NATIONAL ASSOCIATION OF PLANT BREEDERS

2019 ANNUAL MEETING

napb2019.uga.edu

August 25-29
Callaway Gardens
Pine Mountain, GA

Hosted by the UGA Institute of Plant Breeding, Genetics and Genomics
# TABLE OF CONTENTS

The Institute of Plant Breeding, Genetics & Genomics ............................................................ 1  
Code of Conduct ......................................................................................................................... 2  
Internet Access ............................................................................................................................ 2  
Program ........................................................................................................................................ 3  
Conference Map ........................................................................................................................ 10  
Resort Map ................................................................................................................................... 11  
Notes .......................................................................................................................................... 12

![Evaluation of triploid hybrid watermelon cultivars for fruit quality and yield](Photo by Tim Coolong)

**Planning Committee, UGA 2019**

Peggy Ozias-Akins, Chair  
Wayne Parrott, Co-chair  
Scott Jackson, Co-chair  
Deborah Franco, Staff, Local Arrangements  
Michelle Cooper, Staff, IT  
Matthew Liles, Staff, IT  
Maddilyn Johnson, Staff, Program  
Lesa Cox, Staff, Travel Support  
Soraya Bertioli, IPBGG Faculty  
Peng Chee, IPBGG Faculty  
Melanie Harrison, IPBGG Affiliate Faculty

Corley Holbrook, IPBGG Affiliate Faculty  
Zenglu Li, IPBGG Faculty  
Chandler Maddox, IPBGG Student  
Evan McCoy, IPBGG Student  
Cecilia McGregor, IPBGG Faculty  
Ethan Menke, IPBGG Student  
Leynar Naranjo, IPBGG Student  
Carol Robacker, IPBGG Faculty  
Elizabeth Lee, UoG 2018 Chair  
George Graef, UNL 2020 Chair

**Layout and design:** Cindy Allen  
**Webmaster:** David Allen
The University of Georgia offers MS and PhD degrees through the Institute of Plant Breeding, Genetics, and Genomics. Established in 2008, the Institute enrolls about 40 graduate students at any given moment, offers a full slate of plant breeding-related courses, with 28 faculty, five adjunct faculty, and seven affiliated faculty.

Prior to the establishment of the Institute, the University of Georgia already had conducted highly successful plant breeding programs for decades. Part of the legacy of UGA plant breeding is attributed to the highly productive and globally recognized program of Dr. Glenn Burton, conducted at the Coastal Plain Experiment Station and Tifton Campus, and jointly supported by USDA-ARS and UGA. Dr. Burton’s achievements included the development and release of Coastal Bermudagrass in the 1940s, after which the College of Agricultural and Environmental Sciences (CAES) became internationally recognized for breeding successful forage and turfgrass cultivars. These cultivars presently have wide-spread usage on golf courses and athletic fields throughout the southern United States and in several countries, notably present on athletic fields hosting World Cup, Olympic, and Super Bowl events. Peanut cultivars bred on the Tifton Campus have dominated the peanut market in the Southeast where Georgia produces almost half of the US peanuts. Among woody ornamentals, UGA is well known for the breeding and selection program of Mike Dirr, which released ‘Endless Summer’ hydrangea. Numerous other cultivars licensed by the University of Georgia Research Foundation (UGARF) include soybean, alfalfa and other forages, wheat, cotton, blueberry, muscadine, citrus, pecan, and vegetable and ornamental species.

UGA plant breeding programs have developed over 400 commercialized plant cultivars since 1990. Of those, 40% are agronomic crop cultivars, 30% are cultivars of horticultural food crops, 27% are ornamental plant cultivars, and 4% are turfgrass cultivars. UGA plant cultivars contribute to over $1 billion in farm-gate value annually. The royalties returned to UGARF are approaching $100 million, much of which is returned through a variety of mechanisms that support plant breeding programs. With the formation of the Institute of Plant Breeding, Genetics and Genomics, most UGA breeding programs were able to enhance their breadth and efficiency with the incorporation of molecular genetic tools, facilitated by graduate student research, and fulfilling the Institute’s mission to “train graduate students, conduct research, and develop improved crop cultivars through the integration of classical and modern genetic technologies.”

