The Plant Biology and Conservation (PBC) Graduate Program

The PBC graduate program - begun in 2005 – is a partnership between Northwestern University (NU) and the Chicago Botanic Garden (CBG). The MS program started in 2005, and in 2009 a PhD program was added. Students earn their degree from Northwestern University and work closely with faculty at both institutions. The primary mission of the PBC program is to foster an academic and research environment that allows students to gain experience, skills, and knowledge to become scholars, leaders, and practitioners in plant biology and conservation.

The PBC graduate program brings together basic and applied sciences faculty from NU and the CBG and allows students to readily cross departmental and disciplinary boundaries in choosing courses and thesis committee members. The scientists at CBG all have adjunct appointments at NU and typically serve as primary thesis advisors on students’ committees.

PBC faculty are committed to helping students prepare for career options that await them after the completion of their degree, such as further academic training, employment with governmental or non-governmental agencies in land management and conservation, teaching at the college level, scientific journalism, science policy and administration, or many other endeavors.
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PBC PROGRAM REQUIREMENTS
Information can also be found at the PBC website http://www.plantbiology.northwestern.edu

Overview of PBC Requirements

**MS Program**
Students must complete 3 required courses, 5 electives, and 2 independent studies (total of 11 units), and complete and defend a research thesis. A typical timeline looks like this:

1\textsuperscript{st} year: Complete curriculum and independent studies, form thesis committee, do thesis proposal in the spring, fill out a Progress Review with advisor, start research

2\textsuperscript{nd} year: Complete research, write up and defend thesis, graduate. If you have not graduated by the end of your 2\textsuperscript{nd} year, you will fill out a Progress Review with advisor

**PhD Program**
Students must complete 3 required courses, 9 electives, and a zero credit Bioethics course for a total number of 13 units. Students must also pass a qualifying exam to advance to candidacy and complete and defend a research dissertation. A typical timeline looks like this:

1\textsuperscript{st} year: Fall: PBC 450, PBC 451 (3 units)
Winter: PBC 435, 1 – 3 electives and/or PBC 590 (for a total of 3 – 4 units)
Spring: 1 – 4 electives and/or PBC 590 (for a total of 3 – 4 units), form dissertation committee and have a committee meeting
Serve as a Project Assistant (PA) at CBG

2\textsuperscript{nd} year: Complete any necessary elective courses to have a total of 13 units, take the zero credit Bioethics course, complete the qualifying exam and PhD prospectus (spring quarter)

3\textsuperscript{rd} year: Usually TA at least one quarter, serve as a PA when not TAing, annual review with dissertation committee; research, consider attending and presenting at conferences, apply for the NSF DDIG and other research grants

4\textsuperscript{th} year: Possibly TA at least one quarter, serve as a PA when not TAing, annual review with dissertation committee; research, consider attending and presenting at conferences, apply for research grants

5\textsuperscript{th} year: Possibly TA at least one quarter, serve as a PA when not TAing, annual review with dissertation committee, consider attending and presenting at conferences, write up and defend dissertation, graduate
Specific PBC Program Requirements

**MS Program**

1. Students must complete a total of 11 units.
   - 3 PBC required courses (PBC 450 – 2 units, PBC 451 – 1 unit, PBC 435 – 1 unit)
   - 2 PBC 499 Independent Studies. You must fill out a form with your advisor and turn it into the PBC program assistant to get a permission number to register. The form can be found at: http://www.plantbiology.northwestern.edu/documents/independent-study-form.pdf
   - 6 electives (2 of which are recommended, PBC 401 and PBC 402).
   - Attendance at weekly PBC seminar series and journal club

2. Thesis committee should be formed and a thesis proposal should be defended by spring of year one. More information can be found at: http://www.plantbiology.northwestern.edu/graduate/ms/documents/2014Thesisproposalguidelines.pdf

3. Written thesis and oral defense. A public presentation of the thesis is given followed by a defense with the student’s committee. It is recommended that the defense is completed by the summer of year 2. More information can be found at: http://www.plantbiology.northwestern.edu/graduate/ms/documents/2014ThesisFormatandDefenseGuidelines.pdf

4. Satisfactory Academic Progress [http://www.tgs.northwestern.edu/about/policies/satisfactory-academic-progress.html] must be maintained by students. A student will not be in good academic standing if he/she has an overall grade average below B (3.0 GPA, and any single grade below C), has more than three incomplete grades, fails to pass proposal defense by end of year 1, or fails to make satisfactory progress with research as determined by the student’s thesis committee.

5. MS students must complete all degree requirements before the end of the 5th year of study.

**PhD Program**

1. Course requirements
   - 3 PBC required courses (PBC 450 – 2 units, PBC 451 – 1 unit, PBC 435 – 1 unit), 9 electives
   - 1 Bioethics course IBiS 423 in year 2
   - You must have at least 3 units per quarter. In years one and two, if courses do not add up to 3 units, take PBC 590 with your research advisor to bring the units to 3

2. Performance:
   - Satisfactory academic progress [http://www.tgs.northwestern.edu/about/policies/satisfactory-academic-progress.html] must be maintained by students. A student will not be in good academic standing if he/she has an overall grade average below B (3.0 GPA, and no single grade below C), has more than three incomplete grades, fails to pass the qualifying exam by the end of his/her third year, or fails to make satisfactory
progress with research as determined by the student’s dissertation committee. (GPA above 3.0 and no single grade below C)

- Attendance at weekly PBC seminar series and journal club is expected
- Annual public presentation of research at PBC seminars in years 2+
- Satisfactory performance in teaching assignments. Number of teaching assignments will vary with total graduate student enrollment and course needs, but there is a minimum requirement of two quarters of teaching.
- Satisfactory performance in Project Assistantship assignments

3. Dissertation Progress:
   - Form dissertation committee by spring of year 1 and have a committee meeting
   - Take qualifying exam in spring of year 2, after passing you will be advanced to candidacy
   - In years 3 – 5, after you have reached candidacy, register for TGS 500. Please note that PhD students can register for TGS 500 if they have completed 8 quarters of PBC 590 (even if they have not completed qualifying exam).
   - Annual review with dissertation committee in years 2 - 5
   - Dissertation, public defense, and final examination in year 5

6. It is strongly encouraged that students author at least one first-author paper that should be submitted by the time of defense.

7. PhD students must complete all degree requirements before the end of the 9th year of study.
THE GRADUATE SCHOOL REQUIREMENTS

Further details on Graduate School requirements may be found at The Graduate School website http://www.tgs.northwestern.edu/academics/academic-student-services/index.html.

