences.

He will work with an international team of researchers that includes Mark Gultinan, Siela Maximova, Cristina Rosa and Gary Thompson, Penn State; Wilhelm Gruissem, Swiss Federal Institute of Technology Zurich (ETH Zurich); Harry Evans, Centre for Agricultural Bioscience International (CABI); and Tony Cudjoe, the Cocoa Research Institute of Ghana. [\(Return to Index\)](#)

## 2. International Agriculture Educator Receives Young Professional Award

Adapted from Penn State Live [live.psu.edu/story/59933](http://live.psu.edu/story/59933)

Tom Gill, assistant director of international programs in Penn State's College of Agricultural Sciences, recently was recognized for his outstanding efforts at inspiring students to explore international agriculture.



Gill received the 2012 Young Professional Award from the Association for International Agriculture and Rural Development. The organization bestows the honor annually to recognize early career contributions to achieving its goals and objectives.

Gill joined Penn State three years ago as a special assistant to help develop Africa programs in the college's Office of International Programs. Since then he also has taught a variety of undergraduate international agricultural development courses and currently serves as the coordinator for Penn State's International Agriculture undergraduate minor.

"Dr. Gill's strong record and reputation for excellence is highlighted by his commitment to international agriculture and rural development, his personal integrity, his overall productivity and his outstanding scholarship," said Mark Brennan, Penn State associate professor of community and leadership development. "Such excellence has earned him the respect of his students and colleagues."

Gill revised and currently teaches INTAG 100 Introduction to International Agriculture, a core course for the International Agriculture minor, according to Deanna Behring, director of International Programs in the College of Agricultural Sciences.

She noted that Gill also co-created and currently co-teaches two new courses in international agriculture, including a senior seminar course with a travel component to Washington, D.C., allowing students to meet with officials at the U.S. Agency for International Development, the World Bank and other groups engaged in international and rural development.

He also created and launched the Ag2Africa program, a College of Agricultural Sciences initiative to provide increased opportunities for faculty, extension staff and students to engage with partners in Africa.

"Dr. Gill was also a key member of the team that formulated a four-day workshop on global food security for Fulbright students from around the world, which helped kick off the Year of Food Security at Penn State," Behring said.

"He is a great teacher who is highly dedicated to his field and extremely knowledgeable about international agriculture. I expect him to have an incredible influence on current and future international agriculture and development."

Before coming to Penn State, Gill was completing a doctoral degree in Interdisciplinary Ecology from the University of Florida, during which time he worked with smallholder farmers in Kenya with the Christian Reformed World Relief Committee.

Gill received his master's degree in Tropical Agricultural Development from Reading University, U.K., and his bachelor's degree in Geography from Emmanuel College, University of Cambridge, U.K. ([Return to Index](#))

### 3. Global Change Ecology Research in Spain

*Tom Adams, PhD candidate in Ecology*

*Senior Project Associate in the Department of Ecosystem Science and Management*

For over a month this summer, I and three other Penn State students had the pleasure of studying various aspects of global change ecology in Spain.



We were participants in an NSF funded International Research Experience for Students (IRES) grant whose principal investigators are Margot Kaye and Jason Kaye, in the Ecosystem Science and Management Department and Deanna Behring, director of the Office of International Programs. The grant funds 12 Penn State students (four students per year for three consecutive years, 2011-2013) to travel to Spain to gain international research experience.

While in Spain, we worked with two different laboratory groups; one headed by Fernando Valladares of The Museo Nacional de Ciencias Naturales at the Consejo Superior de Investigaciones Cientificas and the other headed by Fernando Maestre of The Universidad Rey Juan Carlos. During our stay, we assisted these laboratory groups with a diverse array of ongoing research projects ranging from coring *Pinus sylvestris* (scots pine) trees along an elevation gradient in the Pyrenees Mountains to measuring precipitation in an urban warming experiment in the outskirts of Madrid. We were also encouraged to conduct our own research projects, which allowed me the opportunity to sample roots from a *Quercus suber* (cork oak) common garden in Monfragüe National Park to see if root traits co-vary with leaf traits in this economically important species.



In addition to getting valuable research experience, we also gained cultural insights by working closely with our Spanish collaborators and by living in the heart of downtown Madrid. The overall experience of being immersed in a foreign

culture while conducting scientific research was fantastic and I would strongly recommend that every student take advantage of such wonderful international opportunities available here at Penn State. [\(Return to Index\)](#)

#### 4. Penn State Ag Ed Students Travel to South Korea

*Daniel Foster, Student Teacher Coordinator*

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Seoul, South Korea – On May 31<sup>st</sup>, after spending a semester developing global competency and preparing to maximize a once in a lifetime experience, 18 Penn State AEE majors and Dr. Daniel Foster, assistant professor, agricultural and extension education, traveled from Happy Valley to Seoul, Korea to participate in the only known student study abroad opportunity in the nation focused on School-Based agricultural education. The Penn Staters joined Dr. Kirby Barrick, professor, agricultural education,



*SNU, PSU and UF students at Suwon High School for Agriscience after teaching to secondary students on agriculture*

University of Florida and two of his students for the experience.

