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Welcome to Plant Biology! This handbook is written by and for graduate students; we can't claim any administrative authority, but we hope to provide accurate information about the department and to offer advice based on our experience.

Future students are invited to keep this document up to date.

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Starting out

1: Moving to Ithaca

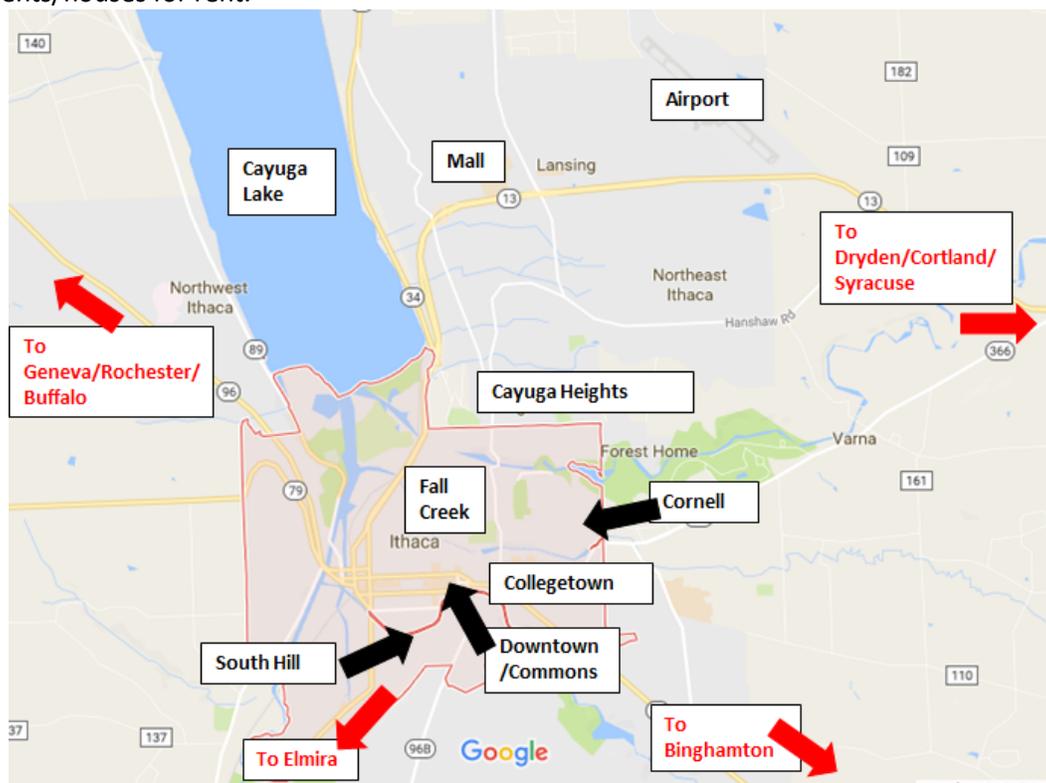
Welcome to Ithaca! Ithaca is a small city in the Finger Lakes region of upstate New York. The economy is largely based on education (Cornell and Ithaca College), and Ithaca feels like a college town-- relatively liberal and international. Ithaca is warm in the summer, cold and snowy in the winter, and often rainy in between.

The nearest major city is New York City, about four hours south. Syracuse is a medium-sized city about an hour to the north-- it has, among other features, a giant mall (Destiny USA).

Finding off-campus housing

Because of the smaller size of the city, housing can often be one of the most challenging parts of living in Ithaca. It is strongly encouraged that you organize living arrangements prior to arriving. Depending on when you plan to arrive in Ithaca, it is advisable to start looking several months early as the rental/real estate market is constantly changing.

Not to fear however, several resources are at your disposal to find the place that's right for you. First, feel free to contact your fellow graduate students about their living arrangements; many of the students live in buildings that have multiple rooms or may have recommendations about where they have lived previously. In addition, websites such as [Ithaca Craigslist](#) are commonly used to identify apartments/houses for rent.



The Plant Biology graduate community is usually fairly spread out over town and as such many will have good advice about where to live. In addition, Ithaca itself has many diverse options. A few of the more common examples can be seen below:

- Fall Creek: This area is close to downtown, however separate enough that the traffic isn't significantly affected while major events are taking place downtown. The spaces for rent in Fall Creek are usually single bedrooms in a house or a multiple bedroom house with multiple roommates.
- Cayuga Heights: Technically a village which is a suburb of Ithaca. This is the area where many of the faculty live and is considered more upscale. However, there are several apartment complexes which rent to students at an affordable rate. Though it is farther from downtown, it is often much more quiet and has less traffic. It is also located very close to the mall and the airport.
- Downtown/Commons: The heart of the city. Living here will offer you easy access to the many events that take place (Apple Fest, Chili Fest etc) and very easy access to the bus lines for travel, though you will also be very affected by the high traffic and occasional construction. Options here are more limited to studio, one, or two bedroom apartments.
- Collegetown: Generally considered to be an undesirable place to live for graduate students with the exception of a few co-ops which some students have been a part of in the past. This area is where much of the undergraduate population lives. It is often busy, loud, and can be quite a mess during the weekend.
- South Hill: This area is most similar to Fall Creek and is mostly houses where people who are not part of Cornell or Ithaca College live. This area is also close to the commercial district where many of the major corporate stores are located.

On-campus housing

On-campus housing is also available for graduate students. The majority of grad student apartments are at the Hasbrouck Apartments on North Campus; these and other options are described at [Living @ Cornell](#). The advantages of living on campus are mostly convenience: utilities and maintenance are covered in the rent, and apartments are walking distance from most campus buildings. [Applications](#) for on-campus housing are filled on a space-available basis, so it's best to apply as soon as possible.