**MS Program**

1. The equivalent of three quarters of full-time registration in courses authorized by the Graduate Faculty for graduate credit.
2. Credit earned at an undergraduate institution or at another graduate school or a professional school may, with program approval, be applied toward the program’s coursework requirements, but not toward the residency requirements, for a master’s degree at Northwestern University.
3. Students must complete all the requirements for the master’s degree within five years of the date of their initial registration in The Graduate School.
4. To graduate, students must complete the Application for a Degree form via TGS Forms in CAESAR (http://www.northwestern.edu/caesar/) by the date specified in the Academic Calendar (http://www.tgs.northwestern.edu/about/news-events/calendar.html#resp-tabs3).
5. To graduate, students must complete the Master’s Degree Completion form via TGS Forms in CAESAR (http://www.northwestern.edu/caesar) and receive program approval of the form by the date specified in the Academic Calendar (http://www.tgs.northwestern.edu/about/news-events/calendar.html#resp-tabs3).
6. Students must have at least a B average and no X or Y grades. All grades must be entered and the online Change of Grade documentation submitted by the faculty member by the grade deadline specified by the Office of the Registrar.

**PhD Program**

1. Residency and transfer credit
   - You must complete 8 quarters of residency consecutively (including summers) over two years. That is, you must be registered for 3 – 4 units each quarter from fall of year 1 – summer of year 2. Registration will include courses and PBC 590 (independent research).
   - No residency credit will be awarded by The Graduate School (TGS) for work completed in a graduate program outside of TGS. Individual programs may waive course requirements based on work completed at another institution (either prior to or after enrollment at Northwestern), but all students must complete nine graded courses in TGS and maintain a B average (3.0 GPA). Students may register for 590 Research within their programs to maintain full-time registration (http://www.tgs.northwestern.edu/about/policies/general-registration-policies.html#fulltime) during quarters in which they are not enrolled full time in graded coursework.
   - Once you have achieved candidacy, you register for TGS 500-0 until the completion of your Ph.D. (http://www.tgs.northwestern.edu/academics/registration-and-courses.html)
2. Timeline
   - You must achieve candidacy by the end of your 12th quarter. A student failing to meet this milestone will be considered “not in good standing” and therefore will be placed on probation (see Section 13.3; http://www.tgs.northwestern.edu/about/policies/satisfactory-academic-progress.html). Deadlines may only be altered in the case of a medical or family leave (http://www.tgs.northwestern.edu/about/policies/leaves-of-absence.html), requiring that a petition for deadline extension be submitted to and approved by TGS. Admission to candidacy is reached by passing a comprehensive qualifying examination, written or oral or both. Individual departments or programs determine the character of this examination.
   - All requirements for the doctoral degree must be met within nine years of initial registration in a doctoral program

3. Performance:
   - A student who enters a doctoral program must successfully complete at least nine graded courses, preferably in the first year of study.
   - A “B” average must be maintained in these courses

4. Teaching:
   - Teaching is an essential element of the education and training experience of PhD students at the university. TGS requires that all PhD students serve in some instructional capacity for at least one academic quarter during their graduate education at Northwestern.

5. By the fourth year in the program, apply for external grants: TGS believes that graduate funding is a collaborative effort between students and the University. Because the mentored experience of writing grant applications as a graduate student is irreplaceable, and the receipt of external awards constitutes a significant advantage on the job market, doctoral students who receive more than two years of guaranteed University appropriated funding (as opposed to funding from sponsored projects), are encouraged to apply for external grants no later than the fourth year of their PhD program.

6. Please Note: Annual reviews once you have passed your qualifying exam are to be completed by fall quarter of each year

7. Submit dissertation according to Graduate School standards

8. Pass final examination

9. Passing score on the TOEFL, IBT, or SPEAK by all students with Bachelor’s degrees from non-US/UK institutions

10. You must register every quarter including summer in order to receive a stipend. You must register on time (i.e., before the deadline set by TGS) every quarter to avoid FICA taxes.
PBC COURSEWORK
Please refer to the web page for current course offerings:
http://www.plantbiology.northwestern.edu/graduate/courses.html

COURSES
All PBC students must take a combination of PBC graduate courses and elective classes. The courses described below are graduate-level courses that provide a broad foundation of plant science research. Courses are subject to change each quarter, and up-to-date information can be found in the NU class schedule prior to each quarter. Additional classes either on the Evanston or Chicago campus or through the Traveling Scholar Program may be appropriate as electives. (For official policy, please see section 4.12: http://www.tgs.northwestern.edu/about/policies/general-registration-policies.html).

PBC Core Courses
Please refer to the web page for current course offerings:
http://www.plantbiology.northwestern.edu/graduate/courses.html

All classes are subject to change each quarter, and up-to-date information can be found in the NU class schedule online at (http://www.registrar.northwestern.edu/registration/index.html#class_schedule) prior to each quarter.

PBC 450 Field and Lab Methods in Plant Biology and Conservation (2 units)
This course is aimed to provide students with the knowledge, critical thinking, and practical skills to design, execute, and analyze plant biology and conservation research in order to help find solutions to real conservation problems. As this often requires the mastery of many skill sets across disciplines, the course is team taught and includes hands on training in topics such as experimental design, sampling methods, managing data, soil analyses, pollinator and breeding studies, DNA extraction, PCR, and DNA fingerprinting.

PBC 451 Critical Topics in Ecology and Conservation (1 unit)
This course provides students with the conceptual and theoretical framework within the field of plant biology (especially ecology) and conservation. This is a seminar style class based on reading and discussion of works ranging from historical literature to recent studies including topics such as conservation policy, economics of conservation, climate change, invasive species, habitat fragmentation, and applied conservation case studies.

PBC 435 Quantitative Methods & Statistics for Plant Conservation Biology (1 unit)
Methods for analyzing data sets in ecology and conservation biology will be taught in a computer lab setting. Students will also conduct research projects using original or publicly available data and results will be presented to the class in a professional, publication ready form.
**Bioethics Course**
All PhD students, generally in their second year, are required to take the Bioethics course, IBiS 423.

**Elective Courses**
Students can tailor their curriculum to their specific interests and elective courses can be taken across departments but must carry graduate credit, and are at the 300-level or 400-level courses.

**Enrollment in TGS 500**
After you have completed your required courses and electives (including 8 quarters of PBC 590), you should then be registering for TGS500.

Check current class schedules on the Registrar’s website
http://www.registrar.northwestern.edu/registration/index.html#class_schedule

Some departmental websites that provide possible elective courses
http://www.wcas.northwestern.edu/epc/courses/current.html
http://www.earth.northwestern.edu/graduate/grad-courses.html
http://isen.northwestern.edu/education/graduate/schedule_descrip.html

**Seminars**

*Program Invited Speaker Seminar*
All students should attend the Invited Speaker Seminar on scheduled Thursdays at 4:30 pm throughout the academic year. Starting in the 2nd year, PhD students are required to present their research as part of the PBC seminar series.

