

Dispersal Notes

Fall 2015 Semester Newsletter

Department of Plant Pathology and Microbiology
Iowa State University

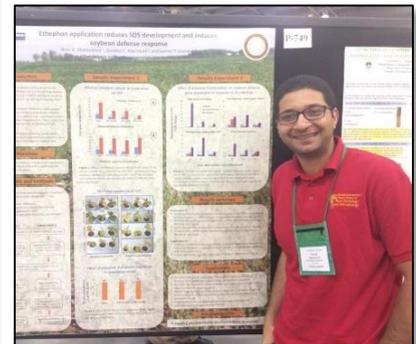


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The purpose of the Department of Plant Pathology and Microbiology's newsletter 'Dispersal Notes' is to keep department members, alumni, prospective students, industry, other universities and the public aware of the happenings of the department. Many thanks to the Zirakparvar family for providing funds for this project. I would also like to express sincere gratitude to Dr. John Hill for his advice and guidance in producing these newsletters, and wish him well in his retirement (see page 8). Additional thanks to Dr. Thomas Baum, Jared Jensen and my wife, Emily, for formatting help and additional edits. If you have any questions, comments, or wish to submit an item to the newsletter, please contact us (<https://www.plantpath.iastate.edu> or email aqbeeman@iastate.edu). Thank you for reading!

-Augustine Beeman, Newsletter Editor

Dear Friends and Alumni!

As we are steadily approaching the Holiday Season I can contently summarize that our Department of Plant Pathology and Microbiology had another great year and is headed in the right direction. Our academic programs are strong and getting stronger. We recently had reviewed our Plant Pathology graduate program and implemented critical changes in the curriculum. Our graduate student numbers are holding steady and we currently have an outstanding cohort of grad students with strong internal leadership and a lot of 'spunk'. Similarly, our Microbiology undergraduate program, which we co-administer with the Department of Animal Science, is going strong. Enrollment is steadily growing and we continue to increase our department's role in providing meaningful microbiology education.

Strong enrollment is a function of many forces, in particular our efforts to reach the public. In order to be visible also in the cyber world, we recently overhauled our departmental [webpage](#) and are continuously improving its appearance and contents. Similarly, we now have a presence on [Facebook](#) and [Twitter](#) and we are releasing monthly email news fliers, our '[Dispersal Notes](#)'. As a department we hope you will enjoy these resources and will find them useful. Please join me in thanking graduate students Augustine Beeman and Jared Jensen who carry the day as Zirkparvar Fellows in charge of newsletters and web resources, respectively. And of course, join me in thanking our alumni Esmail and Mary Zirkparvar for their endowment gift that allowed us to create these fellowships in the first place.

One of the most convincing signs of a healthy department is its ability to offer new faculty positions and to fill them with top talent. Our department has had a very good run of faculty recruitment over the last 1.5 years. We started out in 2014 by attracting [Dr. Wei Wang](#) and [Dr. Justin Walley](#) as part of a presidential strategic hiring proposal in the area of systems biology. Both Justin and Wei are going strong both in their teaching plans and ramping up their research projects. And we are following up this success with the hires of Drs. Nancy Boury and Nicholas Peters as new faculty starting in January 2016. Both Nancy and Nick will build their research careers on the Scholarship of Teaching and Learning (SoTL) and will contribute top tier teaching efforts to our department's academic offerings. We are tremendously excited about these new faculty and I hope you will have a chance to catch up with some or all of them in the near future.



While all of these items fall under good news, I have the great pleasure to close out my greetings with a once-in-a-lifetime news item: our department is slated to move into a brand new building in 2018! ISU, for several years now, has been engaged in an intense dialog, on campus and off, on how to strengthen the biosciences on campus. As a result, the ISU Biosciences Initiative has been initiated, and as part of this capital plan, the concept of an Advanced Teaching and Research Building (ATRB) has taken shape. And by now, the ink has dried on the first round of ATRB construction plans. The old Industrial Education building across the road from the horse barn at the corner of Stange Road and Pammel Drive will be demolished and will make room for a state-of-the-art five-story teaching and research building with a greenhouse complex on its roof. Almost the complete Department of Plant Pathology and Microbiology will make the ATRB its new home together with a number of faculty from the Entomology Department and the Genetics, Development and Cell Biology Department.

Message from the Department Chair (cont.)

Our departmental front office as well as a dedicated plant pathology teaching lab and other teaching infrastructure and a beautiful atrium will be on the ground floor, while the above-ground floors will house a sizable suite for our Plant and Insect Diagnostic Clinic (PIDC) as well as prime research space that will elevate our research enterprise to a new level. I can't wait for the ATRB to take shape, and in order to give you an early impression of this building, I have obtained permission to include two architect's renditions of what the ATRB will look like.



Of course, this capital project requires extensive funds, which are provided through state appropriations but also through fund-raising activities. Our University Foundation has created a flier describing the Biosciences Initiative in a broad concept, and I have taken the liberty to append this flier to our newsletter for your information and perusal.

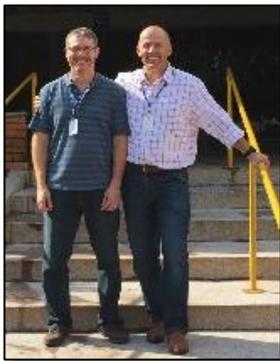
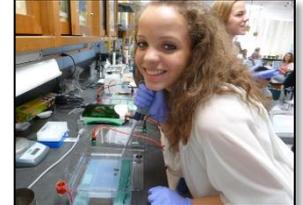
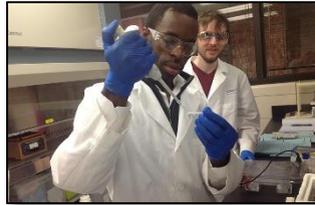
I close by wishing you all Wonderful and Happy Holidays! I hope you will enjoy this newsletter and I encourage you to provide us with your feedback. Don't be strangers! Bookmark our webpage and check back frequently! You are a vital part of our Plant Pathology and Microbiology family and we would love to hear from you. Our department is a truly special place and I am deeply grateful to have the honor to serve as department chair.

-Thomas Baum, PLPM Department Chair

Department Highlights and News

iTAG Barley teacher training and workshops enables hands-on science for students

The Wise lab hosts summer NSF-PGRP sponsored iTAG Barley "Inheritance of Traits and Genes", a 7-12 STEM outreach program to understand the relationship between genotype and phenotype, and empower better-informed citizen scientists. Using the diverse Oregon Wolfe Barley population as the model, teacher iTAG training enables their students to learn principles of phenotyping, DNA extraction, PCR, restriction enzyme digests, and nucleic acid gel electrophoresis. iTAG Barley has been implemented in >40 high school classrooms from 2009-2015, impacting >1,000 students, half of which were underrepresented from urban to rural communities. The project is continuing to expand its reach with the addition of an iTAG Barley summer teachers workshop, July 28th-31st, 2015. Workshop participants collectively will use iTAG Barley in 53 classes during the 2015-16 school year, impacting >1,400 additional high school students.



