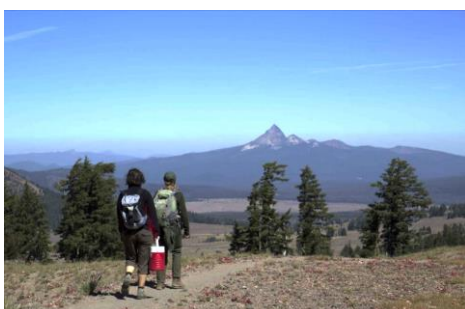
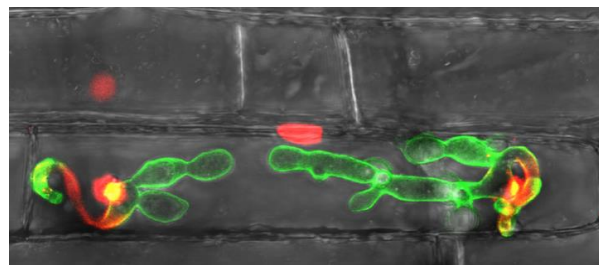




UNIVERSITY OF
GEORGIA
Integrated Plant Sciences

Recruitment 2022





Integrated Plant Sciences
UNIVERSITY OF GEORGIA

Welcome to the University of Georgia! **Go dawgs!** This is a reference guide for all things IPS, UGA, and Athens.

Students joining UGA through Integrated Plant Sciences (IPS) conduct cutting-edge plant- and fungal-related research on topics with applications to society and the environment. **There are many opportunities in plant science at UGA.** Access them through IPS.

IPS is the centralized portal through which students apply, and later specialize in a broad range of research topics including:

- *Bioinformatics*
- *Biotechnology*
- *Breeding*
- *Genetics*
- *Genomics*
- *Physiology*
- *Ecology*
- *Evolution*
- *Fungal Biology*
- *Molecular Biology*
- *Plant-Microbe Interactions*

Research scales can be *molecular, cellular, organismal, or ecological.*

IPS is the starting point for participating graduate programs and the Plant Center, which collectively contribute to the overall graduate experience:

- ☐ PhD training in interdisciplinary plant research areas
- ☐ Customized research specializations
- ☐ Competitive financial support
- ☐ Plant-focused seminars, retreats and symposia
- ☐ A highly interactive plant sciences community spanning basic and applied research questions

IPS Program Information

IPS is a recruitment portal for the plant sciences at UGA.

All requirements for IPS are in the 1st semester, after which the student selects a lab, major, and home department. After this, the student will follow the requirements of their chosen department.

IPS covers 9 PhD graduate programs (departments):

- Biochemistry and Molecular Biology
- Genetics
- Horticulture
- Institute of Bioinformatics
- Institute of Plant Breeding, Genetics, and Genomics
- Microbiology
- Plant Biology
- Plant Pathology
- Warnell School of Forestry and Natural Resources

1st semester requirements:

1. Students perform **three** 6-week lab rotations with any IPS faculty
2. Students take:
 - Responsible Conduct of Research seminar
 - Professional Skills seminar
 - A formal content course

Funding:

Students receive research assistantships for the first semester, based on an annual stipend of \$29,120. After the first year, the stipend is set according to the student's home department.

Formal Content Courses

IPS students will take one of these courses in the first semester:

Biological Content:

- ☐ HORT/CRSS 6430, **Plant Physiology** – Basic principles of plant physiology
- ☐ HORT 8150, **Plant Growth and Development** – Physiological processes of growth, development, and environmental effects
- ☐ PBGG/CRSS/HORT 6140, **Plant Breeding** – Fundamental principles and theories for plant breeding and cultivar development
- ☐ PATH/PBIO 6200/6200L, **Mycology** – The biology, ecology, genetics, morphology, and taxonomy of fungi
- ☐ PBIO 6720, **Plant Variation and Evolution** - Conceptual basis and empirical approach for understanding genetic processes and patterns in natural plant populations
- ☐ PBIO 8100, **Advanced Plant Genetics** – Advanced course in plant genetics and genomics