While in Korea for 10 days, the agricultural education travelers had the opportunity to partner with students from Seoul National University to collaborate on designing and delivering instruction to secondary Korean agricultural education students. AEE Majors visited Yeojou Self

Management HS and Suwon High School for Agrisciences. In addition, they meet with the Future Farmers of Korea (FFK) and the Korean Association of Agricultural Educators (KAAE). In addition, students broadened their own agricultural knowledge by visiting the Rural Development Administration of Korea and the National Agrobiodiversity Center. Of course, the students took time for the cultural sites, visiting the Demilitarized Zone (DMZ) between North and South Korea, participated in a Han River Cruise, and took in shopping on the famous Insadong Street Shopping District.

“I have no doubt that this experience has helped me become a better agricultural educator with an increased ability to work students not like me...to help all students find their success in my agricultural education classroom”, said Doug Masser, 2012 Graduate, “I feel that because of this unique experience,

I will be more confident in connecting my students to opportunities in the global agricultural arena.”



*The Lion on Location at the DMZ with a South Korean Soldier*

The partnership between Seoul National University, the University of Florida and Penn State hopes to continue in 2013 with SNU delegates and students visiting PSU and going back to Seoul again in 2014. “We are constantly striving to develop world class agricultural educators”, said Dr. Daniel Foster, course leader.

To learn more about starting on the path to having a career that

makes positive impact on the lives of students across the globe by becoming an agricultural educator, please contact the agricultural teacher education program at [teachag@psu.edu](mailto:teachag@psu.edu). Follow us on Twitter at TeachAgPSU, on Facebook at [www.facebook.com/PSUTeachAg](http://www.facebook.com/PSUTeachAg), or on our blog at <http://teachagpsu.blogspot.com>. ([Return to Index](#))

## **5. Penn State Animal Science Course Highlights French Equine Industry**

*Sally B. Bair*

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Twenty students in Penn State’s Department of Animal Science received an up-close view of the French equine industry as part of a course taken for credit that included both classroom experience and a trip to the heart of the French equine industry, Normandy. The trip provided an exceptional opportunity to tour stud farms, training facilities, racetracks and equine research facilities.

Katie Branham, Lincoln University, PA, expresses the sentiments shared by the group, “It was a wonderful experience.” Thrilled with the opportunity to visit premier equine operations, she added, “It opened our eyes to the whole range of career opportunities for people who are interested in the equine industry. The training facilities we visited were fantastic, and it was exciting to get a close look.” Branham, who wants to study reproductive biology, was especially intrigued by a visit to the M Stud Farm, a sport breeding and training farm, highly regarded throughout Europe for their advanced breeding techniques. Of particular interest was a foaling device hooked onto the horse’s vulva so that when the mare was foaling, the device alerted owners by cell phone.

Alicia Rickabaugh, Stormstown, PA, junior in Animal Science, said, "I loved the whole trip. It was especially interesting to visit the Ecole De Course Hippiques, and see how concentrated and strict the schedule is. It offered a complete grounding in all aspects of the equine industry." A particular thrill for the students was the chance to drive a sulky around the track – with a former racehorse and an expert teacher to guide them.

Expanding knowledge and horizons while exploring career opportunities were two goals of the trip, according to Ann Swinker, Ph.D, one of the course instructors. "The course brings together the entire gamut of the equine industry, from breeding and training, to trade issues, agriculture trade policy, research, equestrian event management and so much more. The international component includes exposure to the equine industry, but we include French culture, geography and history to really expand the students' global perspective. This is the first year we have offered the course, of which the international trip is an integral part." She noted that they are currently reviewing the course syllabus and hoping to offer the course and a return trip to Normandy next year.

Terry Etherton, Ph.D., Head of Animal Science, said, "This course offers tremendous insight into all facets of the equine industry. It is especially vital for students to see the wide range of career opportunities available in one of Pennsylvania's most important animal industries, and the international travel deepens their perspective."

Justene Testa, Latrobe, PA, added, "Through the class I was truly able to learn a lot about our equine industry here in the U.S. and even more about France. What we experienced went from breath-taking to fascinating. Going on this short trip allowed me not only to experience going abroad, which I had never done before, but also to learn more about the equine industry and a new culture."

For John Boston, Warminster, PA, an ag engineering major, the trip afforded the opportunity to get to know animal science majors, his colleagues within the College of Agricultural Sciences with whom he previously had little interaction. He said, "The introduction prior to the trip really gave us great background, and the course spurred my interest in investigating an equine science minor."