Getting around in Ithaca

Whether you are bringing your own mode of transportation or relying on the use of public transit, getting around Ithaca won't be too bad. Graduate students take advantage of many different options of getting to campus and around town in general. The greater Ithaca area has a well-run public transport system through Tompkins Consolidated Area Transport ([TCAT](#)) with many routes offering two major stops, one inbound and one outbound, at the edges of downtown.

New graduate students receive a complimentary bus pass which allows for unlimited usage for the span of their first year (lasting through August). This pass is operated through your Cornell student ID so that you won't even be required to carry something extra in your wallet.

After your first year, there are a couple of options for transport onto campus. First, you may purchase an Omniride bus pass, which allows unlimited use of the TCAT bus system for \$200. Omniride passes are sold online by [Cornell Transportation Services](#); the pass is linked to your student ID. The pass will go into effect in mid-August and expire on the last day of August the following year. If you would prefer to drive your vehicle to campus the options are more limited; most the parking permits on campus are prohibitively expensive and the only viable option is a parking pass at the B-Lot, located at the east end of Tower Road and costs \$330. In addition, the TCAT buses become free to all students after 6 PM and on the weekends.

However, many of the parking lots on campus become free to use after 5 PM, so one popular option with students with personal vehicles is to buy a bus pass to ride down from campus and return with their personal vehicle after 5 PM.

Ithaca is also pretty bike friendly, but commuting from downtown up to campus involves a serious hill.

Getting to Ithaca: airports

Ithaca has its own airport, but this isn't always the best option for getting into and out of Ithaca. Options to consider include:

- Ithaca Tompkins Regional Airport: Close to the city and accessible by bus (Routes 32 and 72). This is a small regional airport with direct flights only to Detroit, Newark, and Philadelphia. This is the most convenient airport, but tickets can be relatively expensive and flights are often delayed by weather.
- Syracuse Hancock International Airport: In Syracuse, about an hour away from Ithaca. Syracuse has direct flights to Midwestern and East Coast domestic destinations (includes NYC). [Ithaca Airline Limousine](#) will deliver you to/from this airport.
- Elmira Corning Regional Airport and Greater Binghamton Airport: These two are about one hour away from Ithaca. Often have more reasonable prices and are less likely to cancel than Ithaca Tompkins Regional Airport.
- JFK and LaGuardia Airports: A long trip from Ithaca in NYC, but these are often cheaper or more convenient for international flights. The Cornell [Campus to Campus](#) Bus or the [ShortLine](#) Bus will get you to Midtown Manhattan; from there, there are several public transit options to get to the airports in Queens.

When to arrive in Ithaca

The first event that you must be present for is the graduate student orientation/ SIPS orientation, which usually occurs in late August. The specific time that you should arrive in Ithaca will likely be decided by the beginning of your first rotation, which will usually last for the duration of the first semester. To this end, it would be most beneficial to contact the faculty member that you would be interested in working with before you come to Ithaca so that you have an idea of when it would be possible to start. Don't be worried if you don't have your initial rotation arranged before arriving for the orientation as many students do not.

University resources for new graduate students

The graduate school itself has provides [online resources](#) for incoming graduate students. The most useful of these is a To Do List which provides a clear list of tasks to be completed prior to arriving at Cornell. In addition, this website also includes descriptive sections which cover aspects of graduate school that are important but may not have been previously covered including defining terminology (ex. NetID) and the variety of health and wellness programs on campus.

2: Setting up your paperwork

The information we provide here is not necessarily a comprehensive list of all the paperwork you need to complete. These are simply suggestions and tips we think might be useful as you navigate joining the Cornell community. The Graduate School has a very important [To-Do List](#). Filling out health forms for insurance, submitting official transcripts, etc. are all necessary for your transition to Cornell to go smoothly. Pay attention to the deadlines, as some are early in the summer, while others are closer to orientation.

Tuition

If you have a fellowship, assistantship (teaching, research) or another fully-funded model, you do not pay tuition to Cornell. Your tuition costs, health insurance, and stipend are all covered by your funding. However, you will have to pay the University Activity Fee, which is usually small. Also, if you purchase a gym pass or a parking pass, this expense often goes to your Bursar account. To access your Bursar account online, go to the [Office of the Bursar](#) webpage. Cornell uses CASHNet to allow students to manage their Bursar account. You log in to CASHNet as a student, using your NetID and password. It is a good idea to check to make sure that your funding has been correctly posted to your account to avoid later hassles. The Bursar page also has other useful resources to help you understand your account/bill.

Holds

Students who have a hold placed on their Bursar account must clear the hold before being able to register. A hold may have been placed due to:

- Your funding (they particularly care about the tuition payment) hasn't cleared official channels. International students who have international funding sources should note that any checks drawn from a bank outside the United States will take at least two weeks to clear. If you can, try to arrange for the check's arrival at Cornell earlier or you will not be able to register.
- Your Bursar account balance (activity fee, gym membership, health service co-pay fees, etc.) has not been paid in full. You will need to pay this balance to clear the hold.
- A medical hold may have been placed if you have not provided evidence of receiving the required vaccinations (e.g. measles, mumps, rubella, etc.). The University takes vaccinations very seriously. Additional requirements may be in effect for international students. If the correct documentation cannot be provided or you are missing a vaccine or two, you can get the required shots at Gannett to clear the hold (additional charge is billed to you).
- A hold may be placed if you have an outstanding balance on your CornellCard (an on-campus credit card-like system). You will need to clear up this balance in order to clear the hold and register. Accounts from the previous semester must be paid in full before you can register for the upcoming semester.