Steve Whitham (left) and Thomas Baum (right) visited collaborators at Embrapa soja, Londrina, Brazil, October 22 and 23rd, 2015. They presented seminars on their soybean rust and soybean cyst nematode research projects. Baum's talk was titled 'Cyst nematode effector proteins: emerging paradigms of parasitism'.

The Baum lab recently hosted visiting PhD student Margarida Espada from the University of Evora, Portugal. Margarida was visiting the lab to learn a technique, developed in the lab by staff scientist Tom Maier, to isolate the esophageal gland cells from phytonematodes and perform RNA-seq to analyze the phytonematode effectorome. Margarida is involved in a project to study the Pine Wilt Nematode, *Bursaphelenchus xylophilus*, a severe problem in her native Portugal, and will be applying what she learned in the Baum lab to this project.



The Baum Lab with Espada (fourth from right).

Steve Whitham has joined the editorial board of Molecular Plant Microbe Interactions. His three-year term as Senior Editor begins on January 1, 2016! Check it out [here!](#)

The Miller lab has said farewell to postdoc Juliette Doumayrou. With assistance from undergraduate Melissa Sheber, Dr. Doumayrou made great advances in identifying structures in the coat protein of a luteovirus that affect virion stability, virus movement in the plant, and virus transmission by aphids.

Juliette has been very busy! In a separate project, Juliette made several visits to the lab of professor Carolyn Malmstrom at Michigan State University, in a collaborative project involving deep sequencing of old herbarium samples to understand the evolution of barley yellow dwarf virus, a major pathogen of small grains around the world.

Juliette will move to the lab of Andrew Wargo at the Virginia Institute of Marine Science to study evolution of fish viruses. Sample collecting in the field ought to be a lot more fun!



Juliette (left) and Melissa (right) infest pea plants with viruliferous aphids.

The Miller lab has also said farewell to postdoc Sung Ki Cho who had spent the past year performing RNA-protein gel-shift experiments demonstrating the surprising interactions between a plant virus booster of protein synthesis and human translation initiation factors. Dr. Cho has moved on to a postdoc position studying circadian control of translation in plants in the lab of Albrecht von Arnim at the University of Tennessee. We will miss Sung Ki, a kind and dedicated mentor for many rotating and new graduate students in the lab.

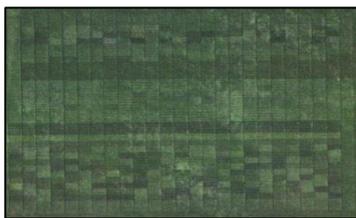
Gwyn Beattie

Dr. Beattie and her lab have had a busy 2015. This year, two PhD students from her lab successfully defended their theses and graduated (see graduate student updates for more information). Dr. Beattie has been active in organizing and attending conferences focusing on the plant microbiome. She co-organized a symposium this summer, "Phytobiomes 2015: Designing a new paradigm for crop improvement", held in Washington D.C. from June 30th to July 2nd. She also helped organized the 10th International Symposium on Phyllosphere Microbiology held last July in Ascona, Switzerland, where researchers discussed diverse aspects of microbial and insect life on leaves. Additionally, Dr. Beattie was part of a 3-member panel representing academia, industry, and crop producers that discussed microbes and the future of agriculture at the SXSW Eco Symposium held in Austin, Texas in October. Other meetings Dr. Beattie has been involved with this year have included trips to Japan, Oklahoma and Mexico. In October, Dr. Beattie also hosted a visiting phytobacteriologist from North-West University in South Africa, Dr. Olubukola Bababola.



Greg Tylka

The Tylka lab finished another successful season of soybean cyst nematode (SCN) resistant soybean variety trials in the fall of 2015. The effort is the largest of its kind in the United States and has been evaluating resistant varieties for agronomic performance and nematode control for more than 20 years. Nine experiments consisting of nearly 2,500 field research plots are planted, soil sampled twice, maintained, and harvested annually. The results of the experiments are compiled in a report sent directly to 70,000 Iowa farmers in early January each year. The work is conducted by Tylka lab members Chris Marett, Greg Gebhart, Mark Mullaney, with assistance from several undergraduate student workers and financial support from Iowa soybean farmers through a grant from the Iowa Soybean Association.



An aerial view of one of the SCN variety trial locations.

The Tylka lab recently began conducting in-field assessment of nematode-protectant seed treatments for management of the soybean cyst nematode. These experiments, at nine locations throughout Iowa, include products such as Bayer's Votivo and Ilevo and Syngenta's Clariva and provide Iowa soybean farmers unbiased assessment of the effects of the seed treatments on soybean yields and SCN numbers. This work also is conducted by Tylka lab members Chris Marett, Greg Gebhart, Mark Mullaney and is supported by a grant from the Iowa Soybean Association. Greg Tylka was named a fellow of the American Phytopathological Society at its annual meeting in Pasadena, CA, in August 2015.



Wei Wang

Dr. Wang started as an Assistant Professor in the PLPM department in late 2014, along with Dr. Justin Walley. The two were part of four high-impact hires in 2014 by the College of Agriculture and Life Sciences. Both have expertise as systems biologists, who seek to use computer software to understand the basis of plant-pathogen interactions. Dr. Wang's research interests focus on using sequencing technology, Bayesian statistical algorithms and other tools to understand temporal plant immune responses at the molecular level. His recent work has examined how salicylic acid (SA) works with the circadian clock, ultimately leading to a "fine tuning" of the immune response of the plant to a pathogen. Additionally, Dr. Wang and colleagues have also predicted and confirmed links between the plant's central clock and immune machinery.



Nutter and Tylka celebrate 25 years at ISU

Professors Forrest Nutter and Greg Tylka each celebrated 25 years in the department in 2015. They both arrived in the Spring of 1990 from the University of Georgia, where Dr. Nutter was an Assistant Professor and Dr. Tylka completed his PhD degree.

Allen Miller

In September, Allen Miller presented research on novel plant virus translation mechanisms at the EMBO Conference on Protein Synthesis and Translational Control at the European Molecular Biology Lab in Heidelberg, Germany. This reflected the hard work of former students Mariko Peterson, Jelena Kraft, and postdoc Sung Ki Cho. While in Europe he also visited virologist Professor Susan Carpenter of the ISU Animal Science Department and her host Carla Saleh at the Institut Pasteur in Paris, then he met with collaborators Andrew Firth and Betty Chung at Cambridge University.



Photo of Andrew Firth (left) and Allen Miller (right) discussing virus translation mechanisms at Cambridge University.

Mark Gleason

Mark Gleason's lab obtained two new USDA/NIFA competitive grants this fall. The first of these, a \$300,000 grant from NIFA's Crop Protection and Pest Management program, is entitled, "Containing anthracnose fruit rot to sustain strawberry producers," continues the lab's work on detection of the anthracnose pathogen *Colletotrichum acutatum*. The subcontractor on this project is Natalia Peres at University of Florida. The second grant, of \$500,000 from NIFA's Organic Transitions program, is entitled, "Reinventing sustainable protection systems for cucurbit production," and includes ISU co-PIs Laura Jesse (PLPM), Ajay Nair (Horticulture), and Mark Hanna and Hurt Rosentrater (Agricultural and Biosystems Engineering) as well as several co-PIs at University of Kentucky. The project will investigate a new strategy for using row covers to protect muskmelon against cucurbit bacterial wilt.