Gaining a better understanding of the equine industry was important to Kelly Corcoran, Monroe County, PA. She reflected on the experience, saying, "I learned so much about the horse industry in France. I know I'll continue to integrate this knowledge when I begin vet school. The trip also encouraged me to learn more about the U.S. horse industry, and I hope to compare my experiences in France to our own high-end breeding farms and racetracks."

It was especially interesting for the group to visit the Saint-Lo National Stud, which features technical centers for horse owners, museums, youth programs, and vocational training programs. Melissa Wise, Bloomington, IL, said, "Being able to see the rich history and the advances that have been made taught us a lot about groups of people coming together so that assets can be developed for all to enjoy." Their hosts emphasized the unity that is shared by those who work in the horse industry, regardless of political or social divisions.



The trip was organized by the Normandy Horse Council, who will also be hosting the 2014 World Equestrian Games being held in France for the first time. They also visited Cruchettes Stud Farm, home of French Trotters Breeding and Training and pioneers of modern horse breeding techniques; the Equine



*Students who traveled to France to learn about the equine industry include: First row, from left - Dr. Marianne Fivek, Kelly Corcoran, Remi Maisel, Alicia Rickabaugh, Kathleen Pierce, Megan Martin, Melissa Wise and Maria Dahl; second row, from left - Brittany Allaband, Karley Milburn, Cecilia McKenna, Emily Belmont, Laura Wodzinski, Justine Testa and Dr. Ann Swinker; third row, from left - John Boston, Luke Harding, Laura Killian, Amy Kraus, Caylie Hake, Caroline Carswell and Katie Branham.*

Research Centers in Douzele, pathology laboratories to study equine diseases; LeQuesnay Stud Farm; La Touques Thoroughbred Racetrack; Thoroughbred Training Centers; and Clairefontaine Racetrack and Deauville

In addition to the strong equine component, students visited several historical sites throughout the region – Mont St. Michel, Caen Memorial Museum providing an overview of World War II, the United States World War II Memorial Museum and Cemetery, and

Versailles. Stops in Paris included Notre Dame Cathedral, the Louvre, Tuileries, Musee D'Orsay and the Eiffel Tower.

Part of the course requirement was keeping a daily travel journal, now used to reflect on the many outstanding memories created in Normandy. While no one was willing to single out just one favorite experience, the enthusiasm for this unique learning opportunity was universal. The French equine leaders left a favorable impression, of their breeding, their training, their career opportunities – and their warmth in welcoming a group of Penn State students eager to experience the culture and the rich, historic legacy of a thriving horse industry. ([Return to Index](#))

## **6. Educational Trip to Denmark**

Four students, Denise Beam, Vance Brown, Kelsey Derstein, Heather Stutzman and one professor, Dr. Ken Kephart, from the Pennsylvania State University visited Denmark from May 20-27, 2012 to gain knowledge about that country's agricultural systems in general and the swine industry in particular. Denmark's swine industry is different from that of the U.S. in many respects, thus it provided a unique opportunity to observe, listen and learn.

The group arrived in Copenhagen (located on the island of Sealand) on May 20 and traveled immediately to the island of Fyn. For several days they visited educators, students, farmers, advisory services, and a packing plant. On May 24 they returned to Copenhagen to visit with other industry leaders and departed for Pennsylvania on May 27.



Seeing a new country, new people and new ways of thinking provides an important perspective for America's agricultural industry. In Denmark, a variety of factors have led to increased production, levels yet to be seen in the United States. Perhaps the most important lesson learned from hearing and seeing the results of a regulatory government is that producers should become more engaged in the decision-making process in our own government. As Denmark is a constitutional monarchy, individuals may have less of a say in the legislative deliberations. In order to prevent poor decisions from being made by officials who are uneducated about the swine

industry, it is important for producers to make every effort to lobby good ideas to those officials so that ultimately we can increase the pork production in our country and raise food to feed the world. ([Return to Index](#))

### **7. Upcoming International Embedded Courses for Spring 2013**

It is that time of year again to begin thinking about international embedded course planning. Although some courses are not confirmed yet, here are the courses that are tentatively planned for Spring and/or Summer 2013 in the college:

- Belize over spring break, focusing on tropical ecology (tentative)
- Brazil over spring break, focusing on sustainable agriculture
- Costa Rica over spring break focusing on Environmental Resource Management
- Costa Rica at the end of the spring semester for Spanish language immersion
- France, Paris based, at the end of the spring semester for agricultural policy and current issues in agriculture and food systems
- France, Normandy based, over spring break or at the end of the spring semester for Equine Science
- Germany at the end of the spring semester, focused on food, fuel, and fiber
- Italy at the end of the spring semester, focused on food science
- Kenya at the end of the spring semester, focused on service learning, community development, and agroecology
- Namibia in June, focused on evolutionary biology
- Spain in June/July, an honors research course focused on global change ecology
- Vietnam at the end of the spring semester, focused on agricultural leadership