As a College of Agricultural and Environmental Sciences where Plant Breeding is one of four designated focus areas, we are proud to host the 2019 annual meeting of the National Association of Plant Breeders, and the chance to share our research programs with you.
Code of Conduct

By participating, you voluntarily agree to abide by the NAPB meeting code of conduct below.

Video/Photography
Pre-registered members of the media and NAPB-designated individuals are authorized to photograph or record presentations. Photographs may be posted for promotion of Society activities. Presentations will be posted for public access only with separate written consent of the presenter.

Social Media
Registered members are free to discuss presentations and posters through social media unless the presenter opts-out. Presenters who wish to opt out should state so in their presentation slides/posters. All participants are expected to honor opt-out requests.

Harassment and Safety
NAPB is a community of plant breeders and associated professionals that finds strength through diversity and is committed to providing a safe and productive meeting environment. We seek to foster open dialogue and exchange of scientific ideas, to promote equal opportunities and treatment for all participants, in an environment that is free of harassment and discrimination. All meeting participants are expected to treat others with respect and consideration, and follow venue rules. Presenters are expected to uphold standards of scientific integrity, and professional ethics.

NAPB prohibits any form of harassment, including, but not limited to, offensive comments related to ethnicity, religion, disability, gender, or sexual orientation and inappropriate physical contact, intimidation, unwelcome attention, or unwarranted photography. Continued disruption of talks or other events is also prohibited. Retaliation for reporting harassment is also a violation of this policy, as is reporting an incident in bad faith.

NAPB reserves the right to expel any individual from its annual meetings if he/she does not comply with the above guidelines to ensure a safe and productive meeting, and to report the complaint leveraged against them to their employer.

All concerns or complaints should be communicated promptly to any member of the NAPB Executive Committee or conference staff listed below, either in person or by calling 706-623-3010. All complaints will be treated seriously and action taken.

· Wayne Smith, Past-president
· Peggy Ozias-Akins, Vice President
· Dave Bubeck, Secretary
· Deborah Franco, Meeting Staff
· Alex Lipka, Web Editor

Internet access
There is complimentary Wi-Fi at the Lodge and Spa and it does not require a password. To logon, go to “The Lodge Wi-Fi” and a picture of the Lodge and Spa will appear, then login.
SUNDAY, AUGUST 25

9 a.m.-3 p.m. Soft skills workshop hosted by Bayer and Corteva .......................................................... Longleaf E

12-6 p.m. Registration .................................................................................................. Hall leading to Longleaf

1-5 p.m. PBCC committee meeting ........................................................................................... Sourwood 4/5

2:30 p.m. Poster set up ............................................................................................................................ Lobolly

3-5 p.m. **NIFA poster session** (open to all) ......................................................................................... Cypress

   **Session Chair: Pushpa Kathir, Program Specialist NIFA**

   Includes NIFA grantsmanship table with handouts

   3 p.m. Even numbered posters

   4 p.m. Odd numbered posters

5:30-6:30 p.m. **Opening session** ........................................................................................................ Longleaf

5:30 p.m. Peggy Ozias-Akins, University of Georgia, NAPB 2019 Welcome

5:35 p.m. Sam Pardue, University of Georgia, CAES Dean

5:45 p.m. Gary Black, Georgia Commissioner of Agriculture

6 p.m. Todd Campbell, NAPB Welcome and PBCC connection

6:15 p.m. Ksenija Gasic, PBCC Report

6:30-7:30 p.m. **Opening keynote** ........................................................................................................ Longleaf

   Jeff Bennetzen, University of Georgia

   *Sources of genetic variation in breeding materials, and how it might be enhanced (O-01)*

7:30-9:30 p.m. **Opening reception** ........................................................................................................ Longleaf

   Micah Levinson improvisation on the piano

MONDAY, AUGUST 26

7-8:30 a.m. Borlaug Scholar breakfast (awardees and mentors) .................................................. Sourwood 2/3

   Sponsored by Inari, Cotton Inc., and Nutramaize

7-8:30 a.m. Diversity Travel Awardee breakfast (awardees and mentors) ........................................... Bayberry 3/4