In November 2015, Mark Gleason led a 2-week-long mini-course at the Faculty of Agriculture, University of Belgrade, on professional speaking skills. Attendees included 26 faculty, graduate students, and early-career professionals from across the spectrum of agricultural sciences, including social sciences.

The mini-course, hosted by Drs. Aleksa Obradović and Milan Ivanović (both former visitors to our Department), was funded jointly by the Fulbright Specialist Program, the University of Belgrade, and the U.S. Embassy. The mini-course used feedback from peers (via rubrics), video, and one-on-one coaching to help attendees to engage scientific and general audiences about research topics.



Dr. Gleason, fifth from left, during his trip to Serbia.

Claudia Lemper

Claudia Lemper, lecturer in microbiology, will represent Iowa State University in a Dancing with the Stars fundraiser in January. The event raises funds for the Heartland Senior Services in Story County. Lemper is the Iowa State Star for the competition. All donations and votes in her name will go to help raise funds for this charity. Please consider going to the following link to support her:

<https://www.heartlandseniorservices.com/index.cfm?nodeID=76328&audienceID=1>



Roger Wise

On October 25th-30 of this year, Dr. Roger Wise attended the International Plant Molecular Biology Congress in Iguazú Falls, Brazil. 1,063 scientists, postdocs and graduate students attended the meetings to present the most up-to-date research aimed at solving the global threat to our food supply. There, Wise presented a talk entitled "Can you hear me now? Differential expression of Blumeria effector repertoires on barley loss-of-function mutant hosts". 1,063 scientists, postdocs and graduate students attended the meetings to present the most up-to-date research aimed at solving the global threat to our food supply.



A Look Back

By: Dr. John Hill

The past 44 years in this Department have provided a fulfilling and sometimes challenging opportunity for a career in Plant Pathology. Certainly, if one wanted to play in the “big leagues” of Agricultural Research and Teaching Iowa State University and this Department have afforded the opportunity. I began in 1971 with Richard “Dick” Ford and was hired by Fred Smith, a physiologist in the Department of Botany and Plant Pathology. Since that time I have watched the transformation through several chairs and deans from the Department of Botany and Plant Pathology to Department of Plant Pathology, Seed and Weed Sciences to Department of Plant Pathology and Seed Science to Department of Plant Pathology and finally to Department of Plant Pathology and Microbiology. It is interesting to recall that at a faculty meeting in the 1980’s I suggested the merging with the then Bacteriology Department into Plant Pathology and Microbiology, but at that time the suggestion was not well received. It is certainly clear to me that the present Department has evolved into what I believe is one of the top Departments in the United States with significant expertise in the major disciplines that comprise Plant Pathology.



Department photo 1990: Dr. Hill is in the center the second row from the top, wearing a blue jacket.

As a member of an experiment station founded to serve the state of Iowa, I have believed it important to work on problems relevant to the agriculture of this state. Consequently, more in earlier years, but also to some extent in later years, I have always felt it important to maintain contact with Extension to help point the direction of my research program. I found there is little more challenging than to provide a program for farmers that is relevant and focused toward solving their problems. Their questions are penetrating, challenging, and “to the point.” They can help form the basis for a research program. I believe such an experience is invaluable for the researcher whose focus is primarily in the lab. I have been very fortunate to have great collaborative colleagues from faculty, post-docs, technicians, graduate students, secretarial support, greenhouse support, and all the rest. Most of my research focus has been “problem oriented.” Consequently, techniques applied to best solve the problem at hand might range from PCR to field plots with “one foot in the furrow.”

When I started research my main focus was on corn. However, at that time it was soon apparent that there were not many viral problems in Iowa corn. One day when Dr. Tachibana “Tachi” took me out to see his soybean field plots full of stunted soybean plants characterized by mosaic and puckered leaves I realized that this was a research area that needed significant help. Hence, over the years most of my focus has been on soybeans (emphasis on Soybean mosaic and Bean pod mottle viruses) with an occasional diversion to other problems as might occur on other crop plants just to keep things interesting. With help from numerous colleagues that provided wonderful cooperation, research topics included virus ecology, epidemiology, virus vector relationships, the role of and detection of seed transmission, serology and the use of monoclonal antibodies, and disease resistance. This allowed us to develop the first application of monoclonal antibodies to a plant virus as well as the first field testing of soybeans that were genetically engineered for disease resistance. More recently, I have been cooperating in studies of gene function in soybeans. I was also fortunate to participate in a USAID program in Morocco where through the Royal Domaines we designed and built a monoclonal antibody laboratory to develop immunoreagents for detection of major citrus viruses as well as establishing a virus laboratory which focused on barley yellow dwarf virus.

I was also fortunate to serve on the Board of Scientific Advisors as well as the Board of Trustees of the American Type Culture Collection (ATCC). Although the future of collections of microbes that infect plants remains somewhat unclear, the ATCC still remains the major United States repository for representative plant virus species that infect plants.

I also believed that the USDA-APHIS process regulating the movement of endemic plant viruses could be improved. We reformed the process to devise a modification of the permit process to expedite movement of endemic plant viruses across state lines. This became the basis for developing the permit process for movement of other endemic plant pathogens and is also now being applied to insects.

Through all these projects, I believe it has been important to apply fundamental scientific principles to resolve the needs of Agriculture in Iowa. I am grateful that this Department over the years has provided the environment and direction to allow this to happen and result in over 300 to 350 publications (journal articles, book chapters, extension circulars, abstracts, etc.) to come from work in this laboratory. The Department also provided the professional setting that allowed my election to Fellow of both the American Association for the Advancement of Science and The American Phytopathological Society. I am grateful for the environment that provided these opportunities.

2015 PLPM Activities and Events

May 15th - Summer Kickoff Breakfast



Jared Jensen, GSO President



Ed Zaworski protecting the pancakes

June 5th - Department Runs Dam-to-Dam 5k and half marathon in Des Moines, followed by potluck.



Dam-to-Dam runners



Mauricio Serrano-Porras

August 11th – Plant disease field trip, organized by Daren Mueller and Alison Robertson.



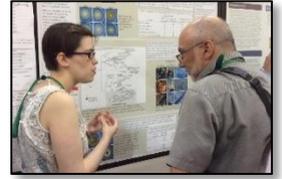
Alison Robertson



August 1st-5th – Department attends and presents research at APS meeting in Pasadena, California.



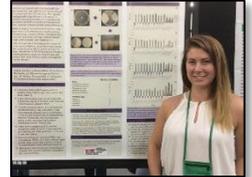
Left from right: Mauricio Serrano-Porras, Noor Abdelsamad, Sally Mallowa



Caroline Wuest (left) discussing research.



Left from right: Lina Rodriguez-Salamanca, Melissa Irizarry, Grazieli Araldi Da Silva.



Moriah Morgan

August 28th – Department retreat at Story County Conservation Center

The retreat, organized by the PLPM grad student organization, invited a PLPM graduate, Dr. Axel Elling from Bayer Cropscience, to talk about his experiences in academia and industry. The retreat also featured a poster session, food, and trivia.



Dr. Elling giving his talk to the department.