Stipend (Direct Deposit)

The method and timing of disbursement of your stipend depend on how you are funded. (See Sections 10 and 11 for more details of funding.) In general, if you have a Research Assistantship (GRA-ship) or Teaching Assistantship (TA-ship), you will be paid on the 15th and 30th of every month. This functions like a paycheck, coming through Cornell's Payroll office. Cornell's online employee website is Workday, and you can log in to Workday using your NetID and password. You can set up direct deposit in Workday by following [these instructions](#) or they will just mail you the checks.

Taxes are withheld from these disbursements, and W-2s are available on Workday as well.

If you have been awarded a fellowship from Cornell, or from an outside organization (NSF, USDA, etc.), you may need to contact the Fellowship Office in Caldwell Hall when you arrive in Ithaca. Generally, fellowship stipends are disbursed in lump sums at the beginning of each semester, rather than on a biweekly basis. Additionally, depending on the fellowship, taxes are sometimes not withheld from these disbursements. It's a good idea to talk to previous students who have had the same fellowship, and/or contact a tax professional to make sure you pay all necessary taxes, etc. If you didn't set up direct deposit before your first payment, you will have to go to the Office of the Bursar at Day Hall to pick up your check. To set-up direct deposit into a bank account, go to [Nelnet Business Services](#) and log in using your Cornell NetID and password. Verify or edit the Student Profile Information. Select your method of refund. If this is the first time you are entering checking or savings information in Nelnet, you will be prompted to add your checking or savings account information.

Important Notes:

- The student must be the primary account holder of the account used for direct deposit.
- Refunds issued by direct deposit will appear in the bank account within 2-3 business days.
- Your default primary e-mail address in Nelnet is your Cornell email address. You can add additional email addresses once you're enrolled, but you cannot change the default email address.
- Students will receive an email when direct deposit refunds or stipends have occurred.

3: Your first week on campus

Orientation

The Cornell Graduate School holds an orientation session on the day before classes start in the fall (specific information about this orientation session will be emailed to you by the Graduate School prior to the start of classes). This is a large event where you check in officially with the Graduate School, submit paperwork, pick up your student ID, as well as get information and free stuff from a variety of campus groups. This is an event for all incoming graduate students, so lines can get long – pack your patience and maybe a water bottle! Plant Biology and SIPS will have additional, smaller orientation events.

Keys, Passcodes, and Desks

As a Plant Biology student, you will be given access to common spaces available to students. Your Cornell ID Card is your entry ticket into most buildings. The building manager simply has to add you to the list of people who have access, and then holding up your card to the card reader outside a door will unlock the door. Our Graduate Field Assistant (Karin Jantz) usually gives all first-year students after-hours access to the 4th and 5th floors of Mann Library. This also includes the kitchen on the 4th floor and the office space on the 5th floor. If you have already started a rotation, you should be given lab/desk space in that lab or a nearby area. Talk to your lab manager or PI about obtaining access to the lab and/or building. There is also a copy room on the 4th floor of Mann with office supplies. Ask Karin Jantz or Tara Reed (in the Plant Biology administrative office on the 4th floor) for the passcode.

Email listservs (E-lists)

The main conduit for announcements of events and seminars is via email listserv. Cornell has a university-wide listserv system, so once you learn how to subscribe and unsubscribe to one list, the process will be the same for other lists. As an incoming Plant Biology graduate student, you should be added to a few listservs automatically.

- PB_FIELDSTUDENTS-L@list.cornell.edu (All Plant Biology grad students)
 - To email all the other Plant Biology grad students, the GFA and the DGS, simply send an email to this address from your subscribed email (i.e. your Cornell email address)
- PB_ALL-L@list.cornell.edu (Plant Biology faculty, students, staff, etc.)
- PLANT-SEMINAR-L@list.cornell.edu (SIPS-wide announcements)

If you are a part of a lab embedded within an institute (BTI, Weill, etc.), you should subscribe to those lists also. For explanation of how to join/leave lists, see the [Cornell IT webpage](#).

Other useful listservs include:

- Evolgen_seminars-l@list.cornell.edu for seminars in evolutionary biology and related topics
 - Subscribe by emailing eovlgen_seminars-l-request@cornell.edu with the word “join” in the subject line, and the message body blank (no text, no formatting)
- Ecology and evolution seminars
 - Subscribe by emailing lyris@cornell.edu with message: SUBSCRIBE EANDSSEMINAR-L full “Firstname Lastname”
- Biogeochemistry seminars
 - Email biogeo@cornell.edu with request to join

Make yourself at home

Feel free to use the kitchen on the 4th floor of Mann; please clean up after yourself. There is an electric kettle for making hot beverages. Mandible Café, on the first floor of Mann near the library entrance, serves coffee/tea, baked goods, snacks and lunch.

The Big Red Barn is a graduate and professional student café on campus. On Friday afternoons from 4:30 to 7pm, the Barn holds an event called “Tell Grads It’s Friday” (TGIF) in which they have free snacks, and sell beer and hard cider. This is always a great time to hang out with your friends after a long week, and

has by far the cheapest drinks in town. The BRB also serves beer most other weeknights, and is a great place to study or meet up with friends.

Other nearby dining options include Trillium (a standard dining hall), Synapsis (pizza and salads), Bus Stop Bagels, and the Dairy Bar (hot sandwiches and *ice cream*). The vet school café is convenient for students at BTI and the Holley Center, and Temple of Zeus has soups and sandwiches that are worth the walk to the Arts Quad.

Health care

Cornell Health (formerly Gannett Health Services) is the primary health care provider on the Ithaca Campus. It is located on Ho Plaza, near the intersection of Campus Rd and College Ave. They offer “medical services and mental health care, plus specialty services like physical therapy, sports medicine, nutrition, and a full-range pharmacy.” Visit [their website](#) to see the resources available to you. Part of your To-Do List as a new student will involve submitting a Health History Form, including documentation of vaccinations.