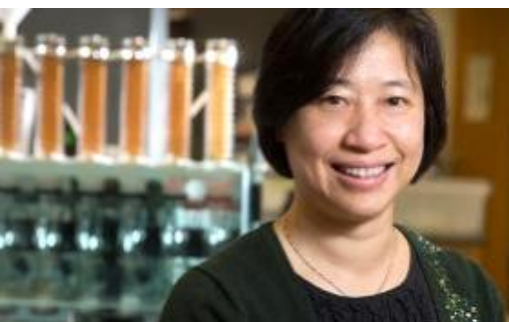
Quantitative Skills:

- ☐ STAT 6315, **Statistical Methods for Researchers** – Basic statistical methods
- ☐ FANR 6750-6750D, **Experimental Methods in Forestry and Natural Resources** – Research methods for constructing and analyzing designed experiments
- ☐ STAT 8200, **Design of Experiments for Research Workers** – Methods for constructing and analyzing designed experiments
- ☐ BINF 8500, **Algorithms in Bioinformatics** – Bioinformatics algorithm design and implementation
- ☐ GENE/BINF 8940, **Applied Genome Analysis** – Bioinformatics approaches for whole genome analyses



IPS Faculty and Student Awards

IPS is marked by exemplary scholarship in research by both faculty and students. Its faculty have a long tradition of world-class excellence in the plant sciences.



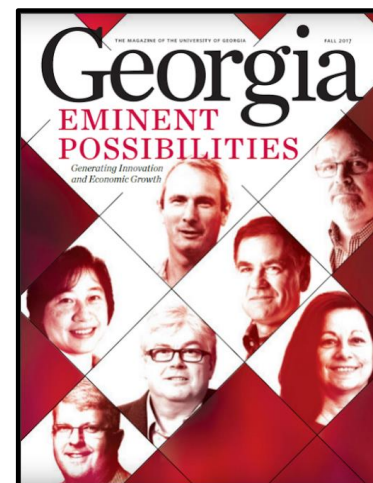
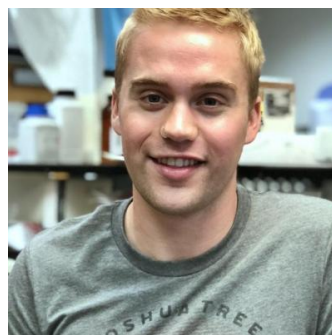
Faculty:

- Faculty have received \$20+ million in active grants
- 12 current faculty are American Association for the Advancement of Science Elected Fellows
- 1 National Academy of Science member
- 2 have won NSF Career Grants
- 3 are Fulbright Scholars
- 8 are UGA Distinguished Research Professors
- 7 have won a UGA Creative Research Medals



Graduate students (since 2012):

- 9+ students received NSF Graduate Research Fellowships
- 6+ received NSF Doctoral Dissertation Improvement Grants

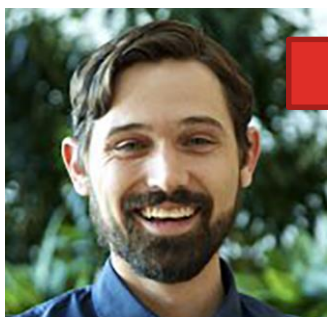


Meet some UGA Alumni



Geoffrey Meru (PhD, Horticulture 2010)

- Assistant Professor of Vegetable Breeding, University of Florida



Chris Topp (PhD, Plant Biology 2009)

- Associate Member, Donald Danforth Plant Science Center

Jennifer Yates (PhD, Plant Breeding 2006)

- Wheat Breeding Lead at Bayer Crop Science



Safira Sutton (PhD, Plant Pathology 2019)

- Microbial Discovery Scientist, Boost Biomes



Jenny Cruse-Sanders (PhD, Plant Biology 2003)

- Director of the State Botanical Garden of Georgia
- Director of Research and Conservation at the Atlanta Botanical Garden

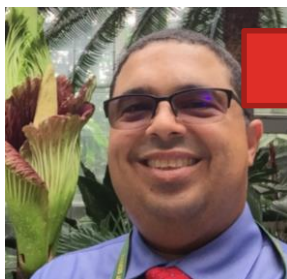


Meet some UGA Alumni



Clint Steketee (PhD, Plant Breeding 2018)