Are you planning to offer a course this year with embedded international travel that is not on the list? Please contact Ketja Lingenfelter, CAS Study Abroad Coordinator at [ketja@psu.edu](mailto:ketja@psu.edu) or 863-4164 to assist and advertise. ([Return to Index](#))

## **8. Study Abroad Stats for 2011-2012**

As we look back on the last academic year, we are encouraged by the number of students who gained international experiences during their time with Penn State's College of Agricultural Sciences. During 2011-2012, over 180 CAS students had international experiences on Penn State study abroad programs. In addition, 25% of graduating seniors in CAS this spring reported that they had some type of international experience while in college. CAS students experienced international education in at least 23 different countries in AY2011-2012, with 12 of these locations thanks to CAS faculty led embedded courses during Spring/Summer 2012.

## **9) Ukraine University 10<sup>th</sup> Year Anniversary**

This has been a year full of anniversaries for our office. After celebrating 20 years of partnership between the Penn State College of Agricultural Sciences and the National University of Life and Environmental Sciences of Ukraine last spring, in August we celebrated two more anniversaries - the 10<sup>th</sup> anniversary of signing a Letter of Intent with the Tavria State Agrotechnological University (TSAU), Ukraine and the 10<sup>th</sup> anniversary of signing a Letter of Agreement with the Vynnytsia National Agrarian University (VNAU), Ukraine.

Close to the date of the 10<sup>th</sup> anniversary, our Letter of Intent with TSAU was renewed. On behalf of the PSU, the Letter of Intent was signed by Bruce McPheron, Dean of the college; and on behalf of TSAU, the Letter was signed by Rector Kiurchev.

In addition to the partnership anniversaries, both TSAU and VNAU are celebrating anniversaries of their own - 80<sup>th</sup> and 30<sup>th</sup>, respectively. Dean McPheron and Deanna Behring have sent their congratulation letters to our friends and partners in Ukraine. [\(Return to Index\)](#)

## **10) CAS International Programs welcomes 2012/2013 Interns!**

If you happen to stop by our offices this semester, you may see some new faces! We'd like to introduce our newest interns who will be working with us for the upcoming academic year.

**Emily Urban** – Junior in Agricultural Extension and Education, INTAG minor

*“Growing up, I was always interested in foreign countries and global issues, hoping to study abroad in the future. This past spring, I spent a semester studying at the University of Bath, England, and followed up in the summer with an internship working at a horse farm under Olympic three-day event rider Karen Donckers in Belgium. Upon arriving back into the States, I knew I wanted to continue my international experiences, stay connected with international opportunities and programs, and welcome international visitors. Working in this office presents me with these opportunities, as well as helping me prepare for a career in the field of international agriculture in the future.”*

**Kristal Jones** – Ph.D. candidate in Rural Sociology and International Agriculture and Development (INTAD Dual Degree Program)

*"I am a Ph.D. student in Rural Sociology and International Agriculture and Development, a dual-title program that has allowed me to pursue interests in the social aspects of agricultural systems in West Africa and the effects of agricultural development projects in rural communities. My Master's thesis work investigated the nature of participation in a plant breeding project, and my Ph.D. research is now following and analyzing the changes in seed systems in West Africa as new varieties of local grains are produced and commercialized. Working in the International Programs office allows me to connect with other faculty and graduate students conducting research in international settings across a range of disciplines. These connections have allowed for mutual learning and collaboration, which has enriched my time at Penn State and led me to seek a consistent way to be involved with international work and study on campus. Working in the International Programs office has also allowed me to explore future professional possibilities, through conversations and examples offered by visiting scholars and researchers, as well as Penn State faculty. I plan to continue to support work in agricultural development in West Africa in the future, as an independent researcher or project consultant. I also plan to use the skills I have learned while at Penn State and abroad to support farmers in the United States as they work to balance external demands on agricultural systems with their personal and social priorities for agriculture and rural communities."*

**Gloria Kim** – MS, School of International Affairs, concentration on sustainable development in Latin America

*"After graduating from Binghamton University State University of New York with a B.A. in Philosophy, Politics, and Law, I worked at Computers for Youth, which is a non-profit organization dedicated to empowering students to take charge of their learning and empowering parents to help their children to do better in school. I decided to intern at the Office of International Programs because of my interests in international sustainable agriculture and the valuable professional experience and knowledge I will obtain through this internship. My career objectives are to become a Foreign Service Officer or work for non-governmental organizations dedicated to international development, food security, disaster management, and other humanitarian issues. When I'm not contemplating on how to make the world a better place (☺), I love to play paintball, go tray sledding and play an array of instruments at public parks."*