Graduate school is a completely unique experience, full of wonderful, thrilling moments, but it can also be quite intense, and sometimes isolating. If you find that you need support, Cornell has many resources available to you.

- “[Let’s Talk](#)” is a drop-in service that offers informal, confidential, no-commitment consultation with a Cornell Health counselor. No appointments are necessary. The hours and locations vary slightly by semester, but there are usually a several hours each weekday.
- [Counseling & Psychological Services \(CAPS\)](#) at Cornell Health includes individual and group counseling as well as psychiatry appointments, referrals, and crisis intervention.
- [Empathy, Assistance and Referral Service \(EARS\)](#) is a peer-led counseling program run by skilled, dedicated volunteers (Cornell undergraduates, graduate students and professional staff) who have undergone extensive training and have passed through a rigorous selection process to provide non-judgmental, short term counseling.
- Ithaca’s Suicide Prevention and Crisis Service: 1-800-273-8255

Gym/Fitness

Cornell has many opportunities to be active on campus. There are four Cornell Fitness Centers (CFC) on campus, the closest to most Plant Biology students being Helen Newman and Teagle. A year membership costs \$145. All centers include weight rooms, cardio rooms, and places to change. There are also free classes, such as yoga, kickboxing and ZUMBA. You can see the schedule of the classes on the [CFC website](#). All you need to do is get a wristband at the fitness center before each class. Teagle and Helen Newman have swimming pools with open swim hours throughout the day. There is a bouldering wall in Noyes, and a whole climbing center in Bartels Hall, which is close to Teagle. You can rent sport equipment, such as basketballs, volleyballs, tennis rackets and more at Helen Newman, Teagle and Noyes. One thing to note is that during breaks, Helen Newman is often the only gym open. You can join an intramural sports team and play soccer, flag football or many other team sports.

Another perk is if you visit a CFC (swiping your card at the entrance to the gym) 50 times per half year period, you can get a refund for the cost of half year membership if you are on Cornell's SHP healthcare (the student health care plan provided to most grad students by Cornell). You can get the whole membership cost refunded if you do 50 per semester for both periods. You can check your 'swipes' on the [Office of Student Health Benefits website](#).

There is also Cornell Outdoor Education (COE), a group that has classes, the climbing center at Bartels Hall and the ability to rent all types of gear (for hiking, climbing, kayaking, skiing and even vans). The outfitting center is in the basement of Bartels Hall. The classes are a great way to learn a new skill, or improve on something you already love to do with an Intermediate- or Advanced-level class. There are also classes that take the form of trips over Fall Break or Spring Break, and allow you to explore the incredible natural areas in upstate NY and beyond. The COE classes are incorporated into the larger list of PE classes offered at Cornell, which also include everything from yoga to archery to ice skating. You can view these on the Cornell Class Roster each semester, under Physical Education, and sign up for them via the Student Center website.

4: Understanding Cornell: power structures and acronyms

Cornell is composed of many different schools, colleges, and smaller groups. Your affiliations are as follows:

Cornell University

CALS: College of Agriculture and Life Sciences

SIPS: School of Integrative Plant Science

Section: *Plant Biology*

Plant Pathology and Plant Microbe Biology (PPPMB)

Horticulture

Plant Breeding

Soil and Crop Sciences

Cornell University is composed of several colleges and schools: CALS is the second-largest of these. The Graduate School is also one. Others include the Law School, the Business School etc.

CALS (the College of Agriculture and Life Sciences) houses 15 departments and two schools (SIPS is a school); people in SIPS often interact with Molecular Biology and Genetics (MBG), Ecology and Evolutionary Biology (EEB), Biological Statistics and Computational Biology (BSCB), etc. These departments also offer seminars—you can ask to be subscribed to their mailing lists.

SIPS is the School of Integrative Plant Sciences. Plant Biology is one of five sections in SIPS. These sections used to be independent Departments under CALS; they restructured to form a school in 2014. Some events are SIPS-wide, while others are section-specific (e.g. weekly seminars, retreats, GSAs). The SIPS administrative office is at 135 Plant Science.

The Section of Plant Biology includes 26 faculty members, 30-ish grad students, and a number of undergraduate students.

Graduate students are also a part of the Graduate School, as follows:

Cornell University

Cornell University Graduate School

Plant Biology Graduate Field

The Graduate School administers masters, Ph.D., and professional students in almost 100 fields of study. Plant Biology, Plant Breeding, Plant Pathology etc. are separate graduate fields.

The Plant Biology Graduate Field includes all Plant Biology graduate students. More importantly, it describes the subset of faculty who are authorized to supervise theses in Plant Biology—these are the people with whom Plant Biology grad students can do rotations and research. Most such faculty members are also in the Section of Plant Biology, but many are housed in other departments (e.g. GG&D, MBG, NB&B) or in non-Cornell institutes like BTI and the Holley Center (USDA).

5: Facilities

Lab space

In your first year, lab space is provided to you by your rotation labs. Depending on the type of lab in which you work, you will usually be given both a bench (or part of a bench) of wet lab space, as well as an office/desk space. Once you join a lab, (again depending on the lab) you'll be given a more permanent space. Bringing photos or fun tchotchkes can be nice to personalize your space and make it feel a little more comfy.