- Soybean Breeding Lead, Inari



William Carromero (PhD, Plant Biology 2004)

- US Forest Service National Botanist

Ada Bacetty (PhD, Plant Pathology 2008)

- Department Chief, Biological Threat Reduction Program, Defense Threat Reduction Agency



Carolyn Lawrence-Dill (PhD, Plant Biology 2003)

- Professor in Genetics, Development, & Cell Biology at Iowa State
 - Lead scientist for the USDA-ARS MaizeGDB project



María Monteros (PhD, Plant Breeding 2006)

- North Hybrid Regional Breeding Lead at Bayer Crop Science
 - Previously, Professor, Noble Research Institute



Key Places:



Odum School of Ecology: Home to Ecology



Davison Life Sciences: Home to Genetics and Biochemistry



Warnell School of Forestry & Natural Resources: Home to Forestry



Miller Plant Sciences: Home to Horticulture, Plant Biology, and Plant Pathology



The Science Learning Center (SLC): Teaching labs, coffee & bagel shop

The Center for Applied Genetic Technologies (CAGT): Home to the Institute of Plant Breeding, Genetics and Genomics (IPBGG)



Riverbend Greenhouse Complex

The Complex Carbohydrate Research Center (CCRC): Many IPS faculty are housed here



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IPS Student Associations

Each IPS-affiliated department has a graduate student organization that provides opportunities for social events and academic enrichment to enhance the graduate experience.

Students from these departments often co-sponsor events and interface at the Plant Center.

Some past events include holiday parties, retreats, bowling, journal clubs, a fun run, and alumni talks.



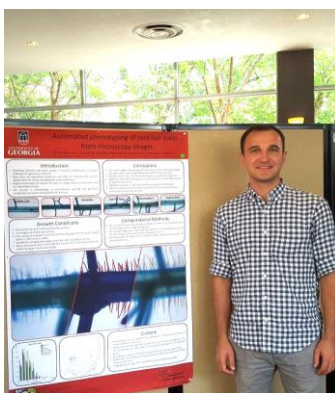
Advice from current students

Questions to ask a potential advisor:

- Are you taking rotation students in the fall or full time students in the spring?
- How do you usually support your students financially?
- What expectations do you have for your students in terms of research development, publishing papers, teaching, and securing their own funding?
- What is the average graduation time for students in your lab and where are they now?

Tips when deciding on a program:

- Ask questions! Don't be afraid to ask questions to anyone and everyone.
- While considering an advisor, also consider the lab environment. Talk to the graduate students, postdocs, staff, etc. of that lab.
- Advisor, lab, department, project, and school are important, but don't forget that you're potentially living in a new place for ~5 years. Is Athens a place you'd like to be?



Teaching at UGA

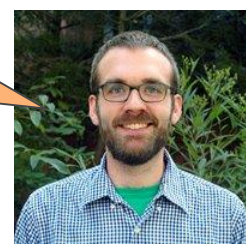
UGA has a strong focus on teaching, promoting excellence and innovation. In addition to abundant resources for instructors, there are opportunities for scholarship and research in teaching. Most IPS students will have the opportunity to develop teaching and communication skills.

- **Bioscience Learning Center** - Computer lab, MediaScape collaboration stations, instructional equipment
- **Center for Teaching and Learning** - Supports instructors campus-wide by providing activities planning, consultations, teaching resources, and workshops. Presents awards for excellent and innovative teaching
- **Greenhouse Teaching Collection** - A variety of tropical plants, cacti and succulents, seedless vascular plants, cycads, carnivorous plants, and orchids are available
- **Scientists Engaged in Education Research** - Facilitates cutting-edge research in STEM education through multi-disciplinary interactions and research collaborations between a community of scientists, provides opportunities to share research



"UGA provided great opportunities to learn about and engage in modern teaching methods and techniques, leaving me with invaluable experience for my current position at a teaching-oriented small university."