7 a.m.-12 p.m. Registration .................................................................................................. Hall leading to Longleaf

8:30-10 a.m. **NIFA Plant Breeding Project Director presentations** (Open to all) ......................... Longleaf

   Welcome by Session Chair: Ed Kaleikau, NIFA National Program Leader

   8:35 a.m. Scott Angle, Director NIFA, Opening Remarks

   8:50 a.m. Soraya Bertioli, University of Georgia

   *Unlocking novel wild alleles in cultivated peanut to increase disease resistance and productivity (O-02)*

   9:10 a.m. Zachary Lippman, Cold Spring Harbor Laboratory

   *Merging breeding and gene editing: Lessons from tomato (O-03)*

   9:30 a.m. George Kantor, Carnegie Mellon University

   *Robotic field measurements for plant breeding and crop management (O-04)*

   9:50 a.m. Allen Van Deynze, University of California Davis

   *Breeding for food safety (O-05)*

10-10:20 a.m. **Coffee Break** ........................................................................................................... Longleaf prefunction area
10:20 a.m.- 12 p.m.  **NIFA Plant Breeding Project Director Presentations continued** ................................................ Longleaf

**Session Chair: Liang-Shiou Lin, NIFA National Program Leader**

10:20 a.m.  **Seth Murray, Texas A&M University**
Transdisciplinary plant phenomics and unmanned aerial system phenotyping for maize crop improvement (O-06)

10:40 a.m.  **Julie Dawson, University of Wisconsin**
Facilitating the increased use of genetic resources: Custom core collections and genomic prediction with carrot as a model crop (O-07)

11 a.m.  **Xiwen Cai, North Dakota State University**
Genomics-enabled chromosome engineering for alien introgression and genome characterization in wheat (O-08)

11:20 a.m.  **Karen Cichy, USDA-ARS**
Optimizing the convenience, nutrition, and taste of yellow dry beans (*Phaseolus vulgaris* L.) to promote pulse consumption in the U.S. (O-10)

11:40 a.m.  **Dusti Gallagher, Heartland Plant Innovations**
Establishment of a winter wheat organic breeding pipeline in the Great Plains (O-09)

11:50 a.m.  Closing remarks

---

**12-8:30 p.m.  GRIFFIN CAMPUS TOUR***

Grab a boxed lunch (in front of The Lodge) and board buses to the Griffin Campus. Buses will be numbered 1-5. Your bus number will be your group throughout the tour. The buses will park at the Student Learning Center (301 Higgins Rd, Griffin, Georgia). We will spend about 45 minutes here for a break and welcome from the campus director, Dr. Lew Hunnicutt. We will also take a photo of the group. Tours of the breeding programs will follow. This will include short walks between buildings and a tram to the ornamental and turf plots. Carts will be available for those who cannot walk. Tours end at 5:10 p.m. Buses depart campus at 5:15 p.m. and stop for dinner at Barnstormer’s Grill (349 Jonathans Roost Rd, Williamson, GA). After dinner, buses will return to Callaway Gardens.

**TIME**  |  **ACTIVITY**
--- | ---
12:30-1:30 p.m.  |  Load buses with boxed lunch, drive to Griffin Campus, lunch on the bus
1:30-2:15 p.m.  |  Break at Student Learning Center, welcome by director and group photo
2:15-5:10 p.m.  |  Each group rotates through all programs
|  **Ornamental Breeding**  |  Carol Robacker
|  **Turf Breeding**  |  Paul Raymer
|  **USDA National Plant Germplasm System**  |  Melanie Harrison
|  **Sensory Science Laboratory**  |  Dario Chavez
|  **Food Product Innovation and Commercialization Center**  |  Kirk Kealey
|  **Food Product Innovation and Commercialization Center**  |  Dick Phillips
|  **Food Product Innovation and Commercialization Center**  |  Kevin Mis Solval
|  **Food Product Innovation and Commercialization Center**  |  Lauren Hatcher
5:10-5:30 p.m.  |  Travel to Barnstormer’s Grill
5:30-8 p.m.  |  Dinner and return to Callaway Gardens