Stith Wiggs (left) and Yuba Kandel (right)



November 9th – Annual Apple/Pumpkin Bakeoff



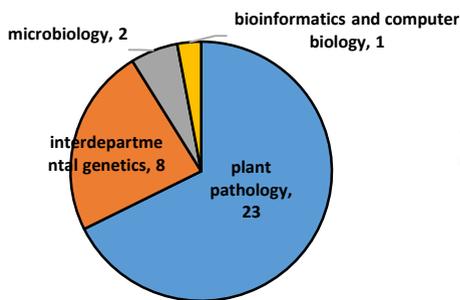
Graduate Student Highlights

The PLPM Graduate Student Population

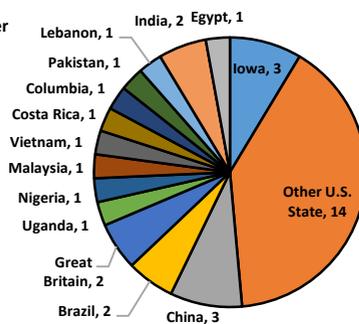
By: Augustine Beeman

An emailed questionnaire and the departmental webpage were used to survey the graduate students. Information was provided or available for 35 graduate students affiliated with the PLPM department. The results of the survey found that the graduate students in the department come from all over the world to study a diverse set of plant disease problems. A little more than half of the graduates come from outside the United States. A majority work on fungi or oomycetes, and ~60% have a project focusing on soybeans. The preferred careers of the graduate students are mostly split among academia (24%), industry (31%) and multiple interests (34%).

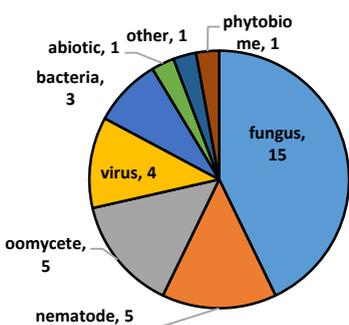
Graduate Major



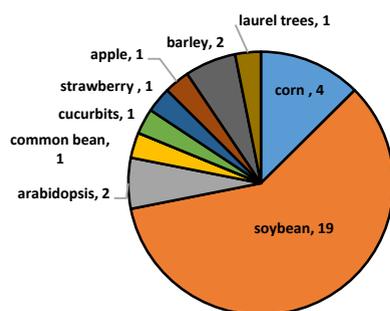
Country of Origin



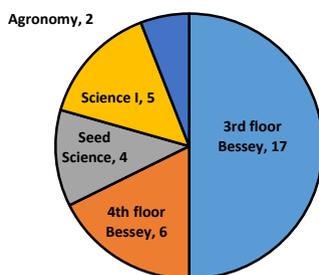
Type of Pathogen Studied



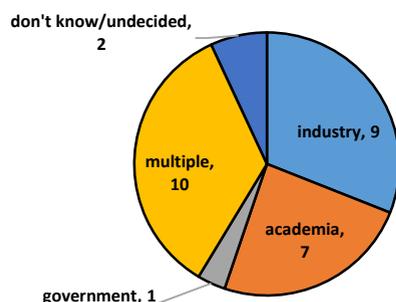
Host Plant Studied



Office Location



Post-graduation career preference



Update on the Plant Pathology Graduate Organization

By: Jared Jensen, GSO President

The Plant Pathology Graduate Student Organization (GSO) started this year with a bang and has found a new lease on life. Traditionally, the GSO's main goal was to organize the department's annual retreat. This year the GSO has also added additional activities for department members. The organization, led by Grazieli Araldi Da Silva (Treasurer), Renan Kobayashi Leonel (Vice President) and Jared Jensen (President), the GSO has incorporated some new traditions. These have included a spring bowling night, a 'Summer Kickoff Pancake Breakfast', design and sale of the official department polo, increased social media presence, the annual retreat, and the start of a monthly grad student lunch at Campustown restaurants. Future plans for the GSO include organizing graduate student seminars with nearby universities, prelim exam prep sessions, and grad student white elephant gift exchange. New officers for 2016 are Chelsea Harbach (President), Lauren Washington (Vice President) and Chase Mayers (Treasurer).

2015 Incoming Graduate Students

Courtney Bozman started a MS in Gary Munkvold's lab.

Changtian Chen started a PhD in Wei Wang's lab.

Chelsea Harbach started a PhD in Greg Tylka's lab.

Olakunle Olawole started a PhD in Gwyn Beattie's lab.

Muhammad "Mohsin" Raza started a PhD in Forrest Nutter's lab.

Daniel Sjarpe started a MS in Daren Mueller's lab.

Lauren Washington started a MS in Gary Munkvold's lab.

New Student Profiles

Chelsea Harbach

Chelsea Harbach is a new PhD student in Greg Tylka's lab. She completed her B.S. at the University of Illinois in Crop Sciences. She continued at UIUC to earn her M.S. in Crop Sciences with a plant pathology focus with Dr. Glen Hartman in 2015 before making the move out west to Ames. For her M.S., Chelsea worked on green stem disorder of soybeans, seed treatments and Sclerotinia stem rot, and Cercospora kikuchii. In Dr. Tylka's lab, Chelsea is switching gears to work with worms and is very excited about one of her primary projects: investigating the interaction of cover crops with soybean cyst nematode populations. Besides school and research, Chelsea enjoys riding her bike, knitting, yoga, and spending time with her corgi, Charles Avocado VanGogh.



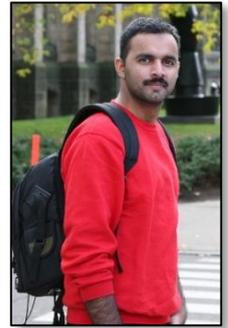
Daniel Sjarpe

Daniel Sjarpe is a new Master's student in Daren Mueller's lab, starting in June of this year. He is working on sudden death syndrome (SDS) in soybeans. His project aims to create a new linear rating scale that is more directly correlated to yield loss. Sjarpe grew up on a small dairy farm, which stimulated his interest in agriculture. Sjarpe graduated from the University of North Dakota in 2012 with a BS in Biology.



Mohsin Ramay

Muhammad Mohsin Raza has developed an early interest in plant disease epidemiology with an intellectual curiosity to learn latest trends in plant disease epidemiology. Hailing from a rural family, it was his keen desire to work for his community, ultimately leading him to attend the University of Agriculture Faisalabad, Pakistan. In 2012, he received his degree of B.Sc. (Hon's) in Agriculture. He completed his M.Sc. (Hon's) in 2014 and conducted a very innovative plant disease epidemiological research project for his thesis research. During his master, he won a Fulbright scholarship for his PhD. Currently, he is working in Prof. Forrest W. Nutter's lab having the futuristic interests in quantitative epidemiology and plant disease management using rational approach to optimize and integrate pest management tactics. Particularly, he will be working on the integration of global positioning systems (GPS), geographic information systems (GIS) and remote sensing technologies to better understand, quantify, and forecast the occurrence of Soybean sudden death syndrome and its impact on soybean yield.