- Alex Pilote, PhD, 2017
Assistant Professor at Tennessee Wesleyan University



Certificates

Graduate students have the opportunity to pursue a variety of certificates with core content training and skills development. These are just a few that may interest IPS students:

Interdisciplinary Certificate in University Teaching - Enhances teaching skills and provides a credential that should enhance opportunities for academic employment. Requirements include four sections of teaching at UGA, selected coursework, a teaching project, evidence of scholarship of teaching, and teaching portfolio

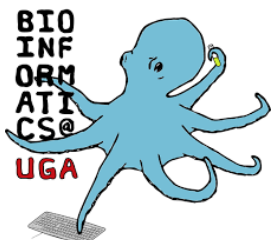
Bioinformatics - Coursework that prepares a student to interface with biology and computer science/statistics

Graduate Certificate in Agricultural Data Science - Produce graduates capable of bridging the gap between the generation, analysis, and interpretation of big data in the agricultural sector. Students with these skills will be critical for improving communication between data generators (agricultural and biological scientists) on the one hand, and data specialists (computer scientists and statisticians) on the other.

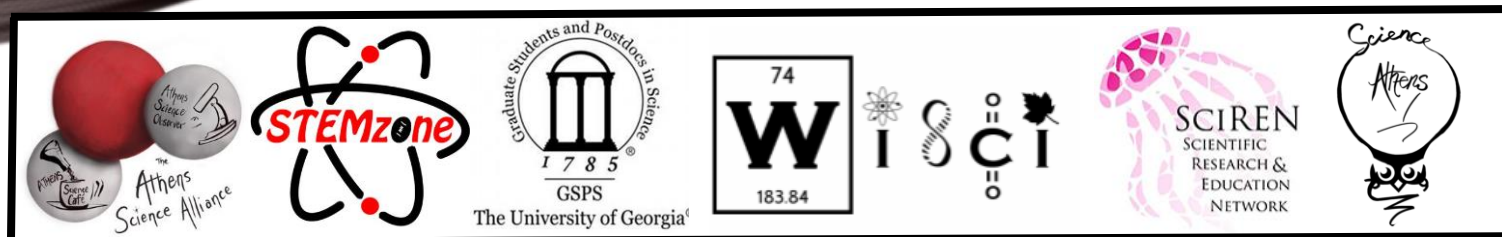
Conservation Ecology and Sustainable Development - Interdisciplinary preparation to handle the unique, multi-disciplinary problems associated with working in the area of conservation and sustainable development

Geographic Information Science - Advanced training for the rapidly expanding field of GIS, students will learn geospatial concepts and skills in geographic data collection and analysis that may increase research and employment opportunities. In addition to coursework, an internship or independent study is required

Sustainability - Develop skills to make significant, systemic changes in communities, paving the way for a more sustainable future. Coursework, a capstone project, and a reflection portfolio are requirements for this certificate



Science Outreach:



There are so many opportunities for science outreach at UGA. These are just a few that IPS students have participated in.



"The Athens Science Alliance contains the Athens Science Café and Athens Science Observer. They provide wonderful opportunities for faculty and students to engage with the community and communicate their science to the public."

- Mason McNair



"In Project Focus, I visited a middle school science classroom three days a week for a semester, designing hands-on activities and leading class lecture and discussions. The kids were avid learners, and it was a wonderful learning experience for me, the students, and their teacher."

- Callie Oldfield



"As Managing Editor in Sciences at *The Classic Journal*, I review UGA students' scientific research, giving them insight in the publishing process and offering suggestions and revisions to their work."

- Patrick Smallwood

UGA Facilities and Services:

There are many research spaces and analytical services available on campus, including:

Bio-imaging Research Center

Biological tissue imaging technologies

Biomedical Microscopy Core

Confocal and traditional microscopes and filters

Complex Carbohydrate Center Services

Mass spectrometry, NMR, chromatography, glycosyl residue composition & linkage, site of protein glycosylation, glycome profiling

Georgia Advanced Computing Resource Center

High-performance computing and networking infrastructure

Georgia Electron Microscopy

Transmission and scanning electron microscopy, X-ray fluorescence

Georgia Genomics and Bioinformatics Core

Core laboratory for state of the art nucleic acid sequencing and bioinformatics

Greenhouse Complex

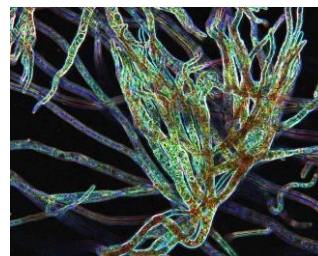
Space for research and teaching, growth chambers