*Closed-toe shoes or boots are recommended. Bring hats and sunscreen. Water will be provided throughout the tour.*
TUESDAY, AUGUST 27

7-8 a.m.  GSWG networking breakfast ................................................................. Bayberry 3/4
7-8 a.m.  ECWG networking breakfast ................................................................. Sourwood 2/3
7 a.m.-5 p.m.  Registration ........................................................................... Hall leading to Longleaf
8-10 a.m.  **Plenary session and lightning talks** .............................................. Longleaf

**Moderator: Jason Wallace, University of Georgia**
8 a.m.  Marlin Edwards, retired plant breeder and consultant
Plant breeding: A lifetime passion (O-11)
8:45 a.m.  Scott Jackson, University of Georgia
The application of machine learning to trait prediction and the underlying genetic architecture of complex traits (O-12)
9:30 a.m.  Graduate student lightning talks
9:50 a.m.  Beatrice Ifie, WACCI
Introduction to newly formed African Plant Breeders Association (APBA)
9:55 a.m.  Rob Duncan, Education Committee Chair
Introduction to ASTA/NAPB plant breeding video competition

10-10:30 a.m.  Break ..................................................................................... Longleaf prefunction area

10:30 a.m.-  Posters (odd numbered presenting) ........................................... Loblolly/Loblolly prefunction area/Cypress
12 p.m.
11:30 a.m.- Lunch and viewing of plant breeding video ................................... Longleaf prefunction area/Longleaf competition winners
12-1 p.m.  Industry Committee Lunch ............................................................... Sourwood 4/5
1-3 p.m.  **General session, Plant Breeding Innovations** .................................. Longleaf

**Moderator: Wayne Parrott, University of Georgia**
1 p.m.  Fredy Altpeter, University of Florida
Editing the complex sugarcane genome (O-13)
1:20 p.m.  Fenggao Dong, Bayer
Doubled haploid technology and utilization in plant breeding (O-14)
1:40 p.m.  Marissa Simon, Corteva
Achieving apomixis in sorghum (O-15)
2 p.m.  Charlie Li, University of Georgia
Robot-assisted and machine learning-enabled in-field high throughput plant phenotyping (O-16)
2:20 p.m.  Katrien Devos, University of Georgia
Trait mapping in non-model crops: Challenges and successes (O-17)
2:40 p.m.  Khushi Goda, North Carolina State University
Optimal mating in Pinus taeda (O-18)
2:55 p.m.  Announcements ............................................................................... Longleaf
3-3:30 p.m.  Break ......................................................................................... Longleaf prefunction area
TUESDAY, AUGUST 27  continued

3:30-5 p.m. General session, Plant Breeding Perspectives ........................................................... Longleaf
Moderator: Melanie Harrison, USDA-ARS

3:30 p.m. Susan Mayne, FDA
FDA’s role in supporting plant biotechnology including genome editing (O-19)

4 p.m. Roger Boerma, Georgia Seed Development
GICRS: Bringing UGA-developed varieties into the marketplace (O-20)

4:20 p.m. Wayne Hanna, University of Georgia
Don’t forget to follow and complete the scientific process (O-21)

4:40 p.m. Qi Mu, Iowa State University
Exploring plant height plasticity observed in natural field environments (O-22)

4:55 p.m. Donn Cummings, Borlaug Scholar Committee Chair
Introduction to Borlaug Scholars Program

5:30 p.m. Student networking – pool and beach options with swimming, volleyball, putt putt and table tennis

7 p.m. All-student cookout ........................................................................................................... Ironwood and Courtyard
Dinner on your own for non-students

7:30 p.m. Social for all participants, with entertainment by Cotton Bird ........................................... Ironwood

WEDNESDAY, AUGUST 28

7 a.m.-5 p.m. Registration ........................................................................................................ Hall leading to Longleaf

8-10 a.m. General session, Awardee Presentations and lightning talks ........................................ Longleaf
Moderator: Josh Clevenger, Mars-Wrigley Confectionery

8 a.m. Shawn Kaeppler, Lifetime Achievement Awardee 2018, University of Wisconsin
Breeding for future food systems (O-23)