In Memoriam

Lisa Shepherd

(Excerpt from the Seed Science Center)

This year the PLPM department mourned the loss of Lisa Shepherd, 43, Director of the administrative unit of the National Seed Health System and Seed Health Testing Coordinator for the Seed Science Center on the ISU campus. Shepherd passed away on July 1st after a brief struggle with amyloidosis



and multiple myeloma. Lisa enjoyed life to the fullest and excelled at helping others. She was a tireless champion for phytosanitary issues relating to seed health and was highly regarded by seed industry colleagues from around the world for her expertise in seed-borne diseases and plant pathology. Lisa possessed natural leadership ability and an infectious enthusiasm that benefitted both ISU and the seed industry. Her full obituary can be found at:

<https://www.plantpath.iastate.edu/news/iowa-state-university-mourns-loss-seed-pathologist-lisa-shepherd>

Helen Herr Benner

This year the PLPM department lost Helen Herr Benner, 90, a former laboratory technician for Dr. John Hill for 25 years. Benner was known as a mentor and friend for many members of department. She was also honored for her time with ISU with an ISU Alumni Foundation P&S Superior Service Award.



Benner was born on February 11th, 1925, in St. Louis and passed away this year on October 23rd, in Ames. The obituary from the Ames Tribune can be found at the following link:

<http://amestrib.com/obituaries/helen-herr-benner-feb-11-1925-oct-23-2015>

Spring Semester



Qian Liu completed her M.S. degree under the direction of Drs. Mark Gleason and Gwyn Beattie. Her thesis topic was “Bacterial wilt of cucurbits: Impact of plant age on symptom progression and pathogen movement, and locating *Erwinia tracheiphila* genes associated with host preference and pathogenicity.”



Laura Weieneth completed her M.S. degree under the direction of Drs. Alison Robertson and Gary Munkvold. The title of her thesis was “Seedborne black *Aspergillus* species as maize seedling pathogens: Role of fumonisin production and interaction with soilborne *Pythium* species.”



Nenad Tatalovic completed his Ph.D. degree under the direction of Dr. Leonor Leandro. His thesis title was “Influence of *Heterodera glycines* infection, plant age, and water availability on foliar and root symptoms of sudden death syndrome disease. Nenad is currently a Horticultural Apprentice at the Greater Des Moines Botanical Gardens.



Ashley West completed her M.S. degree under the direction of Dr. Tom Harrington. Her thesis title was “Ecological specialization of *Tubakia iowensis*, and searching for resistance to bur oak blight”.



Alice Hui completed her Ph.D. degree under the direction of Dr. Allen Miller. Her thesis title was “Ribosomal frameshifting directed by a potyvirus sequence motif in diverse translation systems”.



Sally Mallowa completed her Ph.D. degree under the direction of Dr. Alison Robertson. Her dissertation title was “Emerging corn health issues in the U.S. Corn Belt: Using foliar fungicides to manage leaf diseases and discerning infection pathways of *Clavibacter michiganensis* subsp. *nebraskensis*.”

Summer and Fall Semesters



Gang Han completed his M.S. under the direction of Drs. Leonor Leandro and Daren Mueller. His thesis title was "Effect of drainage and cover crops on soybean seedling health".



Noor Abdelsamad completed his M.S. under the direction of Leonor Leandro. He is currently working on his Ph.D. degree.



Regina McGrane completed her Ph.D. degree (Genetics) under the direction of Dr. Gwyn Beattie. Her thesis title was "Elucidation of a bacteriophytochrome-regulated signal transduction pathway in *Pseudomonas syringae* that contributes to leaf colonization, virulence, and swarming motility". She is currently an Assistant Professor in Dept. of Biological Sciences at Southwestern Oklahoma State University.



Tracey Bruns completed her Ph.D. degree under the direction of Dr. Gary Munkvold. Her thesis title was "The role of Fusarium mycotoxins in seedling infection of maize, soybean and wheat". She is currently working as a postdoc in the ISU Seed Science Center.



Xiaoyu Zhang completed her Ph.D. degree under the direction of Dr. Mark Gleason. Her thesis title was "Detection, taxonomic diversity, and management of *Colletotrichum acutatum sensu lato* on strawberry.



Michael Millican completed his Ph.D. degree (Microbiology) under the direction of Dr. Gwyn Beattie. His thesis title was "The role of plant-derived quaternary ammonium compounds, including carnitine and choline-O-sulfate, on the biology of the plant pathogen *Pseudomonas syringae* and its interactions with the host species *Phaseolus vulgaris*." He is currently a postdoc in the Dept. of Plant Pathology at the Univ. of Wisconsin-Madison.



Yeganeh Gharabigloozare completed her M.S. degree under the direction of Dr. Tom Harrington. Her thesis title was "New *Raffaelea spp.* associated with *Xyleborinus saxeseni* and other ambrosia beetles. Photo on the left shows Yeganeh (center) with Dr. Peter Biedermann (right) and Caroline Wuest (left).

Dr. Walber Luiz Gavassoni

Dr. Gavassoni completed his PhD in the PLPM department in 1999, and has worked as a faculty member in Brazil since. This summer, he was promoted to Dean of Students at the Universidade Federal da Grande Dourados in Brazil.

Q: When were you at ISU?

WG: From 1995 to 1999.

Q: What was your project?

WG: Relationships among tillage, spatial patterns of *Heterodera glycines*, and soybean yield.

Q: Who did you work with on these projects?

WG: Gary Munkvold and Greg Tylka

Q: What did you do after leaving ISU?

WG: I returned to my home country, Brazil, where previously I already had a position as a faculty member at the Universidade Federal da Grande Dourados.

Q: What is your current position? Do you do extension/research/teaching?

WG: I am an Associate Professor at the Faculdade de Ciências Agrárias, and in charge of the Laboratório de Microbiologia Agrícola e Fitopatologia. I am involved in teaching and advising undergraduate and graduate students majoring in Agronomy. In my lab there is a Plant Disease Clinic, mainly for identifying corn and soybean diseases.

Q: How is working in plant pathology in the Brazil different compared to the U.S.?

WG: Asian soybean rust, anthracnose, target spot and SCN/root-knot nematodes are among the main pathogens that challenge our main crop: soybeans. In contrast, Brazilian plant pathologists frequently face new plant pathogens identification in traditional crops as well as in new cultivated species recently introduced in the country.



Dr. Walber Gavassoni (center) with ISU grad students Jared Jensen (left) and Renan Kobayashi Leonel (right) at UFGD this summer.

Q. Tell us about the Dean's position you recently accepted.

UFGD was created in 2005, as a result of a separation from another federal university (UFMS). Since its founding UFGD has stood for academic excellence, for research which benefits society and industry, and for the education of highly qualified specialists. UFGD offers 41 undergraduate programs in the following major areas: Engineering, Agricultural Sciences, Biological and Health Science, Humanities and Natural Sciences. The Dean's office serves a central role in undergraduate student learning and development and is responsible for planning, coordinating and evaluating UFGD's undergraduate programs. The office also has responsibilities for approving and faculty hiring, setting academic policies, overseeing the budget, and other administration procedures.

Q. Do you have any advice for current ISU graduate students?

WG: The best piece of advice I can offer to a graduate student is to stay focused on their objectives and enjoy all the opportunities that ISU offers. I had a great time at ISU, a unique opportunity to interact and learn from excellent professors.