*Informal Seminar Programs*
In addition to the formal seminar series, numerous informal seminar programs are offered throughout the University. These include special departmental seminars, symposia, laboratory group meetings, and journal club. Participation in such activities is considered an important part of graduate training in PBC.
ACADEMIC HONESTY
Both the University and the PBC graduate program take academic honesty very seriously. Cases of suspected academic dishonesty, including suspected plagiarism, will be referred directly to The Graduate School for follow-up, and may result in expulsion from the PBC program. Among the most important goals of graduate education are maintaining an environment of academic integrity and instilling in students a lifelong commitment to the academic honesty that is fundamental to good scholarship. Standards of academic honesty are violated whenever a student engages in any action that jeopardizes the integrity of scholarly work. Such actions include, without limitation, cheating in the classroom or on examinations, including master’s final examinations and PhD qualifying examinations; the intentional and deliberate misuse of data in order to draw conclusions that may not be warranted by the evidence; fabrication of data; omission or concealment of conflicting data for the purpose of misleading other scholars; use of another’s words, ideas or creative productions without citation in either the text or in footnotes; paraphrasing or summarizing another’s material in such a way as to misrepresent the author’s intentions; and use of privileged material or unpublished work without permission.

For more information please refer to:
http://www.tgs.northwestern.edu/about/policies/academic-integrity.html

Proficiency
The PBC Program requires that all students demonstrate a basic proficiency in plant biology and conservation. This requirement is satisfied by successful completion of all the required graduate course work with a B average or better. Students are expected to read widely in the primary literature related to their area of research.

International students who did not complete their undergraduate education in an English-speaking institution need to demonstrate English proficiency before being able to serve as teaching assistants. Students need a score of 26 or more on the speaking portion of the TOEFL internet-based test, or a score 50 or more on the SPEAK test. A score of 45 requires students to be tutored and register for Linguistics 380. Students with scores below 45 on the SPEAK will need to retake the exam. The PBC program will not subsidize the cost of the exam.
FIRST-YEAR STUDENTS

First year students are expected to attend the TGS new student orientation (at NU) and the PBC orientation (at CBG), both in mid-September, the week before classes start.

SELECTION OF FALL QUARTER COURSES
Registration for fall quarter will take place the Friday before fall classes start. Registration and courses will be discussed during the PBC orientation. You will register for PBC 450 and PBC 451. You have the option of registering for an additional elective. You may discuss elective options with the Program Director if you have any questions.

REGISTRATION
Courses usually carry one unit of credit except for PBC 450 (2 units), and research and independent studies, which may earn 1-3 units of credit. Full-time registration consists of either three or four units per quarter.

ONLINE REGISTRATION
ALL STUDENTS MUST REGISTER ON TIME TO RECEIVE PROPER PAYMENT OF STIPENDS AND SCHOLARSHIPS.

Log into CAESAR (www.northwestern.edu/caesar). The next screen will prompt you to enter your NetID and password and Click “Login.” If you would like a demonstration of how to register, click “CAESAR walk through.” If you have any log-on/access problems, please contact Registration and CAESAR Login Support at 847-467-0260 (they can walk you through registering online), and if you have course questions contact the PBC Program Director.

1. Clear any holds.
Holds are indicated once you log on to CAESAR. You are responsible for clearing any holds before attempting to register. You will NOT be able to register with a hold on your student account. To clear a financial hold, please consult with the Life Sciences Financial Services office. If you have not entered your local phone number (e.g., cell/mobile phone) in CAESAR, a hold will be placed on your account. This information is required by Northwestern in case of a campus emergency and all students need to be contacted.

2. Obtain permission from the department for any restricted courses.
Some courses require permission numbers. Permission can be obtained from the appropriate department. Obtaining permission before attempting to register will facilitate the process.
## TYPICAL MS TIMELINE AND MILESTONES

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
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| **Fall** | **Register for TGS 512**  
| PBC 450 (2 units) | **Work on research/dissertation**  
| PBC 451 (1 unit) |  
| 1 – 2 electives |  
| Consider applying for research grants |  
| **Winter** |  
| PBC 435 (1 unit) |  
| PBC 499 (1 unit, requires form and permission number) |  
| 1 – 2 electives (including PBC 401) |  
| Consider applying for research grants |  
| **Register for TGS 512**  
| Work on research/dissertation |  
| Complete the Application for Degree form in CAESAR if you plan to graduate in June |  
| **Spring** |  
| PBC 499 (1 unit, requires form and permission number) |  
| 2 – 3 electives (including PBC 402) |  
| Form your thesis committee |  
| Submit Thesis Advisor Agreement Form |  
| Do thesis proposal and submit form* |  
| Start research |  
| Consider applying for research grants |  
| Progress review |  
| **Register for TGS 512**  
| Complete Master’s Degree Completion form in CAESAR if you plan to graduate in June |  
| Defend thesis and graduate** |  
| **Summer** |  
| No registration required |  
| Work on research |  
| Progress review if not graduated |  

*Refer to “MS thesis proposal guidelines” and “MS thesis proposal form” at the following link [http://www.plantbiology.northwestern.edu/graduate/ms/forms.html](http://www.plantbiology.northwestern.edu/graduate/ms/forms.html)

** Refer to “MS Thesis Format/Defense Guidelines” and “MS Thesis Defense Decision” at the following link: [http://www.plantbiology.northwestern.edu/graduate/ms/forms.html](http://www.plantbiology.northwestern.edu/graduate/ms/forms.html)
# Typical PhD Timeline and Milestones

<table>
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<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
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<tbody>
<tr>
<td><strong>Year 1</strong></td>
<td>PBC 450 (2 units)</td>
<td>PBC 435 (1 unit)</td>
<td>3 elective units (including PBC 402)</td>
<td>3 units of PBC 590 Consider applying for research grants</td>
</tr>
<tr>
<td></td>
<td>PBC 451 (1 unit)</td>
<td>2 elective units (suggested PBC 401)</td>
<td>Form and meet with dissertation committee &amp; submit dissertation committee form</td>
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<tr>
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<td>1 elective (1 unit)</td>
<td>1 unit PBC 590</td>
<td>PA</td>
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<td></td>
<td>Submit Dissertation Advisor Form</td>
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<td></td>
<td>PA</td>
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<tr>
<td><strong>Year 2</strong></td>
<td>1 elective (1 unit)</td>
<td>1 elective (1 unit)</td>
<td>1 elective (1 unit)</td>
<td>3 units of PBC 590</td>
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<td>2 units of PBC 590</td>
<td>2 units of PBC 590</td>
<td>2 units of PBC 590</td>
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<tr>
<td></td>
<td>Apply for research grants</td>
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<td>Qualifying exam</td>
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<td>TA 1 quarter during year</td>
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<td>PhD Prospectus</td>
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<td></td>
<td>Annual review meeting</td>
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<td>Present in PBC seminar</td>
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<tr>
<td><strong>Year 3</strong></td>
<td>Apply for NSF DDIG</td>
<td>TGS 500</td>
<td>TGS 500</td>
<td>TGS 500 Latest allowed completion of Qualifying Exam and PhD Prospectus</td>
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<td>TGS 500</td>
<td>PA</td>
<td>Present in PBC seminar</td>
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<td>Annual Review meeting</td>
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<td>TA 1 quarter during year</td>
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<td><strong>Year 4</strong></td>
<td>TGS 500</td>
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<td></td>
<td>TA 1 quarter during year</td>
<td>PA</td>
<td>Should have applied for external grants by now</td>
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<tr>
<td></td>
<td>Apply for research grants</td>
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<td>Present in PBC seminar</td>
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<td></td>
<td>Annual Review meeting</td>
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<td><strong>Year 5</strong></td>
<td>TGS 500</td>
<td>TGS 500</td>
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<td>TGS 500</td>
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<tr>
<td></td>
<td>PA</td>
<td>PA</td>
<td>Defend dissertation</td>
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<td></td>
<td>Annual Review meeting</td>
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MS ADVISOR, COMMITTEE, THESIS, AND DEFENSE INFORMATION