8:30 a.m. Donald Bockelman, Plant Breeding Impact Awardee 2018
Reflections on 38 years of corn breeding and diversity (O-24)

9 a.m. Jeffrey Endelman, Early Career Awardee 2018, University of Wisconsin
Genomics-assisted breeding in potato (O-25)

9:30 a.m. Nathan Taitano, University of Georgia
Exploring a shared organ shape regulatory network in three solanaceous crops (O-26)

9:45 a.m. Graduate student lightning talks

10:05-10:30 a.m. Break ........................................................................................................ Longleaf prefunction area
Sponsored by UGA Plant Breeding

10:30 a.m.-12 p.m. Posters (even numbered presenting) ........................................ Loblolly/Loblolly prefunction area/Cypress

11:30 a.m.-1 p.m. Lunch ........................................................................................................ Longleaf prefunction area/Longleaf
WEDNESDAY, AUGUST 28 continued

1-3 p.m.  General session, Breeding Specialty Crops ................................................................. Longleaf
Moderator: Cecilia McGregor, University of Georgia

1 p.m.  Shelley Jansky, USDA-ARS
My mother is also my father: Tales of inbreeding and redemption through the eyes of a potato (O-27)

1:20 p.m.  Michael Mazourek, Cornell University and Row 7 Seed Co.
Breeding for flavor: Field and kitchen co-selection (O-28)

1:40 p.m.  John Ruter, University of Georgia
Herbaceous ornamental plant breeding at the University of Georgia (O-29)

2 p.m.  Patrick Conner, University of Georgia
Pecan tree breeding at the University of Georgia (O-30)

2:20 p.m.  Ksenija Gasic, Clemson University
Starting from scratch: 10 years of peach breeding program at Clemson University (O-31)

2:40 p.m.  Sarah Kostick, Washington State University
Identifying fire blight resistance/susceptibility loci in apple for breeding use (O-32)

2:55 p.m.  NAPB2020 and other announcements

3-3:15 p.m.  Break .................................................................................................................. Longleaf prefunction area

3:15-4:15 p.m.  General session, Advances in Field Crop Breeding and Genetics ....................... Longleaf
Moderator: Mohamed Mergoum, University of Georgia

3:15 p.m.  Michael Casler, USDA-ARS
Design optimization in field experiments (O-33)

3:35 p.m.  Jenny Koebernick, Auburn University
Importance and impact of cotton breeding in the U.S. (O-34)

3:55 p.m.  David Bertioli, University of Georgia
The peculiar genetics of peanut – breeding with a segmental allotetraploid (O-35)

4:15-4:30 p.m.  Break .................................................................................................................. Longleaf prefunction area
Begin poster removal

4:30-6 p.m.  NAPB Committee Breakout Sessions and General Meeting ........................................ Longleaf

6-7 p.m.  Pre-dinner social featuring boiled peanuts and entertainment by our own Albert Culbreath ................................................................. Longleaf prefunction area
Complete poster removal

7-9 p.m.  Banquet and award presentations ............................................................................ Longleaf

---

Evaluation of interspecific bermudagrass (Cynodon spp.) hybrids for turfgrass quality and persistence over years to drought, diseases, plant parasitic nematodes and other stresses in Tifton, GA.
THURSDAY, AUGUST 29

8 a.m.- 8 p.m. DEPART CALLAWAY GARDENS FOR POST-MEETING TOURS*

Participants need to grab a boxed breakfast and board bus and vans in front of THE LODGE for transport to Plains. The first stop will be at UGA’s Southwest Research and Education Center, 108 Experiment Station Rd., Plains, GA. The group will split in two groups as shown below.

