

2017 IPBGG Highlights



Institute of Plant Breeding,
Genetics and Genomics
College of Agricultural & Environmental Sciences
UNIVERSITY OF GEORGIA

Cultivar Development Activities

A prominent part of the mission of the Institute of Plant Breeding, Genetics & Genomics is to develop improved plant cultivars from agronomic and horticultural species of importance to Georgia, the U.S., and worldwide. I encourage you to read the [Innovation Gateway Highlights](#) each month which publishes abundant evidence of our national and international recognition for cultivar development. For example, in the November/December 2017 issue, testing or license agreements were issued for turfgrass, ornamental grass, other ornamental plants, peanut, soybean, blueberry, and citrus with the US or other countries in Europe and southern Africa. New releases in the past year include switchgrass germplasm, disease and insect resistant soft-red winter wheat cultivars and an associate wheat cultivar, a high-oleic spanish-type peanut cultivar, and a hermaphroditic, purple, large-berried muscadine grape that is sure to be attractive to many growers for its productivity and quality traits.



New Members

Four new members joined IPBGG over the past year, one faculty, one affiliate, and two adjunct. The two adjunct faculty, Josh Clevenger and Justin Vaughn, actually are not strangers to the



Institute since they formerly held member status as Ph.D. student and Assistant Research Scientist, respectively. Josh (above, left) now is a Research Geneticist with MARS-Wrigley, still working in peanut breeding and genomics, while Justin (above, right) is a Computational Biologist in the USDA-ARS Genomics and Bioinformatics Research Unit. Both are housed in Athens with office space in CAGT.

Our newest UGA faculty member, Dario Chavez, is from the Department of Horticulture in Griffin. Dario's research interest is in stone fruit breeding and genetics. Dario presented on "Peach Research and Extension – How does breeding fit in?" at our 2017 Retreat.



The most recent affiliate member, Alicia Massa, conducts peanut research at the USDA-ARS



National Peanut Research Laboratory in Dawson, GA. Alicia also attended the 2017 Retreat and presented a fall seminar on “Generating Genetic and Genomic Resources to Advance Breeding Efforts.”

Student Updates

Seven students graduated in 2017 and all are gainfully employed or pursuing another degree!

- ✔ Nino Brown, PhD (Chee), *Improving cotton fiber quality using exotic germplasm, interspecific sources, and marker-assisted introgression*. Nino continues as a Cotton Breeder with Bayer Crop Science.
- ✔ Silas Childs, MS (Li), *Discovery, characterization and utilization of Rpp genes for resistance against soybean rust*. Silas moved to West Virginia as Greenhouse Director at West Virginia University.
- ✔ Leigh Ann Fall, MS (McGregor), *Marker development for Fusarium wilt race 1 resistance and quantitative trait loci (QTL) mapping of fruit traits in watermelon*. Leigh Ann is currently employed as a Research Plant Pathology Specialist at the University of Illinois.
- ✔ Jacob Hoyle, MS (Parrott), *An Expanded Toolkit for Genome Editing*. Jacob is now working for the Alpine Roads biotechnology company in the bay area.
- ✔ Walid Korani, PhD (Ozias-Akins), *Genetic factors and biochemical pathways regulating post-harvest aflatoxin resistance in cultivated peanut*. Walid is a postdoc in computational biology with Justin Vaughn, Athens.

- ✔ Evan McCoy, MS (Parrott), *Hidden in plain sight: untangling an unexpected pyramid of caterpillar resistance QTLs*. Evan will remain in PBGG as a Ph.D. student under the guidance of Wayne Parrott.
- ✔ Dung (Ivy) Tran, MS (Li), *Evaluation of soybean germplasm and identification of quantitative trait loci conferring soybean cyst nematode resistance*. Ivy will remain in PBGG as a Ph.D. student with Zenglu Li.