Greenhouses/Growth Chambers/Plant Transformation

There are [plant growth facilities](#) all across campus, and the ones you use will vary widely based on the lab in which you work, and what plant(s) you are growing. You should ask the lab manager or PI which space the lab primarily uses. Be sure to follow all posted signage and be aware that some spaces are more restrictive than others (e.g. no moving of plants between spaces to prevent the spread of disease/pests, etc.). A particularly nice spot for an afternoon break is the Liberty Hyde Bailey Conservatory (attached to the Plant Science building) which houses some wonderful tropical and exotic plants, such as our resident corpse flower, 'Wee Stinky'.

The [Plant Transformation Facility](#) is located in the basement of Weill Hall. It's a relatively new facility which focuses on transforming 'difficult' plants such as rice, maize, wheat, apple, etc. The current director of the facility, Matt Willman (mrw6@cornell.edu), is friendly and willing to chat with researchers to explore potential collaborations. There are also some transformation capabilities in the [Biotechnology Center at BTI](#), which focus on the transformation of tomato, potato, *Brachypodium distachyon*, and *Setaria viridis*, among others.

Statistics and Computing

The [Biotechnology Resource Center](#) comprises a large collection of facilities (Genomic, Proteomic, Imaging, etc.). It also houses the [Bioinformatics Facility](#) (previously called the Computational Biology Service Unit, CBSU) which has lots of resources available, including project design and data analysis consultation, bioinformatics support for next generation sequencing, and some *wonderful* workshops

(e.g. Linux for Biologists, RNA-seq Data Analysis, Genome Assembly, and many others). The staff of the Bioinformatics Facility have offices over in Rhodes Hall, and are very friendly and helpful!

The [Cornell Statistical Consulting Unit](#) (CSCU) is a “professional service group that aims to strengthen research on campus by assisting scholars with using statistical methods in their research in the most optimal way.” They can assist with a broad array of questions, from designing experiments or surveys to implementing statistical analyses. They have walk-in hours, or you can schedule an appointment. As Plant Bio grad students, we are part of a department within CALS, which supports the CSCU, and so these services are free to us! They also have a number of really useful workshops (Multivariate Statistical Analysis, Introductory Statistical Analysis Using R, and many others).

Libraries

An amazing, wonderful thing about Cornell is its plethora of [libraries](#)! It would take too long to describe all the resources available from the library, but we'll try to list some important ones:

- Space! There are some great nooks for working/reading/writing all around campus. Explore Mann Library, as that is close to a lot of Plant Bio spaces, but also venture further out! The Law Library is majestic and full of light. Uris Library is historic and has a Harry Potter feel.
- Articles/Journals/Books abound at the library! Mann Library tends to have a lot of the Plant Bio-related material. The catalog is eminently searchable, and if you're having trouble, the reference librarians are helpful and friendly! There's a really nice 'Ask a Librarian' function in which you can email/chat with a librarian if you're feeling shy about an in-person encounter.
- The libraries also have a great workshop series on topics ranging from Poster Design to LaTeX to Citation Management.

Your grad career

6: Overview of a grad career

There is no single timeline for a Ph.D.—the timing of events will depend on you, your research, your committee etc. There are, however, landmark events that have to occur in all Ph.D.s. The Field and the Graduate School impose restrictions on the timing of these events, though all of these deadlines can be bent. These landmarks are:

1. Complete 3 rotations in the first year.
2. Join a lab by the end of the first year.
3. Assemble a committee.
 - 3a. Declare a major and minor.
4. The A exam
5. Thesis research
6. The B exam / thesis defense / exit seminar

Coursework and teaching are also happening at the same time; these will be discussed in later sections.

1. First-year rotations

Plant Biology graduate students complete three rotations in their first year. People use these rotations to A. find out whether a lab is a good fit and B. learn new skills. Rotations last roughly ten weeks, but this varies a lot; you'll figure this out with the lab's PI. Find more advice on choosing rotations in Section 7.

It's a good idea to inquire about rotating well in advance of the time you want to start—PIs might need time to assemble data/resources/plant materials. It is possible to rotate with professors not in the Field of Plant Biology, though you should discuss this with the DGS first. Generally, the timing of rotations is as follows:

First Rotation: begin at the start of the semester (most students contact a PI before arriving on campus). End at winter break, like mid-December.

Second Rotation: Begin mid-January (after break).

Third rotation: Ideally ends at the end of spring semester.

Note: A Fourth rotation is sometimes done during Summer, if students have not identified a home laboratory after their rotations

2. Joining a lab

Students should join a lab by the end of their first year (end of spring semester). Find advice on choosing a lab in Section 7. To officially join a lab, make the PI your Committee Chair on the Student Center website (after speaking with the PI, of course!).

3. Assembling a committee and choosing concentrations

The Graduate School requires that you assemble your Special Committee by the end of your third semester. The special committee is the group that will oversee your A and B exams; you'll also have committee meetings, likely annually, to report your progress. Your committee consists of your major professor (your PI) and two or three minor members.

You'll have to ask minor members to be on your committee. Choose people whose expertise will contribute to your thesis—remember that committee members do not have to be affiliated with Plant Biology. Be sure to discuss these choices with your PI.

To make your committee official, add your minor members in the Student Center website under My Advisors. You'll also choose a major and 2 minor concentrations at this time. This is because each minor committee member supervises a minor concentration-- you'll be able to select these in the Student Center website. Minors are "not explicitly linked" to any coursework, so these choices are often kind of trivial.

Concentrations in plant biology are:

- cytology
- paleobotany
- plant biochemistry
- plant cell biology
- plant ecology
- plant molecular biology
- plant morphology, anatomy, and biomechanics
- plant physiology
- systematic botany

Minor concentrations can also be outside of plant biology.

4. The A Exam, in brief

The A exam can be taken after two semesters of grad school, *should be taken before the end of the fifth semester, and must be taken before beginning the seventh semester*. You must pass this exam in order to become a Ph.D. Candidate - you are a Ph.D. *student* before passing the exam and a Ph.D. *candidate* after. See Section 8 for details on the A exam.