MS Advisor
Some students will enter the PBC graduate program with a selected research advisor, whereas others will not. Independent Studies (PBC 499, typically taken in the winter and spring quarters of year one) will facilitate the mentor selection process. All students must secure a thesis advisor by spring quarter of year one and submit the Thesis Advisor Agreement Form to the PBC program assistant. The selection of a thesis committee is the joint responsibility of the student and thesis advisor. If at any point the student or advisor believes it would be in the best interest of the student to change advisors, a new advisor may be chosen and a new Thesis Advisor Agreement Form must be submitted to the PBC office.

MS Thesis Committee
Your thesis committee must be made up of at least 3 people (PBC policy), two of whom must be members of the NU TGS faculty (TGS policy - this includes faculty based at NU as well as the adjunct faculty from CBG). The third member may be from an outside institution.

MS Thesis Proposal
Students will form their thesis committee and present a thesis proposal to them in the spring of year one (and no later than the end of their first year). The MS Thesis Proposal form that is turned in after the proposal meeting serves as documentation of committee membership. If at any point the student and advisor agree a change should be made to the committee, this may be done by simply submitting a written notification of the change to the PBC Program Director. Information and forms about the thesis proposal can be found at http://www.plantbiology.northwestern.edu/graduate/ms/forms.html

MS Thesis Defense
MS students should defend their thesis to their committee by the end of the second or third year in the program. Bound theses of other MS students are available at the CBG library or in pdf format upon request to the PBC Program Assistant or Program Director. The defense will consist of a research presentation open to the public (scheduled for ~ 1 hour including questions), followed by the oral defense/final exam to just your committee (schedule 2 hours for this). During your committee defense, committee members should focus questions on issues pertaining to the thesis research, but more generalized questions relevant to the research subject are also appropriate. All committee members will sign off on the “thesis defense decision” form with either “pass with no revisions, pass with minor revisions, pass with major revisions, or fail to pass.” In the case of revisions, the committee will specify what they are and if the entire committee needs to see them once they are made or just the major advisor, before the thesis is officially approved by the committee. The committee will also indicate a deadline for the revisions and consequences for not meeting the deadline. At this point the “thesis decision form” should be turned into the PBC program assistant. Students should retain a copy for themselves if revisions are expected. Once revisions are made and approved, the student will turn in a pdf version of the final approved thesis along with the signed “Thesis Decision Form” to the PBC Program Director. At this point the student will graduate. If a student has not turned in the revised thesis within a year after the defense, the student must re-defend the thesis and incorporate discussion of all newly published data in the area of study. Details about the defense and formatting can be found at http://www.plantbiology.northwestern.edu/graduate/ms/forms.html
Checklist for MS Thesis Defense

- Watch for graduation deadlines for each quarter and fill out the “Application for Graduation” and “Master’s Completion Form” through CAESAR by the appropriate deadlines. [http://www.tgs.northwestern.edu/academics/academic-services/masters/degree/index.html](http://www.tgs.northwestern.edu/academics/academic-services/masters/degree/index.html)
- Schedule a defense date well in advance so that you can find a date that works for all your committee members and you can reserve a room.
- Defenses can be held at NU or CBG. For the former, contact the PBC program assistant for room reservation. For the latter, contact gkushino@chicagobotanic.org for room reservation. Allow at least 3 hours for the defense.
- Outside committee members that are not local, may video conference/skype into the defense. It is the student’s responsibility to make the arrangements for this.
- Your thesis must be submitted to your committee members at least 2 weeks before the thesis defense. Before submission, you should have gone through drafts with your major advisor.
- Be sure to schedule your defense to allow ample time to make revisions for the graduation deadline.
- Once your defense date, time, and location have been settled, contact the PBC program assistant with the thesis title, date, time, and location as well as an image that can be used for a flyer to advertise the defense.
- Bring the “MS Thesis Defense Decision Form” to the defense. [http://www.plantbiology.northwestern.edu/graduate/ms/forms.html](http://www.plantbiology.northwestern.edu/graduate/ms/forms.html)
- If no revisions are necessary, turn in the signed form to the PBC Program Director. If revisions are necessary, retain a copy of the form after the defense and turn in the original to the PBC Program Director.
- Make appropriate revisions by deadlines and get necessary signatures for final approval of the revised thesis.
- Turn in the form with all appropriate signatures along with a pdf version of the final approved thesis to the PBC Program Director.
- You are now graduated!

Petitions and Appeals
The faculty members recognize that deviations from the requirements may be warranted in certain cases. Students may submit petitions requesting a variation in the requirements whenever they believe that they can adequately justify their request. Minor variances from the requirements may be requested, in writing, to the PBC Executive Committee. Substantial variances require a petition, in writing, to the director of the PBC program. Similarly, decisions made by the faculty or PBC administration may be appealed by the student. Such appeals should be justified in writing to the director of the PBC program. The director will establish an appropriate impartial committee to make a recommendation to the PBC faculty, who will vote on the appeal. Alternatively, the student can appeal to the Dean of The Graduate School.
PhD ADVISOR, DISSERTATION COMMITTEE, AND QUALIFYING EXAM

PhD Research Advisor
Upon your arrival at Northwestern you should have identified a major research advisor and meet regularly with your advisor. During the fall quarter of year one, you should submit the Thesis Advisor Agreement Form to the PBC program assistant. Your advisor will help you to decide what classes you will take during your first and second years. Your advisor must approve all electives that you choose to take. You should schedule three meetings between you and your advisor during your first year, prior to the start of each quarter. You should also feel free to consult your advisor or the PBC Program Director as the need arises during the course of the year. It is of particular importance that you contact your advisor and/or the PBC Director if you are experiencing problems with any of your courses. If at any point the student or advisor believes it would be in the best interest of the student to change advisors, a meeting should be arranged with the student, current advisor, proposed new advisor, and PBC executive committee to discuss the change. If it is determined that a new advisor should be chosen, a new Research Advisor Agreement Form must be submitted to the PBC office.

Your research advisor is also responsible for helping you form your qualifying exam and dissertation committee, and for ensuring that you have annual meetings with your dissertation committee. More information about this can be found below.

Dissertation Committee
The selection of a dissertation committee is the joint responsibility of the student and graduate advisor. Dissertation committees will be comprised of at least four members, two of whom must be TGS faculty (includes all full time NU faculty and CBG adjunct faculty), and one of whom is an outside reader from an institution other than NU or CBG. Students will form and meet with their committee by the end of their first year, at which point a dissertation committee form should be submitted to the PBC office. If at any point the student and advisor agree a change should be made to the committee, this may be done by simply submitting a written notification of the change to the PBC Program Director.