UGA Herbarium

Over 230,000 sheets of vascular plants with an emphasis on plants from the Southeast, particularly Georgia

Field Research Facilities and Opportunities:

Savannah River Ecology Laboratory
Marine Institute on Sapelo Island
Network of 10+ University research farms
Coweeta Hydrologic Laboratory
State Botanical Garden
Museum of Natural History
River Basin Center



UGA Campuses at Tifton & Griffin

UGA has been a part of Tifton, Georgia, for a century. Its faculty and staff discover agricultural solutions and deliver them to people around the state, nation and world.

GA and USDA-ARS breeding programs for peanut, cotton, soybeans, muscadine grape, citrus, turf and forage grasses along with the associated seed system that brings new cultivars to market.



For more than 100 years, the Griffin campus has played a leading role in the development of modern agriculture in the South. It houses UGA turf and ornamental breeding programs and the USDA National Plant Germplasm System – Seed Storage Facilities; the Sensory Science Laboratory to learn how consumer sensory perception is used to evaluate fruit quality in breeding; and the state-of-the-art Food Product Innovation & Commercialization Center where research is conducted to convert agricultural commodities to value-added products for farmers and producers in Georgia.





The Plant Center UNIVERSITY OF GEORGIA

The Plant Center is the umbrella organization that unites the IPS participating units.



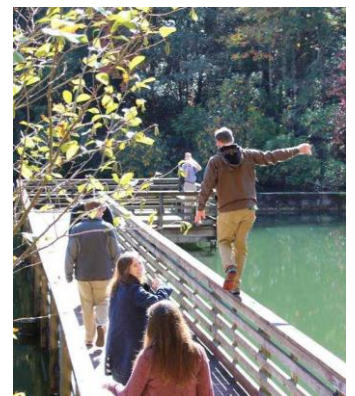
The Plant Center aims to enhance the tradition of outstanding research in plant molecular biology and genetics at the University of Georgia.

The Center brings together plant scientists through an annual retreat, seminars, and symposia to share research and promote the plant community here at UGA. Most IPS faculty and their students are members of The Plant Center.



“The Plant Center enriches my research by re-energizing and re-focusing my ideas and approach to plant biology.”

– Josh Clevenger, Faculty Investigator, Hudson Alpha





Living in Athens

"The Classic City" is a cultural hub in the southeast with a flair for the arts. Renowned for its music scene, Athens is home to REM, Widespread Panic, and the B-52s and venues such as the 40 Watt Club and Georgia Theater. Downtown Athens has an abundance of food and nightlife, and was named as a Historic District on the National Register of Historic Places.



Athens Accolades

"Best College Football Towns in America"
(ranked #2), *USA Today Sports*

"12 Best Music Towns in the Nation,"
Expedia

"Underrated food cities in the south,"
USA Today

"The 24 coolest towns in the USA"
(ranked #1), *Matador Network*

Athens has many distinctive neighborhoods (above) and historic areas with a lower cost of living than the national average. IPS students live in houses or apartments all around campus - some of their favorite neighborhoods include:

Five Points - right next to campus, you can grab a cup of coffee at *Jittery Joe's* or enjoy fish tacos at *Cali 'N Titos*

Normaltown - go for trivia at *Hi-Lo Lounge* or visit *The Grit*

Chicopee-Dudley - visit *Trail Creek Park* or brunch at *Mama's Boy* in this quaint neighborhood

Ask around for other favorite living areas!



UGA and Athens buses are free for students! - though many ride bikes to campus or carpool. The air quality index of Athens is 21% better than the national average! (Source: *AreaVibes*)

"My mother was deeded all land within 8 ft of her trunk, and I was planted after she passed."
- *The Tree that Owns Itself*





Brunch? Eat at Mama's Boy (left) – the best breakfast in Athens! Other options include Athens Bagel Company or homemade pastries at Big City Bread or dishes made with local ingredients at Heirloom Café and The National- or make your own with veggies from the Farmers Market.