5. Thesis research

The majority of your time between the A and B exams is spent conducting research. The Graduate School requires that at least two semesters pass between your A and B exams; most students take significantly more time.

6. Thesis and the B exam, in brief

The B exam is scheduled when you, your advisor, and your committee feel that you have produced a body of work sufficient for conferral of the Ph.D.; the university imposes a time-to-degree limit of seven years. There are three components of the exam: a written thesis, an exit seminar open to the department, and a private oral exam with your committee. See Section 8 for details on the B exam.

7: Advice on choosing labs

Choosing a rotation lab:

- Does the lab do research you think you want to focus on, or will it offer you the chance to learn a new technical skill?
- Is there a project ready for you?
- Have you and the potential rotation PI discussed goals for the rotation?
- Is there a chance for you to join the lab after the rotation, or does the PI know already they will not take any new students?

Choosing a thesis lab:

- Have you and the PI been able to agree on a funded project for you?
- Does your PI's mentorship style mesh well with you (hands-on vs. hands-off)?
- Is your PI easy to contact?
- Does your PI offer advice on your research project?
- Do you feel comfortable in the lab climate?
- How often are you expected to be in the lab? Are you expected to follow specific working hours?
- Have you arranged with your PI how often you will update them (weekly meetings, emails, or during lab meetings only)?
- Have you asked other graduate students or postdocs in the lab for their opinion?
- Will working in this lab help you to achieve your future career goals?

For both decisions:

- Do your research interests align with the research within the lab?
- Do you feel comfortable approaching the PI for advice or with questions regarding fellowships, research objectives, and feedback?

8: Graduate exams

The "A" exam

The A Exam is a comprehensive exam to test your fluency in the field of plant biology and to assess your readiness to conduct research full time. You will defend a research proposal for your committee and should demonstrate that you have adequate breadth of knowledge on the subject to continue your program successfully. You will take your A Exam at the end of your second year, typically after finishing all classes. It is possible to fail this exam, but this does not happen often.

Your A Examination committee will consist of your Special Committee and a "field appointed" member, who is actually a faculty member you have to invite yourself. Their purpose is to ensure uniformity among exams. (However, if you have 4 members of your Special Committee, you do not need an extra "field appointed" member.)

It is the student's responsibility to initiate and set a date for the A Exam. An [official form](#) is due to the graduate school seven days before the exam. You'll need all of your committee members' signatures, so don't leave this for the last minute.

To prepare, study everything that may be even remotely related to plant biology, your specialization, and your minor(s). You should discuss beforehand - with your advisor - his or her expectations for a research proposal that will be submitted to your committee before the Exam. Typically, your proposal will have a format similar to a grant proposal. Talk to all committee members before the exam to get an

idea of their expectations. Some faculty will even tell you the types of questions they routinely ask. Also, talk to senior students for advice and strategies for preparing. Fellow students are usually happy to share copies of their A Exam research proposals. Practicing your talk and answering questions with other students is also a good way to prepare.

The A Exam will be challenging, as you are expected to be conversant and analytical. However, you will probably not be able to answer every question. There is some variation in the format of each student's A Exam depending on their Special Committee (again, discuss with your Committee members) and the research topic. Plant Biology guidelines currently suggest starting with a 10 -15 minute presentation by the student about their proposed research.

Additionally, prepare a written list of course work completed thus far, as well as paperwork to be signed by the examiners ([the "Results of A Exam" form](#) from the Graduate School). Many students choose to prepare *sacrificial offerings* in the form of beverages (coffee, juice), snacks, and baked goods (etc) to the A exam (confer senior grad students about this practice!:

The "B" exam

The B Exam is the 'Ph.D. Defense' and is (almost) the final hurdle between you and a Ph.D. (The actual last step is correctly formatting your dissertation, submitting it to the Graduate School and receiving both their approval and the approval of your committee). Copies of dissertations completed by previous students from your lab or department will certainly be available. All Ph.D. and Master's Theses are available through the Cornell University libraries.

Hopefully you will have an excellent working relationship with your major advisor, and he or she will work with you to determine what you need to accomplish in order to be ready for the B Exam. You can certainly seek guidance from other committee members as well. Typically, you will have published at least one paper - two if you are lucky - and perhaps a review. These manuscripts can sometimes form individual chapters in your Thesis.

During the exam you will present the research you have accomplished, your committee will ask you some questions (more about the interpretation of your research and how it relates to other published research than about basic knowledge of plant biology), and they will decide if you deserve a Ph.D.

The B Exam itself should (in theory) be less stressful than your A Exam, mainly because you will be able to focus completely on your own research. Because the B Exam itself is administered by your Special Committee behind closed doors, students are expected to give an Exit Seminar for department members and general public *immediately prior to* the B Exam. This seminar is a summary of your thesis research and gives the audience a chance to ask questions. Email announcements for the Exit Seminar will be sent out to the Plant Biology Section, and all of SIPS beforehand.

Similar to the A Exam, there is an official form that must be filed with the Grad School to schedule your B Exam, and there is an official "[Results of Exam](#)" form that must be signed by all members of your committee after you complete the exam.

Career resources

Graduate study does not commit you to a career in academia; the majority of Ph.D.s do not end up in tenure-track positions. It's a good idea to be aware of multiple career options early in your graduate training. The [BEST](#) program offers information about and internship-like appointments in fields including

science policy, science communication, industry, and governance. Cornell offers career development resources through [Cornell Career Services](#); these include free membership at [Versatile Ph.D.](#) and access to a Science Careers [Individual Development Plan](#). BTI often has many events related to careers inside and outside of academia.