Q. Best memories of Ames?

WG: Snow sledding with my son at Veenker Memorial Golf and the barbecues with the Tode Buster crew in Bessey Hall's loading dock are among the many memories from Ames and ISU.

Dr. Axel Elling

Dr. Elling completed his PhD in 2006 with Thomas Baum. He was invited to give a talk at this year's PLPM retreat, where we had a chance to interview him.

Q: When were you at ISU?

AE: I was at ISU for the first time in the summer of 2000 during a three-month internship with Forrest Nutter. During that time I met Thomas (Baum) and what I really wanted to do was Nematology because that's what I worked on as an undergraduate. I was a PhD student in Thomas' lab from 2001-2006. Pretty much five years on the dot at Iowa State.

Q: What was your project?

AE: I initially worked on nematode secretory proteins called effectors. That is a classic Baum lab project. You get effectors and then you figure out what they do. That's how I started, except I completely changed the project. What happened at the time was a company called Affymetrix put out a microarray for soybeans, which allows you to look at gene expression for thousands of genes in parallel. They also happened to include genes for soybean cyst nematode (SCN). So the effector project eventually went on the backburner and I looked at gene expression in SCN using microarrays. So I shifted really quickly to an SCN genomics project.



Dr. Axel Elling

Q: What do you do immediately after leaving ISU?

AE: Immediately after leaving ISU I left nematology thinking I would never go back. The reason for that was I thought nematology was such a small field that I thought I would never get a faculty position. I went to Bar Harbor, Maine and I did a postdoc at Howard Hughes Medical Institute to do medical research. From there I went to Yale and came back to plants. At the end of the day I decided plants were better than mice. That led me to branch out a little more to do more general plant biology.

Q: What is your current position?

AE: I currently work for Bayer Cropscience and the official job title is Group Leader-Nematology.

Q: What is a typical day for you at work?

AE: A typical workday for me is very diverse. I would say certainly a lot of different meetings with different people: scientists, lawyers, IP specialists. You have a lot of phone conferences, monitoring field locations, checking on the lab. I'm also in the lab myself if need be. I would say the bulk of the day is meetings, which are very different [compared to academia]. Meetings [in industry] often take 30-60 minutes at most, and are more efficient.

Q: Do you have any advice for grad students?

AE: The best advice I can give is , which is very obvious, do good work. Hopefully you have picked a good lab, which is likely since you have picked Iowa State already, and publish as many papers as you can and publish in as good a journal as you possibly can. One thing I would strongly suggest is you need to separate yourself from the pack. It's expected that all of your competitors will have very good papers. You need to figure out what makes you different. In terms of looking back one thing I would have done differently is finish papers before I left. It's really hard to start a new job and wrap up papers, so do that even if it takes you one more semester. Also, do network and get out there. Go to meetings, get leadership experience, get involved with APS, all these little things will allow you to be noticed. Another piece of advice is if you are not happy with your career or lab choice; correct it as fast as you can.

Q: What are your best memories of Ames?

AE: Ames always feels like coming home, really nothing but good memories. I think there is something about the campus...just a really beautiful campus. Having all the office doors open, being able to talk to all the faculty, that is not normal at all universities. As far as food goes I absolutely love The Cafe, guilty as charged. I would say people who make fun of Ames and Iowa in general...I pity them, because they have never been here (laughs).



Dr. Axel Elling giving his talk to department at the PLPM retreat on August 28th.

2015 Awards and Honors

Faculty Awards

Steve Whitham received the 2015 Iowa State University Exemplary Faculty Mentor award on May 6. Iowa State University recognizes the importance of supporting all faculty through both formal and informal mentoring along the various stages of one's academic career. Steve was nominated for the award by **Daren Mueller**, who he is currently serving as faculty mentor.



Thomas Baum was named a fellow of the Society of Nematologists at the annual meeting of the society, held at Michigan State University in East Lansing, Michigan, July 19-24, 2015. The photo on the right shows Baum (left) being presented the award by Byron Adams (right), professor of biology at Brigham Young University and current president of the Society of Nematologists. Photo credit: Jon Eisenback, Virginia Tech Univ.



Greg Tylka was named a Fellow of the American Phytopathological Society at this year's meeting in Pasadena, California. The photo (right) shows Greg Tylka (center) receiving his award by Rick Bennett (right), former president of APS and George Abawi (left), at the annual meeting of the society, held in Pasadena from August 1st-5th. Photo credit: APS



Thomas Baum was awarded the Noel T. Keen Award for Research Excellence in Molecular Plant Pathology by the American Phytopathological Society at this year's meeting in Pasadena, California for his many years of productive research on molecular nematology.



Roger Wise was named a Fellow by the American Association for the Advancement of Science (AAAS), along with six other ISU faculty. Wise was recognized for his "distinguished research and leadership in the genomics of disease interactions in cereal crops, technology development and outreach to young scientists".



Graduate Student Awards

Xavier Phillips and **Jared Jensen** were awarded travel grants from APS to attend and present research at this year's North Central APS meeting, held in East Lansing, Michigan from June 10th-12th. Phillips and Jensen are advised by Drs. Daren Mueller and Greg Tylka, respectively.

Jared Jensen and **Augustine Beeman** were awarded Zirakparvar Graduate Fellowships by the PLPM department to serve as webmaster and newsletter editor, respectively. Jensen is supervised by Dr. Laura Jesse and Beeman is supervised by Dr. John Hill. Both are advised by Dr. Greg Tylka.

Augustine Beeman was awarded the Harold "Sande" McNabb, Jr. Student Travel Award from the APS Foundation to travel for this year's annual meeting in Pasadena, CA. Harold "Sande" McNabb was a faculty member at ISU for 47 years, who was well-known for his devotion to forest pathology, teaching and research.

Augustine Beeman won the best oral presentation award in the Agricultural and Biological Sciences section at the 9th Annual ISU GMAP Research Symposium, held at the Memorial Union on October 10, 2015. Beeman gave a presentation titled "The Effect of Seed Treatments on the Soybean Cyst Nematode." **Melissa Irizarry** (Mueller Lab) won the same award in 2014.