Enjoy a freshly baked pizza outside surrounded by hanging lights at Ted's Most Best. If you're looking for a nice place to have coffee in the day or a beer at night, try Hendershot's, 1000 Faces, or Walker's. A great vegetarian option is the Grit- so good it appeals to omnivores too! If you're craving some BBQ, try Saucehouse BBQ for great ribs, homemade sauce, and sides. World Famous is a restaurant featured for its unique food and live music.

Student favorites:

- Georgia Theatre (top) – The local theatre is home to local musicians and acts/concerts that come through town. Its rooftop bar has live shows weekly!
- Rook and Pawn (right) – Athens' newest board and brew game café is fully stocked with any tabletop game you can imagine
- ARTini's – Paint a masterpiece led by a certified instructor... and drink wine while you do it!
- Escape the Space – Challenge yourself and a group of friends to a timed room puzzle
- UGA Football – We live for football. We live to tailgate. GO DAWGS!
- Classic City Rollergirls – Roller derby like you've never seen before!
- Little Kings - a bar which Athens Science Café hosts their monthly public science communication events



Local Breweries:

Creature Comforts (above) is a chill place to go downtown for a few cold beers– including Thor's favorite beers on Avengers: Endgame-- and good conversation. Southern Brewing Company and Akademia have a great indoor/outdoor scene. Terrapin remains a local favorite and has weekly events and live music in their large outdoor area. Athentic Brewing Company is the newest one to offer local brews.

Guide to Athens

In August 2020 Athens announced the creation of the Athens Music Walk of Fame, a two square block area in downtown Athens. Many artists have historically and currently call Athens home, making our small city the spot to see a lot of big artists at clubs like Georgia Theater and 40 Watt. The first 10 inductees include Drive-By-Truckers, Danger Mouse, and Widespread Panic.



New and Notable in 5 Points:

- Condor Chocolates – Local brothers Nick and Peter sell bean-to-bar chocolate bars, truffles, coffee, gelato and more at this adorable confectionary. The store is an homage to their family's Ecuadorian heritage and is a bustling spot in the 5 Points neighborhood. Have dinner at nearby Donna Chang's or The Expat and desert at Condor Chocolates.
- El Barrio Taqueria – Mini golf and tacos go together like...tacos and mini golf! El Barrio has a covered open air dining area surrounded by the aforementioned greens for golfing while you wait for your order. There are many vegetarian options as well as fare for those who are not.
- Fully Loaded Pizza – A great spot to enjoy pizza and people watching, Fully Loaded Pizza occupies a prime corner in 5 Points with a big patio out front for perfect for outdoor dining.

Athens International Favorites:

- Ding Tea– Downtown Athens has always been the best spot to get your beverage of choice and now with the addition of Ding Ting, you can get your bubble tea fix too. Ding Tea offers an array of flavored teas, milk tea, slushes and juice drinks and is located on Washington St close to the parking deck.
- All for Pho the love of Pho!– Nothing is quite as comforting as a hot bowl of Pho on a chilly fall day. Athens has several excellent options to soothe the stomach and soul. Mother Pho downtown on Broad St and Just Pho on Baxter are both great places to get that pho fix.
- Kelly's Jamaican – located near the UGA track on S. Milledge this Jamaican spot serves Athens residents the best jerk anywhere close to Athens and some say the southeast. The menu also has southern favorites like cornbread and collard greens with a Jamaican twist.
- Punta Cana– On Prince Ave you'll find Punta Cana Latin Grill serving up traditional favorites in The Bottleworks. The Bottleworks was originally constructed by Coca-Cola in the late 1800s and is now the site of several restaurants and shops and has won awards for historic preservation. Punta Cana's house made sausage and lively patio are both not to be missed.
- Siri Thai– On the Athens Eastside, Siri Thai is consistently a favorite for those who are seeking a spicy curry or Thai noodle dish. The service is as friendly as the curry is hot...first time diners beware the "4 stars hot"!

visitathensga.com



More in Georgia

Get outdoors in and around Athens!