Coursework

You will take several courses as a graduate student, mostly in your first and second years. The specific composition of every graduate student's coursework will be decided by the student in consultation with his/her Advisor and Special Committee. However there are some core courses that are required of all Plant Biology graduate students (below).

Required courses:

Courses required by the department are:

Every term:

PLBIO 7440: Graduate Research in Plant Biology. This is a weekly seminar in which graduate students present their work.

PLBIO 7400: Plant Biology Seminar. A weekly seminar given by invited faculty from other institutions or from Cornell.

Three terms

PLBIO 7420: Current Papers in Plant Biology. A once-weekly journal club based on a given theme. A different faculty member teaches this course each term, and the topic generally relates to their area of research. You'll receive an email sometime before enrollment describing the focus of the course.

Core curriculum

Plant Biology offers a core curriculum, but it is not strictly required by the department. Most students take these courses, and they may be required by your committee. The core courses are:

PLBIO 6410: Laboratory in Plant Molecular Biology. An introduction to a wide variety of techniques (e.g. confocal microscopy, plant transformation, laser capture microdissection) given by faculty members with expertise in those areas.

PLBIO 4831: Concepts and Techniques in Plant Molecular Biology. Overview of concepts in biochemistry, molecular biology, and phylogenetics.

PLBIO 4841: Plant Form and Function: overview of plant anatomy, cell biology, and development.

PLBIO 7410: Problems in Plant Cell and Molecular Biology. An introduction to critical reading of scientific literature. A different PI leads each weekly meeting; students read, discuss, and answer questions about a paper.

Other coursework:

Most students take a couple of courses that aren't required by the department, either based on their interest or suggestion by their committee. You are not limited to courses in Plant Biology. Course descriptions can be found [here](#).

Balancing total credit hours:

You're expected to be enrolled for 15 credit hours each semester, but the majority of this probably won't be coursework. Once you've enrolled in all of your desired courses, enroll in **PLBIO 7490** (Graduate Research in Botany) for the balance of credits. Select your advisor as the instructor.

How to enroll in courses:

You'll be given an enrollment appointment by email: this defines the dates on which you can pre-enroll in classes in [Student Center](#). You can also enroll in courses after the semester has started.

Student Center isn't intuitive to use: it's easiest to find class numbers in the [Class Roster](#) beforehand.

Funding

First Year:

All students are guaranteed funding by the department for their first year (Fall Term, Spring Term, and summer). This funding is often a fellowship awarded by Plant Biology Department. Some first year students are funded by competitive, university/SIPS fellowships such as the Presidential Life Science Fellowship, the Dean's McNair Graduate Fellowship, or the SIPS Dennison Fellowship.

Second year and beyond:

Funding beyond the first year is more complicated: students in good standing are guaranteed five full years of support for tuition, stipend, and health insurance, although the sources for this funding can vary. Sources include fellowships, teaching assistantships, and PI research assistantships; grant money can be awarded directly to you (in the form of a fellowship), but more often you'll be paid by grants awarded to your PI. Talk to your PI about expected funding sources before you join a lab.

Research Assistantships

If your PI has a grant with sufficient funding for the project you're working on, you can be paid by a Graduate Research Assistantship (GRA).

Fellowships:

- Applied for by and awarded directly to the student
- Sources include [Fulbright](#), [NSF GRFP](#), [NIH](#), [Ford](#), and [USDA NIFA](#)
- Usually typically provide funding for 2-3 years and allow more freedom for research
- Some give one year of support for thesis writing, usually at the end of the graduate career-- these can be found at many society websites

Teaching Assistantships

- Applied for by the student on a yearly basis (see below)
- Assigned by semester
- Usually a 15-hour appointment to a given course
- Cover stipend, tuition, and health insurance
- Each student is required to TA for at least one semester; additional TA support is applied for as needed

Research grants

There are many grants for which graduate students can apply.

From Cornell:

- [Research Travel Grant](#): (up to \$2000)
- [Einaudi- International Research Travel Grant](#)
- [Atkinson Center for a Sustainable Future](#)-- for projects related to sustainability, biodiversity, and biogeochemistry (\$4000-8000)

From external sources:

- NSF, NIH, USDA dissertation improvement grants

- Societies are great sources for funding for research, travel for fieldwork, and conference grants

Funding for travel

The university offers non-competitive support for travel to conferences. These grants reimburse up to \$675 for travel expenses depending on the distance to be traveled. Fill out the [Conference Grant Application](#) here. It's also worth checking whether the conference you're attending offers travel grants for students.

Teaching (required and for funding):

Graduate students can act as Teaching Assistants (TAs): requirements of the job vary by course, but often include attending lectures, setting up materials, leading laboratory and discussion sessions, holding office hours, and grading students' work. Most TA-ships are scheduled for 15 hours per week. TA-ships provide a stipend, a full tuition fellowship, and student health insurance.

The Plant Biology section *requires that you TA for one semester* -but many students TA two semesters. Most students do their mandatory teaching in Fall or Spring semester of the second year; however, some may TA in the third year. Students requiring funding can apply for additional TA-ships in subsequent terms. International students for whom English is not a first language are required to pass the [International TA Language Assessment](#) before becoming a TA, which is offered three times each year.

Two types of TA-ships are available to Plant Biology graduate students: SIPS TA-ships and Biology TA-ships.

SIPS TA-ships:

All students in SIPS use the same [application form](#) for TA positions. This form is due in January to indicate that you will need a TA-ship for either or both terms in the next school year. The form includes basic information about when you would like a TA-ship and what classes you are interested in teaching.