Qualifying Examination
By spring of year three, students should complete their qualifying exam, after which the student will advance to PhD candidacy. The exam will be overseen by the student’s committee and will include a written dissertation proposal, which must be defended orally to their committee as well as a knowledge exam. The written dissertation proposal will be drafted following guidelines for National Science Foundation DDIG Proposals, so that students will be prepared to submit their proposals for funding http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5234. The oral exam will include a 45 minute presentation by the student of the proposed research followed by questions from the committee. Students should be prepared to address questions from the committee members on broad topics associated with their research. Students should request a recommended reading list from the committee members before the exam.

Evaluation
During the qualifying examination, the examination committee must evaluate performance in coursework, advanced understanding in plant biology and conservation, and research accomplishments during the first year of dissertation research, in addition to the written research proposal and performance in the oral examination. Students must demonstrate satisfactory performance in all categories in order to be admitted to candidacy.
Notification to The Graduate School Regarding Qualifying Exam

It is the responsibility of the student to complete the DGS PhD Qualifying Exam document in CAESAR (link to CAESAR for students) to enter their current contact information and the scheduled date of their qualifying exam.

It is the responsibility of the dissertation committee chair to contact the PBC program assistant with the results of the qualifying exam so official notification can be sent to The Graduate School indicating the PhD student passed the examination.

Students are notified via email by The Graduate School of their admission to candidacy. If a student does not pass the qualifying exam the first time, they will have one additional opportunity to do so sometime within the next calendar year.

The Written Proposal

Below is an overview of the guidelines for the written proposal for the qualifying exam. The written proposal serves as your PhD Prospectus. See Appendix http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5234 for more details. The research proposals follow guidelines similar to NSF-DDIG. The proposal should be single-spaced on standard size (8 1/2” x 11”) with one-inch side, top and bottom margins and a font size not smaller than 12 Times New Roman. This should not exceed 15 pages. Good proposals are clear, precise, succinct, well formatted, and include visuals.

1. Cover Page
   Begin the Project Title on the Cover Page with "DISSERTATION RESEARCH:" followed by a brief title of the dissertation research project. List the primary dissertation advisor as the PI and list the student and other advisors as co-PI(s).

2. Project Summary (1 page)
   The summary should be a brief synopsis of the proposed research. It should include a statement of specific aims and objectives, the scientific background of the proposal, and the methods or procedures to be used. This section must also clearly address, in separate statements, the intellectual merit and broader impacts of the proposed activity. This is limited to one page.

3. Project Description (8 pages)
   This section is limited to eight single-spaced pages including figures and tables. The proposal should include a brief description of the overall dissertation project including its design and scientific significance. It should then provide a detailed description of the question(s) to be addressed by the DDIG, what new data would be collected, and details on experimental design, analysis and interpretation. The following is a good way to organize the project description.

   - **Background and Significance.** Sketch the background of the present proposal, critically evaluate existing knowledge, and specifically identify the gaps which the project is intended to fill. State the importance of the research described in this proposal by relating the specific aims to longer-term objectives
   - **Specific Aims/Objectives.** Provide a clear, concise point-by-point summary of the aims of the work proposed in the form of hypotheses to be tested.
   - **Experimental Design and Methods.** Discuss in detail the experimental design and the procedures to be used to accomplish the specific aims of the project. Describe the protocols to be used and provide a tentative sequence or timetable for the investigation. Include the means by which the data will be analyzed and interpreted. Describe any new methodology and its advantage over existing methodologies.
Discuss potential difficulties and limitations of the proposed procedures and alternative approaches to achieve the aims

4. References.
List all references cited in the text according to their order of appearance, including all authors and the full title of the publication using proper citation practices.

5. Budget
Provide a detailed budget for the project.

6. Budget Justification
In the Budget Justification explain the need for each budget item requested in the context of the proposed research project. For instance, a request for per diem allowance for time away from a home base to conduct research should be carefully justified in terms of only those living costs in excess of those in the vicinity of the home campus or institution.

What is the intellectual merit of the proposed activity?
How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?
How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

The Oral Examination
The oral exam consists of a thesis presentation to the exam committee and discussion in response to questions from the committee. Details of the format of the oral examination are at the discretion of the committee chairperson. Each student should consult with the committee chairperson one month before their exam to establish the expectations for the exam. The student typically prepares a 20-25-minute slide presentation of the thesis proposal. The entire exam normally lasts about two - three hours. The oral examination focuses on the thesis research proposal as well as basic aspects of modern plant biology and conservation. The student is expected to demonstrate proficiency in topics covered in the PBC core courses and departmental seminars.

Checklist for Qualifying Exam

- The exam should be completed by the end of spring quarter of year 3.
- Contact committee members well in advance to schedule a date for your exam so that you can find a date that works for all your committee members and reserve a room.
- Exams can be held at NU or CBG. For the former, contact the PBC program assistant for room reservation. For the latter, contact gkushino@chicagobotanic.org for room reservation. Allow at least 3 hours for the exam.
- Outside committee members that are not local, may video conference/skype into the defense. It is the student’s responsibility to make the arrangements for this if necessary.
Once the date has been chosen, the student must access the PhD Prospectus form and add the requested information [http://www.tgs.northwestern.edu/academics/academic-services/phd/prospectus/index.html](http://www.tgs.northwestern.edu/academics/academic-services/phd/prospectus/index.html).

Your research proposal must be submitted to your committee at least 2 weeks before the exam. Before submission, you should go through drafts with your major advisor.

Bring the “PhD Qualifying Exam Form” to the exam: [http://www.plantbiology.northwestern.edu/graduate/phd/documents/RevisedPBCPhDexam.pdf](http://www.plantbiology.northwestern.edu/graduate/phd/documents/RevisedPBCPhDexam.pdf).

Bring the PhD prospectus form for your committee members to sign: [http://www.plantbiology.northwestern.edu/graduate/phd/documents/PBCPhDProspectus.pdf](http://www.plantbiology.northwestern.edu/graduate/phd/documents/PBCPhDProspectus.pdf).

Once the PhD prospectus form has been approved by your committee members, please give it to the PBC program assistant for approval in CAESAR.

Bring a list/unofficial transcript of all graduate courses you have completed to the exam.

After a successful exam, the signed forms (Qualifying Exam and PhD Prospectus) should be turned into the PBC Program Director. TGS will be notified that the student is qualified to advance to candidacy.

A pdf version of the proposal must be sent to the PBC Program Director and the PBC program assistant.

TGS will send an e-mail confirming you candidacy status.

### Failure to advance to candidacy, and the Master’s Degree

Students whose performance in each of the four qualifying exam categories (advanced understanding of biology, successful completion of courses, research aptitude, and research accomplishment as demonstrated through the qualifying exam and previous research) is judged insufficient for advancement to candidacy, three alternatives are available and are up to the discretion of the committee.