Our student numbers increased from 34 in Fall 2016 to 37 in Fall 2017 with 9 new students matriculating during the calendar year. These include:

- ✔ Eric Antepencko, MS (Jackson)
- ✔ Thomas Gottilla, MS (Devos)
- ✔ Lynsey Kovar, PhD (Wallace)
- ✔ Carmen Kraus, MS (van der Knaap)
- ✔ Ben Lopez, MS (Mergoum)
- ✔ Ethan Menke, PhD (Li)
- ✔ Alexandra Ostezan, PhD (van der Knaap)
- ✔ Manoj Sapkota, PhD (van der Knaap)
- ✔ Yasin Topcu, PhD (van der Knaap)

Among these, Lynsey Kovar and Alexandra Ostezan were Graduate School GREAT (Georgia Research Education Award Traineeship) awardees and Ethan Menke was a Graduate School Research Assistantship recipient.



The PBGG Graduate Student Association (GSA) remains active with social, fundraising, and professional

events. The annual Plant Sale was a big success, providing a source of revenue to support graduate student activities.



The GSA provides leadership opportunities through officer positions. New officers that were elected at the annual retreat in May are:

- 🌿 President – Brian Nadon
- 🌿 Vice President – Chandler Levinson
- 🌿 Secretary/Treasurer – Elizabeth Prenger
- 🌿 GSA Delegate – Connor Ryan
- 🌿 Journal Club Chair – Matthew Johnson
- 🌿 Webmaster – Leynar Leyton
- 🌿 Plant Center Rep - Shreya Shanbhag



Students took the lead to host guest seminar speakers including Kevin Folta, and Jude Grosser, both from the University of Florida. Dr. Folta (left) is well known for his educational efforts on

GMOs through his [Talking Biotech](#) podcast. Dr. Grosser (below) is an expert in application of modern breeding methods to citrus scion and rootstock development, with a particular emphasis on combating citrus greening.



Our students continue to demonstrate excellence through their achievements, awards, and recognitions. **Nathan Taitano** was awarded the Glenn and Helen Burton Feeding the Hungry Scholarship. The purpose of this award is to help educate Ph.D. students and keep alive research that involves breeding food crops. At the College level, the E. Broadus Browne award is presented to recognize outstanding research and effective communication. PBGG PhD



candidate, **Carolina Ballén-Taborda**, was the 2017 recipient for her research on “Mapping a new source of root-knot nematode resistance from the wild species *A. stenoperma* and introgression into peanut *Arachis*

hypogaea L. At the national level, **Clint Steketee** was selected as a 2017 Crop Science Graduate Student Scholarship recipient from the Gerald O. Mott Scholarship Fund of the Crop Science Society of America and the Agronomic Science Foundation.

Two students received awards for posters or presentations at national meetings, **Carolina Chavarro** (American Peanut Research and Education Society) and **Suraj Sapkota** (Crop Science Society of America section C-1). Participation in professional society activities is strongly encouraged as one of our learning objectives and supported by our student travel grants. Awards were made to nine PhD and three MS students as well as five postdocs to present at meetings such as National Association of Plant Breeders, CROPS, Society for In Vitro Biology, Crop Science Society of America, American Society for Horticultural Science, American Peanut Research and Education Society, as well as a couple of international meetings.

Curriculum Additions

Undergraduate students now have more opportunities to receive and accelerate training in Plant Breeding, Genetics and Genomics either through Honors research (PBGG 4960H, 4970H, 4980H, 4990H) and/or enrollment in the [Double Dawgs](#) major offered in conjunction with the Agriscience and Environmental Systems major with Plant Breeding Emphasis.



Double Dawgs
The University of Georgia Advantage

For the graduate program, the joint recruitment weekend with PBIO was extended with a new initiative for [Integrated Plant Sciences](#) that was collectively launched and includes participation of IPBGG among eight departments in total. IPS is not a degree granting program, it is a portal through which PhD students who have broad interests in the plant sciences may apply. If accepted, students will spend their first semester engaged in coursework and research rotations through three labs. At the end of the first semester, students must select a degree program such as PBGG.

Retreat

Our annual retreat circled back to the Tifton area this year, but we deviated from our typical on-campus venue to gather at Lake Blackshear Resort in Cordele. Participation by faculty and students remained high, and the location energized all to become involved in the team-

building activities of disk golf, hiking, volleyball, or the fun run coordinated by Nathan Taitano.