Plant Biology courses utilizing TAs, in 2017-18

Fall term

PLBIO 2410: Introductory Plant Biodiversity and Evolution

PLBIO 2470: Plants and People

PLBIO 6410: Laboratory in Plant Molecular Biology

Spring term

PLBIO 1120: Issues in Social Biology: from Diet to Diseases, DNA to Deforestation

PLBIO 2400: Green World/Blue Planet

PLBIO 2420: Plant Function and Growth Lectures

PLBIO 2421: Laboratory Investigations of Plant Function and Growth

PLBIO 2480: Vascular Plant Systematics

PLBIO 2490: Hollywood Biology: Science in Cinema

PLBIO 3420: Plant Physiology, Lectures

PLBIO 3421: Plant Physiology, Laboratory

PLBIO 3431: Laboratory in Molecular Biology and Genetic Engineering of Plants

PLBIO 4480: Plant Evolution and the Fossil Record

PLBIO 4841: Plant Form and Function: Anatomy, Cell Biology, and Development

Timeline for SIPS TA appointments (2017-18):

December 1: TA solicitation for the coming academic year is released

January 27: TA applications due

March 6: Initial TA appointments announced

Applicants not receiving appointments remain on wait list

April 30: Last date to decline a TA appointment

April 1 – May 15: TA Rebalancing to fill vacant TA positions

Waitlisted applicants are given priority for open slots

May 28: TA appointments finalized for coming academic year

General Biology TA-ships:

If there are more students requesting TA-ships than there are available SIPS TA positions, students will apply for “at large” biology TA-ships. These TA-ships are for introductory, general biology courses with larger class sizes. In the current system, PBIO students applying for SIPS TA-ships will be notified of their success in early March; students who are not awarded a SIPS TA-ship will then apply for a General Biology TA-ship in late March).

Resources for teaching:

The [Center for Teaching Excellence](#) (CTE) and [Center for the Integration of Research, Teaching, and Learning](#) (CU-CIRTL) offer numerous resources to develop teaching skills.

Student associations

PBGSA-- the Plant Biology Grad Student Association

The PBGSA is the Plant Biology Graduate Student Association: all Plant Biology grad students are members. PBGSA is an important group as it is a place for Plant Biology students to get to know each other, it interacts with Plant Biology faculty, and it helps plan many important annual events, such as recruitment. Meetings are monthly, usually Tuesdays at 6 pm, in room 22 of Plant Science. Also, there is always food! If you want more information about PBGSA, just talk to any officer.

Events planned by PBGSA:

Student invited speaker: PBGSA invites a professor to speak at a Friday Plant Biology seminar. This includes selecting the professor, inviting the professor, helping to plan the visit with Plant Biology administrative staff and acting as the host for the speaker. This happens once per semester or once per year.

Recruitment weekend: PBGSA helps to plan and facilitate the recruitment weekend. This includes planning the activities on Saturday afternoon, helping to transport recruits and organizing graduate student attendance to events over the weekend. This is the most important event of the year and PBGSA is a large part of it.

Other events include the annual SIPS Chili Cookoff and Crossroads, a semi-monthly event when a professor invites the graduate students to their house for dinner and a paper discussion.

PBGSA officers:

President: Oversees most of the day to day function of the group

Vice president: Helps with the day to day function

Secretary: Write up the minutes to send out after meetings

Treasurer: Helps to set up budget to submit to the GPSA (see below), tracks finances

GPSA Representative: Attends bi-weekly GPSA (see below) meeting to allow for funding

Funding:

Funding is obtained from the Graduate & Professional Student Association (GPSA) and is used for community events (ie skating, fossil hunting) as well as paying for a student invited speaker for the Friday seminar.

Graduate Student Council:

There is also a representative who sits on the Graduate Student Council (GSC - see more below). This group represents graduate students to the SIPS administration. This group can bring up issues and concerns to SIPS, and communicates information back to the SIPS community. At the time of publication, PBGSA has not decided if the GSC representative will be a current officer or a new position.

GSC - Graduate Student Council

The Graduate Student Council is a new organization to help facilitate connections between the section and communication between the graduate students of SIPS with the SIPS administration. This council will focus on graduate student issues across SIPS, and how to discuss and solve said issues with SIPS as a whole. There will be one representative from each section of SIPS, as well as from SAGES (Geneva

graduate student group), PGS (the Boyce Thompson Institute graduate and post graduate group) and the USDA Holley Center. There will be yearly meetings with the SIPS Executive Committee and the Graduate Fields Council. The GSC has not been finalized at the time of publication.

GPSA - the Graduate and Professional Student Assembly

The Graduate and Professional Student Assembly (GPSA) is part of shared governance at Cornell University. GPSA is made up of representatives from all graduate and professional fields, as well as common-interest organizations. As a group, GPSA addresses non-academic issues impacting all constituencies of GPSA. Examples are setting the student activity fee, sponsoring graduate and professional student events, and lobbying the administration to improve pay and benefits, or to address concerns shared by the body.

Plant Biology sends one field representative elected from our Graduate Student Association to represent PBGSA's views during discussion. Field representatives are responsible for attending the biweekly GPSA meetings and relaying updates about resolutions and campus initiatives back to PBGSA, as well as communicating issues to GPSA regarding our department or the graduate school. Field representatives have no voting power, but are able to introduce motions and contribute to discussions. By sending a field representative to GPSA, PBGSA is able to request money from the GPSA Finance Committee for events and initiatives. GPSA is open to the public, and any graduate or professional student can run for a voting member seat.

- [More detailed information about GPSA](#)
- [GPSA meeting schedule](#)

Current Plant Biology representation in GPSA (2016-2017):

Dan Evanich (dje94): field representative

Elena Michel (ejm339): biological sciences voting member

Important contacts

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