1. The student may have one more chance to complete the qualifying exam satisfactorily before the end of their 12th quarter (summer of third year). If the committee chooses this option, the committee members will inform the student what they need to do to prepare and give the student a date by which they need to complete the 2nd qualifying exam. If the student does not perform satisfactorily on the 2nd exam, options 2 and 3 below remain.

2. The committee may decide the work accomplished is sufficient to merit consideration for a terminal Master’s degree. In this case, the student may petition the PBC executive committee for permission to write and defend a Master’s thesis. If the petition is granted, the thesis proposal must be rewritten in the format of a Master’s thesis and defended before a Master’s degree exam committee, which is generally reconstituted from the qualifying exam committee. The awarding of a terminal Master’s degree by PBC should reflect significant achievement by the degree recipient. A terminal Master’s degree will be awarded by The Graduate School upon recommendation by the program director acting on the advice of the chairperson of the graduate student committee and the Master's degree exam committee.

3. If the committee decides that the student’s performance is not sufficient for either of the two above options, the student may be dismissed from the program with no degree. Students whose performance was not satisfactory in any one of the categories mentioned above are normally not eligible for a Master’s degree, and are dismissed from the program. For example, a student who has demonstrated a good understanding of biology, but who did not perform satisfactory research during their first two years is not eligible for a Master’s degree.
PhD DISSERTATION AND FINAL EXAMINATION

The advisor, the student, and their committee together determine the appropriate time to write and submit the dissertation. Each student must complete an original research study and produce a dissertation acceptable to the final examination committee. Doctoral research usually begins in the summer quarter of the first academic year and continues uninterrupted until all the requirements for the Ph.D. degree have been met and a satisfactory dissertation has been completed. The program expects students to have authored publications over the course of their degree and it is recommended that at least one first-author data paper be submitted by the time of defense.

All requirements for the Ph.D. degree must be met within nine years of initial registration in a doctoral program. A comprehensive list of requirements for the PhD degree can be found in above sections.

Permission to Write & Final Examination
The final examination will consist of two parts: the “Permission to Write” and “Final Examination” meetings. The final examination will typically be scheduled approximately three to six months after the "permission to write" meeting.

At the "permission to write" meeting the student will request permission to write their dissertation. In preparation for this meeting, the student will submit a detailed outline for a dissertation. At the meeting, he or she will discuss the experimental results and defend the conclusions to be described in the dissertation. The outline must be submitted to the final exam committee members at least two weeks prior to the "permission to write" meeting. During the meeting, the committee will determine whether additional experiments or substantial alterations to the proposed dissertation outline are required prior to scheduling the final exam. Where appropriate, contingencies regarding the outcomes of requested experiments should be agreed upon during this meeting and indicated on the “Permission to Write” form (http://www.plantbiology.northwestern.edu/graduate/phd/documents/PERMISSIONTOWRITEREQUEST-Final_000.pdf). Please also inform the PBC program office of your graduation plans.

Two weeks prior to the final exam, students will present the committee with the written dissertation. A complete guide to the writing of the dissertation is available from The Graduate School and should be consulted for stylistic requirements. The dissertation will be in a fully edited and corrected form. It is expected that the student’s advisor will have read and approved the dissertation prior to its submission to the committee. The final exam will include a presentation and discussion of the research, and an evaluation of the dissertation as a whole. If the committee judges the dissertation to be satisfactory, the dissertation can be approved at this meeting although final corrections, revisions, or editing may be requested. The committee’s decision is recorded on the “Committee Report” form. Possible outcomes are an unqualified pass, a conditional pass requiring no re-examination, a mandatory re-examination, or a failure to pass the exam. Students may present their public seminar if they receive an unqualified or
conditional pass. The committee will set a deadline for making any required revisions and indicate the consequences for not meeting the deadline. Consequences could include but are not limited to academic probation, or re-examination. If a student has not turned in the revised thesis within a year after the defense, the student must re-defend the thesis and incorporate discussion of all newly published data in the area of study.

**Once the date for the final examination has been determined**, the student must

1) Access the PhD final exam form (this can be found under TGS Forms in CAESAR), fill in the requested information, and submit it; 2) obtain from the PBC website the form, "Committee Report on Examination of Candidate for the Degree of Doctor of Philosophy." Complete the appropriate sections and take the form to the exam. At the conclusion of the exam, the form must be signed by each of the committee members and returned, completed, to the PBC program office. If the student passes (with or without conditions), the student will be required to follow the TGS guidelines for degree completion, which can be found here: [http://www.tgs.northwestern.edu/academics/degree-requirements/index.html](http://www.tgs.northwestern.edu/academics/degree-requirements/index.html)

**Public seminar**

If the student has received an unqualified or conditional pass, the public seminar can be scheduled in consultation with the committee. This is a formal seminar presented to the PBC program members and invited guests. The seminar must be arranged through the PBC office. The program staff will assist in advertising the public presentation. It is strongly recommended that the arrangements be made at least 14 days prior to the presentation.

**Petitions and Appeals**

The faculty members recognize that deviations from the requirements may be warranted in certain cases. Students may submit petitions requesting a variation in the requirements whenever they believe that they can adequately justify their request. Minor variances from the requirements may be requested, in writing, to the PBC Executive Committee. Substantial variances require a petition, in writing, to the director of the PBC program.

Similarly, decisions made by the faculty or PBC administration may be appealed by the student. Such appeals should be justified in writing to the director of the PBC program. The director will establish an appropriate impartial committee to make a recommendation to the PBC faculty, who will vote on the appeal. Alternatively, the student can appeal to the Dean of The Graduate School.
OTHER REQUIREMENTS

Teaching Responsibilities for PhD Students
Many students will eventually pursue a career that involves both research and teaching. Experience as a teacher is therefore a valuable part of the PBC graduate program. Participation in teaching is profitable for the student because it provides further expertise in the subject material of the course and enhances the student’s verbal communication skills. Each student will participate in the teaching program beginning in the second or third year, regardless of the method of support of the student. The PBC program currently requires at least two quarters of teaching for the PhD degree, although the requirement may vary with total graduate student enrollment. Teaching assignments require that the student work with the course instructor to organize and conduct quiz, discussion, and/or laboratory sections for one quarter.
ANNUAL REVIEW

MS Progress Reviews
MS students should fill out an Individual Development Plan (IDP) with their thesis advisor by the spring quarter of year one, found at http://www.plantbiology.northwestern.edu/graduate/ms/forms.html. This plan outlines the goals and expectations of both the student and advisor and will be used to assess progress toward the degree during progress reviews. Shortly after the student and advisor fill out the IDP in spring of year one, the form should be discussed at the student’s first committee meeting (often the proposal defense) so that everyone is aware of and in agreement with the expectations. Then both the filled in pdf version and a signed hard copy of the IDP as well as the MS Progress Review Form should be submitted to the PBC program office. Progress is measured in terms of successful completion of coursework and meeting research goals. A student will not be in good academic standing if he/she has an overall grade average below B (3.0 GPA), has any single grade lower than C, has more than three incomplete grades, fails to pass the proposal defense by the end of his/her first year, or fails to make satisfactory progress with research as determined by the student’s thesis committee. The first progress review must be conducted, signed, and turned into the PBC office no later than spring quarter in year one and summer quarter in year 2 if the student has still not graduated. However, the NU/CBG faculty members of the committee may organize additional progress reviews if they deem it necessary to keep on track. If there are only two NU/CBG faculty members on the committee, the PBC Director will sit in on this meeting. A student may also organize a meeting with the committee at any point. If a student is not in good academic standing, he/she may be excluded from consideration for PBC travel and research awards or put on academic probation. If satisfactory progress is not made after 2 quarters of academic probation, the student may be dismissed from the program.