- Ahmad, A., Acharya, J. **Mbofung, G.** and **Robertson, A.E.** 2015. Characterization and comparison of *Clavibacter michiganensis* subsp. *nebraskensis* strains recovered from epiphytic and symptomatic infections of maize in Iowa. PLoS ONE 10(11): e0143553. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0143553>
- Almasi, R., **Miller, W.A.**, and Ziegler-Graff, V. 2015. Mild and severe cereal yellow dwarf viruses differ in silencing suppressor efficiency of the P0 protein. Virus Research 208: 199-206.
- Brinton, M.A., and **Miller, W.A.** 2015. Positive strand RNA virus replication: It depends on the ends. Virus Research 206: 1.
- Byamukama, E., **Robertson, A.E.**, **Nutter, F.W.** Bean pod mottle virus time of infection influences soybean yield, yield components and quality. Plant Disease 99: 1026-1032.
- Carillo-Tripp, J., Bonning, B.C., and **Miller, W.A.** 2015. Challenges associated with research on RNA viruses of insects. Current Opinion in Insect Science 8: 62-68.
- Eggenberger, S.**, Diaz-Arias, M.M., **Nutter, F.W., Jr.**, Sernett, J., and **Robertson, A.E.** 2015. Dissemination of Goss's wilt of maize and epiphytic *Clavibacter michiganensis* subsp. *nebraskensis* from inoculation point sources. Plant Disease. <http://apsjournals.apsnet.org/doi/pdf/10.1094/PDIS-04-15-0486-RE>.
- Gougherty, A.V., and **F.W. Nutter.** 2015. Impact of eradication programs on the temporal and spatial dynamics of Plum pox virus on Prunus spp. in Pennsylvania and Ontario, Canada. Plant Disease 99: 593-603.
- Gougherty, A.V., Pazdernik, K.T., Kaiser, M.S., and **Nutter, F.W., Jr.** 2015. Evaluation of the sampling and testing efficiencies of Plum pox virus eradication programs in Pennsylvania and Ontario. Plant Disease 99:1247-1253.
- Fraedrich, S. W., **Harrington, T.C.**, and G. S. Best. 2015. Xyleborus glabratus attacks and systemic infections by Raffaelea lauricola associated with dieback of camphortree (Cinnamomum camphora) in the southeastern United States. For. Path. 45:60-70.
- Harrington, T. C.**, Q. Huang, M. A. Ferreira, and A. C. Alfenas. 2015. Genetic analyses trace the Yunnan, China population of Ceratocystis fimbriata on pomegranate and taro to populations on Eucalyptus in Brazil. Plant Dis. 96:106-111.
- Hewezi, T., **Juvalé, P.S.**, Piya, S., **Maier, T.R.**, Rambani, A., Rice, J.J., Mitchum, M.G., Davis, E.L., Hussey, R.S., and **Baum, T.J.** 2015. The cyst nematode effector protein 10A07 targets are recruits host posttranslational machinery to mediate its nuclear trafficking and to promote parasitism in Arabidopsis. The Plant Cell DOI <http://dx.doi.org/10.1105/tpc.113.135327>.
- Mayers, C. G.**, **McNew, D.L.**, **T. C. Harrington**, R. A. Roeper, S. W. Fraedrich, P. H. W. Biedermann, L. A. Castrillo, and S. E. Reed. 2015. Three genera in the Ceratocystidaceae are the respective symbionts of three independent lineages of ambrosia beetles with large, complex mycangia. Fungal Biology 119:1075-1092.
- Miller, W.A.**, Jackson, J., and Feng, Y. 2015. Cis-and trans-regulation of luteovirus gene expression by the 3' end of the viral genome. Virus Research 206: 37-45.
- Noon, J.B.**, Hewezi, T., **Maier, T.R.**, Simmons, C., Wei, J., Wu, G., Llaca, V., Deschamps, S., Davis, E.L., Mitchum, M.G., Hussey, R.S., and **Baum, T.J.** October 2015. Eighteen new candidate effectors of the phytonematode *Heterodera glycines* produced specifically in the secretory esophageal gland cells during parasitism. Phytopathology 105(10): 1362-1372.
- Oliveira L.S.S., **Harrington T.C.**, Ferreira MA, Damascena MB, Al-Sadi AM, Al-Mahmooli HIS, Alfenas AC. 2015. Species or genotypes? Reassessment of four recently described species of the Ceratocystis wilt pathogen, C. fimbriata, on Mangifera indica. Phytopathology 105:1229-1244.
- Oliveira LSS, **Harrington T.C.**, Freitas RG, **McNew D**, Alfenas AC. 2015. Ceratocystis tiliae sp. nov., a wound pathogen on Tilia americana. Mycologia 107:986-995.
- Pogorelko, G.**, **Juvalé, P.S.**, Rutter, W.B., Hewezi, T., Hussey, R.S., Davis, E.L., Mitchum, M.G., and **Baum, T.J.** 2015. A cyst nematode effector binds to diverse plant proteins, increases nematode susceptibility and affects root morphology. MPP, DOI: 10.1111/mpp.12330.
- Sharma, S.D., Kraft, J.J., **Miller, W.A.**, and Goss, D.J. 2015. Recruitment of the 40S ribosomal subunit to the 3'-untranslated region (UTR) of a viral mRNA, via the eIF4 complex, facilitates Cap-independent translation. Journal of Biological Chemistry 290(18): 11268-11281.
- Whigham, E.**, Qi, Shan, Mistry, D., **Surana, P.**, Xu, R., **Fuerst, G.**, Pliego, C., Blindscedler, L.V., Spanu, P.D., Dickerson, J.A., Innes, R.Q., Nettleton, D., Bogdanove, A.J., **Wise, R.P.** 2015. Broadly conserved fungal effector BEC1019 suppresses host cell death and enhances pathogen virulence in powdery mildew of barley (*Hordeum vulgare* L.). Molecular Plant-Microbe Interactions 28(9): 968-983.
- Xu, W., Meng, Y., **Surana, P.**, **Fuerst, G.**, Nettleton, D., **Wise, R.P.** 2015. The knottin-like *Blufensin* family regulares genes involved in nuclear import and the secretory pathway in barley-powdery mildew interactions. Front. Plant Sci. 6: 1-18.

Donations to the PLPM Department

Please consider making a gift to the Plant Pathology Development Fund. Your gift allows us to provide lecture series, academic excellence awards, travel stipends, small research grants and professional development opportunities to faculty and students.

To make a gift online, go to www.foundation.iastate.edu/ag. Fill out your name and email address at the top of the page and scroll to the bottom of the page to give to the Plant Pathology Development Fund. If you wish to give through the mail, please mail your check to: Iowa State University Foundation, PO Box 868, Ames, IA 50010-0868. Please note fund #0111622 in the memo line on your check or include a note with your donation to ensure that your donation is properly designated.

Thank you for your support. If you have any questions, please contact the ISU Foundation at 515-294-4607 or 866-419-6768.

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THE BIOSCIENCES FACILITIES PROJECT AT IOWA STATE UNIVERSITY



IOWA STATE UNIVERSITY

A NEW ENVIRONMENT FOR THE BIOSCIENCES AT IOWA STATE UNIVERSITY

Solving global challenges affecting our food, water, energy, health, security and environment requires a research environment in which the crosscutting scientific discoveries and advances with the potential to change our world can be made: new drugs, vaccines and treatments that alleviate both human and animal disease and suffering. Hardier, more nutritious crops. New technologies to protect plants, animals and humans from pests and diseases. Safer, renewable sources of energy to power our planet.

As a national leader in research and education in the highly critical areas of agricultural, animal and plant sciences, Iowa State University is uniquely positioned to address these grand challenges by harnessing the economic and social benefits of new bioscience discoveries, and preparing leaders to work in these emerging fields. Iowa State faculty and students in these areas, and the bioscience-derived innovations they develop, make the university vital to the Cultivation Corridor, the economic development initiative focused on establishing central Iowa's reputation as the country's premier region for the ag-bioscience industry.

Iowa State has an ambitious vision for transforming the biosciences in Iowa and beyond. For the university to achieve this vision, we must provide the environment that attracts and retains the world-class faculty and motivated students who will make these important breakthroughs.