<table>
<thead>
<tr>
<th>TIME</th>
<th>ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 a.m.</td>
<td>Load bus/vans, drive to SWREC in Plains</td>
</tr>
<tr>
<td>9:30-10 a.m.</td>
<td>Break in conference room; welcome by Assistant Dean for Research, Bob Stougaard and SWREC superintendent, Scott Rogers</td>
</tr>
<tr>
<td></td>
<td><strong>Group 1</strong></td>
</tr>
<tr>
<td>10-10:40 a.m.</td>
<td>Zenglu Li – soybean breeding</td>
</tr>
<tr>
<td></td>
<td>Bill Branch – peanut breeding</td>
</tr>
<tr>
<td></td>
<td><strong>Group 2</strong></td>
</tr>
<tr>
<td>10:40-11:20 a.m.</td>
<td>Roger Boerma – Georgia Seed Development</td>
</tr>
<tr>
<td></td>
<td>Terry Hollifield – Georgia Crop Improvement Association</td>
</tr>
<tr>
<td></td>
<td>Zenglu Li – soybean breeding</td>
</tr>
<tr>
<td></td>
<td>Bill Branch – peanut breeding</td>
</tr>
<tr>
<td>11:20 a.m.-12:10 p.m.</td>
<td>Jimmy Carter boyhood farm/museum</td>
</tr>
<tr>
<td>12:10-1 p.m.</td>
<td>Lunch in SWREC Conference room</td>
</tr>
<tr>
<td></td>
<td>Board bus/vans and depart for Tifton</td>
</tr>
</tbody>
</table>

*Closed-toe shoes or boots are recommended. Bring hats and sunscreen. Water will be provided throughout the tour.

Zenglu Li, Professor/Soybean Breeder at University of Georgia visited an early planted soybean field in Vienna, GA.
After the morning tours and lunch at the Plains Research and Education Center, the bus and vans will travel to the Tifton campus, National Environmentally Sound Production Agricultural Laboratory ([NESPAL] 2353 Rainwater Rd., Tifton, Georgia). We will spend about 30 minutes here for a break and welcome from the Assistant Dean, Dr. Joe West. The group will split in two groups as shown below.

<table>
<thead>
<tr>
<th>TIME</th>
<th>ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2:30 p.m.</td>
<td>Travel to Tifton Campus</td>
</tr>
<tr>
<td>2:30-3 p.m.</td>
<td>Break at NESPAL, welcome by Assistant Dean</td>
</tr>
<tr>
<td>3-4 p.m.</td>
<td><strong>Group 1</strong>&lt;br&gt;Peng Chee – cotton breeding&lt;br&gt;Corley Holbrook – peanut breeding&lt;br&gt;Bill Anderson – forage breeding</td>
</tr>
<tr>
<td>3-4 p.m.</td>
<td><strong>Group 2</strong>&lt;br&gt;Patrick Conner – muscadine breeding&lt;br&gt;Brian Schwartz &amp; Wayne Hanna - turf/ornamentals&lt;br&gt;Peggy Ozias-Akins - centennial garden</td>
</tr>
<tr>
<td>4-5 p.m.</td>
<td><strong>Group 1</strong>&lt;br&gt;Patrick Conner – muscadine breeding&lt;br&gt;Brian Schwartz &amp; Wayne Hanna - turf/ornamentals&lt;br&gt;Peggy Ozias-Akins - centennial garden</td>
</tr>
<tr>
<td>4-5 p.m.</td>
<td><strong>Group 2</strong>&lt;br&gt;Peng Chee – cotton breeding&lt;br&gt;Corley Holbrook – peanut breeding&lt;br&gt;Bill Anderson – forage breeding</td>
</tr>
<tr>
<td>5:15 p.m.</td>
<td>Hotel check-in</td>
</tr>
<tr>
<td>5:45 p.m.</td>
<td>Travel to Blackshank Farm</td>
</tr>
<tr>
<td>6-7 p.m.</td>
<td>Pre-dinner social featuring boiled peanuts</td>
</tr>
<tr>
<td>7 p.m.</td>
<td>Dinner</td>
</tr>
<tr>
<td>8:15 p.m.</td>
<td>Bus and vans return to hotel; bus/van transport will be provided to Atlanta Hartsfield airport on Friday morning</td>
</tr>
</tbody>
</table>

*Closed-toe shoes or boots are recommended. Bring hats and sunscreen. Water will be provided throughout the tour.*
NATIONAL ASSOCIATION OF PLANT BREEDERS
2019 ANNUAL MEETING

Hosted by the UGA Institute of Plant Breeding, Genetics and Genomics