PhD Annual Progress Reviews
PhD students should fill out an Individual Development Plan (IDP) by the fall quarter of year two with their thesis advisor (found at http://www.plantbiology.northwestern.edu/graduate/phd/forms.html. This plan outlines the goals and expectations of both the student and advisor and will be used to assess progress toward the degree during progress reviews with the thesis committee each fall, starting in year 2. Shortly after the student and advisor fill out the IDP in the fall, the form should be discussed at the student’s annual progress review meeting with the thesis committee so that everyone is aware of and in agreement with the expectations. Then both the filled in pdf version and a signed hard copy as well as the PhD Annual Review Form should be submitted to the PBC program office. The meetings provide an opportunity for students to discuss their work with scientists from outside the student’s laboratories. They serve to assess the student’s progress towards the Ph.D. degree, but are not intended to be examinations. Progress is measured in terms of successful completion of coursework and meeting research goals. A student will not be in good academic standing if he/she has an overall grade average below B (3.0 GPA), has any single grade lower than C, has more than three incomplete grades, fails to pass the
proposal defense by the end of his/her first year, or fails to make satisfactory progress with research as determined by the student's thesis committee. Progress reviews must be conducted annually starting in the fall of year 2. However, the NU/CBG faculty members of the committee may organize additional progress reviews if they deem it necessary to keep on track. If there are only two NU/CBG faculty members on the committee, the PBC Director will sit in on this meeting. A student may also organize a meeting with the committee at any point. If a student is not in good academic standing, he/she may be excluded from consideration for PBC travel and research awards or put on academic probation. If satisfactory progress is not made after 2 quarters of academic probation, the student may be dismissed from the program.

Annual review meetings should be held in the fall quarter of each academic year. Students are responsible for scheduling the annual meetings with their committee. The annual review form must be signed by all committee members. A copy of the annual review form will be kept in each student's program file in the PBC office. Additional committee meetings may be arranged throughout the year as deemed necessary by the student and/or advisor.

Remediation Process
If students would like to appeal a decision of placement on academic probation, they may submit a petition to the PBC Executive Committee adequately justifying their request. Alternatively, the student can appeal to the Dean of The Graduate School.
FELLOWSHIPS AND TEACHING ASSISTANTSHIPS

MS Program
All Master's students will be considered for scholarships based on merit and need. Scholarships cover a portion of tuition costs during year one. The curriculum can be completed in one academic year. After completion of curriculum requirements, MS students will maintain matriculation, as they complete their research, by registering for TGS 512 ($100/quarter). MS students may have the opportunity to serve as a proctor, grader or TA for courses.

PhD Program
PhD students are guaranteed funding for at least five years. The first year of support is derived from a Northwestern University full tuition scholarship plus a stipend and full coverage of health insurance premiums for plans available through Northwestern University. Support in subsequent years will be provided as long as the student remains a full-time student in good standing. It is the policy of the PBC program to use research assistantships, teaching assistantships, project assistantships, and fellowships to continue support.

TRAVEL AND RESEARCH AWARDS

All PBC graduate students are encouraged to apply for research grants and travel awards to attend conferences. More information can be found at http://www.plantbiology.northwestern.edu/graduate/grants.html
EXPENSE REIMBURSEMENT FOR MS STUDENTS

Read these procedures carefully before submitting requests for reimbursement. Failure to follow these guidelines, may result in delayed reimbursement, returning of documents, or possibly no reimbursement if deadlines are missed.

There are two main categories for which you may seek reimbursements:

1. Reimbursements associated with an award letter
   a. PBC Travel Award to attend a conference or workshop.
   b. PBC Research Award. The expenses may include travel, equipment and/or supplies.
2. Reimbursements not associated with an award letter. These are usually for refreshment purchases. Examples include:
   a. Refreshments for a visiting speaker seminar
   b. A meal with a visiting speaker

Procedures for reimbursements associated with an award letter

1. Awards associated with a letter will include a letter that outlines how much you may be reimbursed and for what purposes. In the letter, there will be a deadline associated with the use of those funds, and you will need to submit all requests for reimbursements by that date. Please make every effort to submit as few requests as possible. That is try to include multiple purchase in the same reimbursement request. Here is an example letter:

   October 26, 2012
   Dear Name,
   Thank you for submitting a proposal for the Plant Biology and Conservation Research Award. PBC is pleased to inform you that you will be awarded up to $1,483 to purchase supplies and travel described in the budget below. You must make all purchases and submit all requests for reimbursement within 9 months (by July 31, 2013).

   **Approved budget:**
   **Supplies/Equipment**

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   **Travel**
   Roundtrip airfare Chicago – Denver for fieldwork in Colorado = $400
   Car rental in Colorado - $150
   Gas mileage in Colorado – up to $100
   Accommodations in Colorado - $250
   Total travel = $900

   Consult the Graduate Student Handbook for details on getting reimbursed. Here are a few key items to remember:
   1. It is preferred that you make as few submissions for reimbursement as possible.
   2. You will need to include a copy of this letter as part of getting reimbursed, and with each reimbursement request you will need to indicate which items on this letter have already been reimbursed and which items you are currently asking for.
   3. Save all original receipts.
   4. It is preferred that scientific supplies be directly ordered through PBC program assistant to alleviate the need for reimbursement. To do this supply the program assistant with this letter and clear information about which items need to be purchased.
   5. If you purchase items on your own, please remember that sales tax on purchases is not reimbursed by Northwestern. You can download a copy of the NU tax exempt letter and request that one of the program assistants sign it before bringing it to the store.
   6. Reimbursements should be requested within 60 days of the purchase or in the case of travel, within 60 days of completion of travel.
2. **For scientific supplies**, ask the program assistant to place these orders directly. Provide her with:
   a. The award letter and highlight the items you would like to have ordered and indicate on the letter if any of the items have already been reimbursed.
   b. All necessary web links, product numbers, quantity, and pricing.
   c. The order will be placed and there will be no need for you to be reimbursed.