Following an update on the graduate program by Scott Jackson and highlights of the research enterprise at UGA by David Lee, excellent



scientific presentations were the main content, including the keynote on the future of plant breeding by Mike Graham (left), Global Breeding Lead for Monsanto. Both UGA and external speakers covered a range of other breeding-related topics such as cotton breeding (Todd Campbell, USDA-ARS, below, left) and high-throughput phenotyping (Changying (Charlie) Li,



College of Engineering, above, right) along with our previously mentioned new member's (Dario Chavez) research on peach breeding. With the debut in 2016 of an internal grants program supported by the Cultivar Development

Research Program, two award recipients, PhD students **Clint Steketee** (left) and **Ben Stewart-Brown** (right) presented on their funded



soybean research. In the interim since the first round of funding, Shelley Fincher announced that UGARF has institutionalized the program under the name of the John Ingle Innovation in Plant Breeding Award to honor John Ingle. In response to an annual call for proposals, awards will be made to support graduate students or postdoctoral fellows conducting research that targets novel plant breeding approaches to overcome cultivar development challenges. In addition, faculty and research professionals are eligible to apply for support for professional leave that will allow them to gain new skills in techniques from non-UGA researchers that directly benefit the cultivar development program at UGA. In 2017, four awards were made for research projects proposed by graduate students **Tim Chappell**, **Liz Prenger**, **Ivy Tran** and postdoc **Lisa Baxter**. We look forward to hearing more about their progress in 2018.

An important part of the retreat is our poster session sponsored by the Roger and Cindy Boerma Academic Support Fund and the PBGG GSA. Students, staff and postdocs presented 36 posters, and awards were given for 1st and 2nd place MS, PhD and staff/postdocs. In the PhD category, **Winnie Gimode** and **Nathan Taitano** took 1st and 2nd place, respectively; in the MS category, **Ivy Tran** and **Leigh Ann Fall** won 1st and



2nd place; and for staff/postdoc, the 1st and 2nd place awards went to **Miles Ingwers** and **Tatyana Nienow/Ricky Zoller**, respectively. In addition to a cash award, 1st place PhD awardee, Winnie Gimode, received travel funding to attend the NAPB meeting at UC Davis, courtesy of Todd Campbell in lieu of his honorarium.

Faculty Kudos

- 🌿 Katrien Devos received UGA's [Creative Research Medal](#) and the CAES D.W. Brooks Faculty Award for Excellence in Research.
- 🌿 Wayne Parrott was elected Fellow of [AAAS](#).
- 🌿 Peggy Ozias-Akins was awarded the title of [Distinguished Research Professor](#)

Visibility and Operations

As you travel to meetings, to visit other institutions, or host visitors to your programs, remember to promote the institute and the PBGG Graduate Program. Evidence of our increasing recognition as an outstanding program for graduate education comes from the number of applicants that are referred by colleagues and former students, as well as the increasing quality of applicants and accepted students. Our IPBGG swag and promotional materials have been updated and replenished.

Examples are shown of some of the choices, modeled by Chandler Levinson (right), but feel free to stop by our offices, rooms 136 and 215 in CAGT, to see first-hand. We are open to suggestions for other items you find useful.



We now have a new look to the [IPBGG website](#) which hopefully is easier to navigate for content. Thanks to Cecilia McGregor and other faculty for input on content, David Allen for design, and Tracey Vellidis for updates. We hope to keep the home page fresh, so continue to send pictures or call our attention to news stories.

A lot happens behind the scenes to support graduate students, the graduate program, and Institute activities. Our considerable growth over the past six years of my term justified to Associate Deans Moore and Broder the need for additional administrative staff, and led to the hiring of part-time Administrative Associate Sarah Iezzi. Deborah (right, top) and Sarah (right, bottom) make an efficient team and are always ready to assist.

We look forward to another year of accomplishment and growth that can only happen with faculty and student involvement and investment in the IPBGG mission “to train graduate students, conduct research, and develop improved crop cultivars through the integration of classical and modern genetic technologies.”



Contact us at pbgg@uga.edu
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Steering Committee: Athens - Zenglu Li,
Griffin - Carol Robacker
Tifton - Peng Chee (2017), Brian Schwartz (2018)



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Retreat photo credits – Donglin Zhang