A MATTER OF CAPACITY, QUALITY AND CAPABILITY

The Biosciences Facilities Project creates the setting in which this cross-disciplinary research, education and collaboration in the biosciences can occur. A top priority of President Steven Leath, the Biosciences Facilities Project establishes a strategic presence for the biosciences at the core of campus, integrating teaching, learning, research and industry collaboration.

The first of the project's two new facilities, the Bessey Hall Addition, to be located east of Bessey Hall, will provide highly flexible, state-of-the-art learning, lab and collaborative space that will enable undergraduate students to immerse themselves in hands-on, team-based projects. This new building, along with renovated

spaces in Bessey Hall, creates a biology teaching hub in the center of campus, and will ensure undergraduate students acquire the critical purpose-driven, problem-solving skills they need and that employers value. Upper floors of the facility will be devoted primarily to graduate programs for interdisciplinary departments conducting cutting edge research in the biological sciences.

The new Advanced Teaching and Research Building will be located at the corner of Stange Road and Pammel Drive, a highly visible and prominent campus setting promoting a new gateway to campus from the north. The facility will provide an efficient, flexible and adaptable research and teaching environment, and will enhance Iowa State's ability to pursue larger multidisciplinary and multi-institutional research grants. Located on the ground floor are spaces for collaboration among faculty and students, as well as with industry, and the administrative home of the department of plant pathology and microbiology. Upper floors will be dedicated largely to research and graduate student labs for programs advancing crop science research.

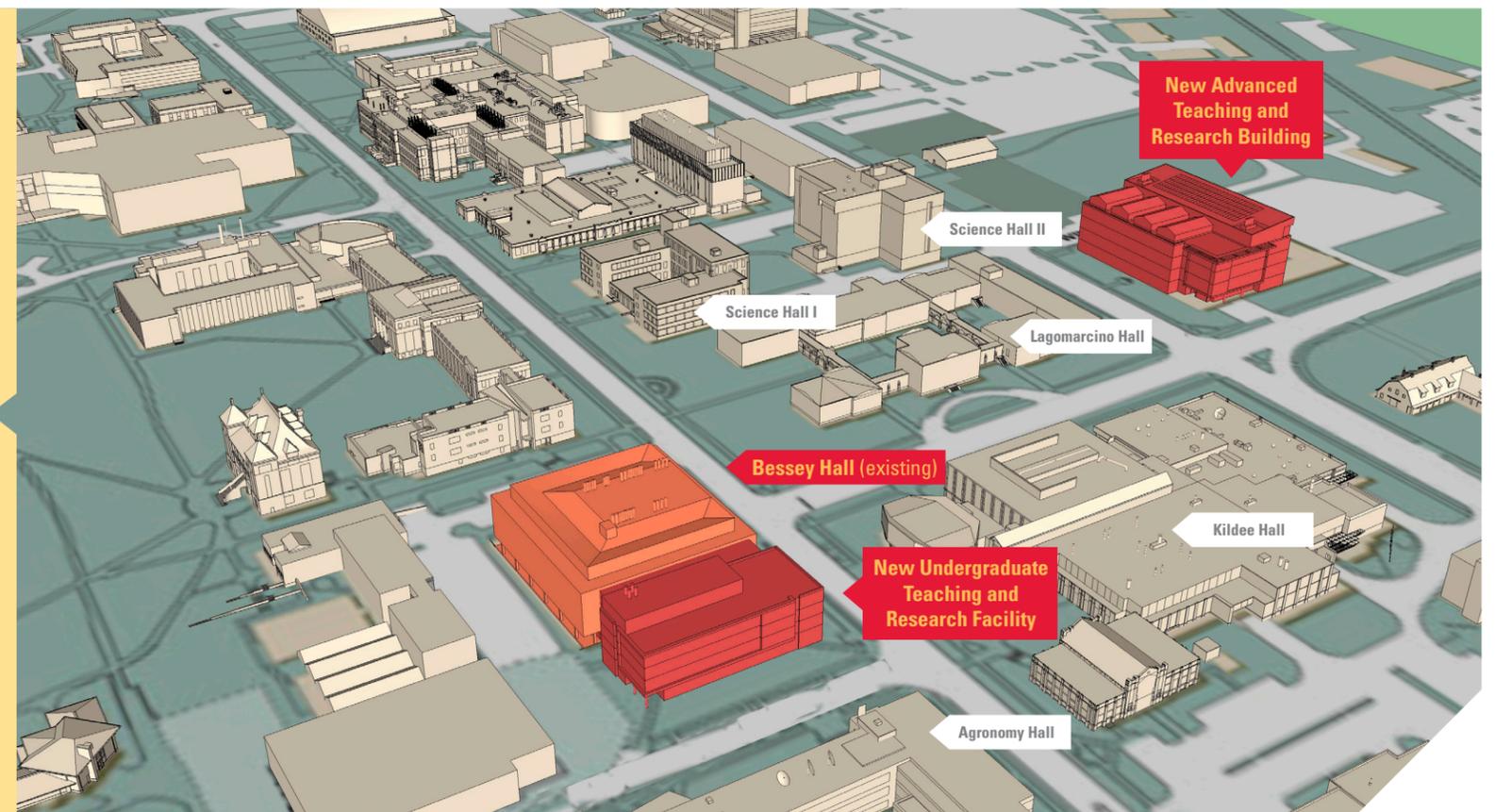
AN OPPORTUNITY TO PARTNER

Iowa State University seeks visionary partners in creating the best environment to engage students, faculty, industry and the public in making important connections for understanding science's power in changing our world and their role in bringing about such change. Spaces within both the Bessey Hall Addition and the Advanced Research and Teaching Building offer you the opportunity to associate your name with this high-impact, high-profile initiative. Please refer to the separate list of named space opportunities for specific gifting levels.

The Biosciences Facilities Project optimizes resources and fosters collaboration among the bioscience disciplines at Iowa State, and maximizes the potential of the people who will steer next-generation technologies. With this dynamic new environment for the biosciences in place, Iowa State University will lead the revolution in solutions to our complex food, water, energy, health, security and environmental challenges for the next century.

BIOSCIENCES FACILITIES PROJECT:

- With increasing enrollment in the biosciences – currently at more than 6,000 students, with an expected increase of 10 to 25 percent in the next five years – the Biosciences Facilities Project will allow the space for students to grow and thrive.
- The Biosciences Facilities Project increases space for research capabilities and shared learning space by 321,000 net square feet through the construction of two new buildings – the Bessey Hall Addition and the Advanced Teaching and Research Building – as well as renovating spaces in existing buildings.
- The estimated cost of constructing the two new facilities is \$80 million, which includes \$50 million in appropriations committed by the state of Iowa, with \$30 million provided in private gifts and institutional funds.
- The Bessey Hall Addition, a new facility adjacent to Bessey Hall, will concentrate undergraduate teaching in biology, with classrooms and teaching labs on the first two floors. Upper floors will house research labs for two departments: ecology, evolution and organismal biology; and genetics, development and cell biology.
- The Advanced Teaching and Research Building, to be built at the northwest corner of Stange Road and Pammel Drive, will include space for graduate teaching labs, formal and informal collaboration, and departmental administration on the ground floor. Upper floors will house a plant diagnostic clinic, and plant pathology and microbiology as well as portions of two other departments: entomology; and genetics, development and cell biology.



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