- State Botanical Garden – enjoy the observatory, cafe, gardens, and hiking trail at this must-see spot!
- Bear Hollow Zoo – a free park with Georgia wildlife, adjacent to a Memorial pool (pond) and dog park
- Sandy Creek Nature Center – explore woodlands and wetlands or stop by the visitor's center to view aquariums and natural history exhibits
- Tallulah Gorge – about an hour from Athens, hike the trails to an overlook and visit the Victorian resort town
- Panther Creek – a little over an hour from Athens, hike the trail noted for its Chattahoochee forest flora
- Blood Mountain – about an hour and 45 minutes from Athens, great vistas from one of Georgia's tallest mountains
- Raven Cliff Falls – about an hour and a half from Athens, Hike to one of Georgia's most popular and beautiful waterfalls
- Broad River – just half an hour away, it is a favorite for canoers, rafters, and kayakers (photo below)



Explore the north Georgia mountains by visiting the waterfalls or hiking or biking the trails around Helen

Unicoi Lodge, which is frequently where the Plant Center annual retreat is held, is also near Helen.





More in Georgia

Want to learn more? Beaches, white water rafting, canoeing, history– the largest state east of the Mississippi has it all!

**EXPLORE
GEORGIA®**

www.exploregeorgia.org



Atlanta (~90 min away):

- Atlanta Botanical Garden
- Georgia Aquarium
- World of Coke
- High Museum of Art
- IKEA
- Zoo Atlanta
- Jimmy Carter Library & Museum
- CNN Headquarters
- Martin Luther King Jr. National Historic Site
- Truist Park, the Braves

Well worth the trip:

Savannah

(~3.5 hours away)

Chattanooga

(~3 hours away)

Admire Art in Athens:

- Georgia Museum of Art – new exhibitions every few months and a stunning permanent collection
- Lyndon House Arts Center – visit free exhibits, attend art classes, and explore the historic house connected to the gallery

Student favorites:

“The Masquerade is a really amazing music venue in Atlanta and Lenox Square Mall in Atlanta is a great place for shopping.”



IPS Faculty Directory:



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fungi, biological clocks*



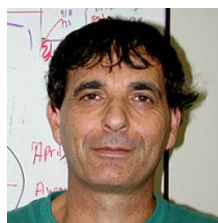
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phenomics, plant roots, plant
imaging and simulation*



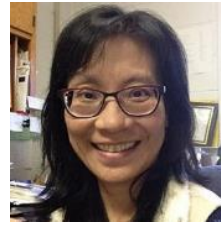
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population and community ecology,
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Josh Clevenger

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polyploid genomics*



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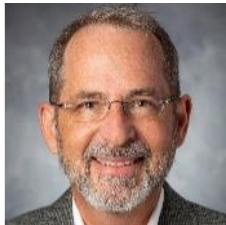
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reproduction*



Jennifer Cruse-Sanders

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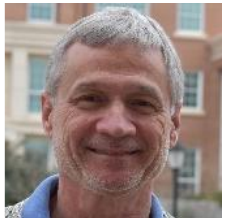
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centromeres, cytogenetics



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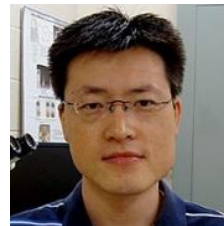
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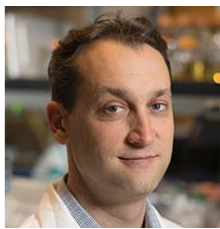
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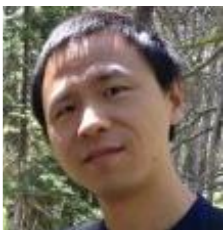
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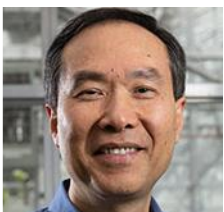
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Abbreviations:

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CCRC = Complex Carbohydrate Research Center

Ecol. = Ecology

Hort. = Horticulture

IPBGG = Institute of Plant Breeding, Genetics, and Genomics

IoB = Institute of Bioinformatics

Micro = Microbiology

PBio = Plant Biology

Plant Path. = Plant Pathology

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