3. **For items that are simpler to buy in a store**, follow these procedures:
   a. Print out a copy of the NU tax exempt letter (if you don’t do this, it just means you won’t get reimbursed for tax), and have a program assistant sign it before you go to the store. 
      [http://www.northwestern.edu/uservices/purchasing/policies_forms/tax-exempt-status.html](http://www.northwestern.edu/uservices/purchasing/policies_forms/tax-exempt-status.html)
   b. Save the receipts
   c. Try to put as many purchases as possible together in a reimbursement request so that you are not making several separate requests. This makes things much more difficult and time consuming.
   d. **When you are ready to be reimbursed, bring the following to the program assistant:**
      i. A brief message explaining the purpose of the purchase
      ii. A copy of the award letter and highlight what items are being requested for reimbursement and which (if any) have already been reimbursed.
      iii. Receipts in an envelope, with a list indicating what each receipt was for.
   e. The program assistant will fill out the appropriate paperwork and notify you when you need to sign the report.

4. **Travel expenses include airfare, accommodations, or gas mileage. For travel expenses, if you are an MS student, bring the following to the PBC program assistant:**
   a. A brief message explaining the purpose of the travel (i.e. fieldwork or a conference) with specific dates included.
   b. If it was travel to a conference, include the name of the conference and a print out of the conference announcement (i.e., webpage for the conference).
   c. A copy of the award letter and highlight what items are being requested for reimbursement and which (if any) have already been reimbursed.
   d. Receipts in an envelope, with a list indicating what each receipt was for.
   e. **If you are requesting gas mileage**, include a list of the dates traveled, the mileage covered, and a print out of a map showing the route. Only include mileage up to the amount for which you have been awarded. For example, if you traveled 500 miles and the rate is $0.55/mile, but you were only awarded $100, don’t include all the mileage for reimbursement.
   f. The program assistant will fill out the appropriate paperwork and notify you when you need to sign the report.

5. **For conference registration**, the fee can be paid by the PBC program assistant on a Northwestern procurement card and charged to the PBC account chart string. Just contact the program assistant if you would like to use this option and note that this needs to be done as soon as you know you’ll be attending a conference. Students may need to use their own funds and be reimbursed.

**Procedures for reimbursements NOT associated with an award letter**
These reimbursements are typically for refreshments or food associated with a visitor. To be reimbursed, bring the following to the program assistant within 60 days of the purchase:

1. **AN ITEMIZED RECEIPT. IF ALCOHOL WAS PURCHASED, IT MUST BE ON A SEPARATE RECEIPT.**
2. A list of all the people at the meal/seminar
3. A flyer for the talk associated with the visitor
4. The program assistant will fill out the appropriate paperwork and notify you when you need to sign the report.
EXPENSE REIMBURSEMENT FOR PhD STUDENTS

PhD students are responsible for submitting their own reimbursement requests through NUFinancials. Please follow these steps to enter a reimbursement request.

SOME THINGS TO KEEP IN MIND

1. It is preferred that you make as few submissions for reimbursement as possible on a single award.
2. If you are being reimbursed as part of a research or travel award, you will need to include a copy of the award letter as part of getting reimbursed. You will need to indicate which items on the letter have already been reimbursed and which ones you are currently asking for.
3. Save all original receipts
4. It is preferred that scientific supplies be directly ordered through PBC program assistant to alleviate the need for reimbursement. To do this supply the program assistant with your award letter and clear information about which items need to be purchased.
5. If you purchase items on your own, please remember that sales tax on purchases is not reimbursed by Northwestern. You can download a copy of the NU tax exempt letter and request that one of the program assistants sign it before bringing it to the store. http://www.northwestern.edu/uservices/purchasing/policies_forms/tax-exempt-status.html
6. Reimbursements should be requested within 60 days of the purchase or in the case of travel, within 60 days of completion of travel.
7. Please do not make large purchases of research supplies on your personal credit card even if your advisor suggests that you do this because of timing of your research project.

The following needs to be turned into the PBC program assistant in order to submit the reimbursement request electronically:

a. Printout from NU Financials of the request
b. Tape two sides of each receipt to the blank page generated in NU Financials with the expense reimbursement identifying number so there is always a way to track which receipts are included with the reimbursement request. Multiple copies of the blank page with the identifying number printed on it may be necessary. If you are submitting mileage printouts from Google maps, then you will still need to write the identifying number on each Google map page.

c. If you are being reimbursed as part of a research or travel award, include a copy of your award letter with your request for reimbursements. Clearly indicate on it which item(s) you are requesting for reimbursement and if any of the items have already been reimbursed.
d. A copy of these will be made in the PBS/PBC office and the Program Director will sign the request.

2. When there are problems with the reimbursement request, the students will be notified by Project Café/NU Financials and the LFS business office will make any necessary adjustments.

CAREER AND PROFESSIONAL DEVELOPMENT PROGRAMS

BioProfessionals – BioSurvivals, BioOpportunities, Pathway to the Professoriate

To foster the career development of graduate students training in the life sciences at Northwestern University, the IBiS Graduate Program co-sponsors BioProfessionals, which includes BioSurvival Skills, BioOpportunities, and Pathway to the Professoriate. For information on past and upcoming BioProfessionals events go to http://www.ibis.northwestern.edu/news/bio_prof.html
BioSurvival Skills are a series of workshops on topics such as presentation skills, grant and CV writing, and job hunting. The workshops take place quarterly, on both campuses. The BioOpportunities program regularly invites alumni and other professionals to talk about the diversity of careers available to the PhD student. These talks take place quarterly on alternating campuses. Pathway to the Professoriate touches on issues important for successful academic careers including lab management, startup package negotiations, and the tenure-track process. These conversations take place monthly.

Searle Center for Advancing Learning and Teaching and The Graduate School programs
PBC students have access to the Searle Center for Advancing Learning and Teaching and resources through The Graduate School, NU Directions.

The Searle Center is a valuable resource for students interested in improving their teaching skills in preparation for an academic career. Additional information about the Searle Center programs can be found on their website: http://www.northwestern.edu/searle/programs-events/

Professional Development for Graduate Students
Please consult The Graduate School website for the numerous professional development opportunities available (http://www.tgs.northwestern.edu/professional-development/index.html)

University Career Services
University Career Services (UCS) provides comprehensive career services to all life sciences graduate students and postdoctoral fellows considering non-academic as well as academic careers. Career counselors assist students and fellows with career decision-making by helping them explore and re-clarify interests, values, and skills through one-on-one counseling meetings and career assessments.

Life sciences trainees also utilize the Career Resource Center and other online materials to research employers and careers of interest to them. Employment counselors work closely with students and fellows to help them develop individualized job search strategies and refine job search skills (resumes, CVs, interviewing). More detailed information can be found on the University Career Services’ website, http://www.northwestern.edu/careers/

OTHER STUDENT ISSUES
**Health Insurance Coverage**

Wendy Weaver, Health Service Administrator from the Office of Risk Management, is available to meet with any student or student group seeking further information about health insurance. You may contact Wendy at 847-491-2113 or w-weaver@northwestern.edu.

General information about Student Health Insurance can be found here: [http://www.nuhs.northwestern.edu/evanston/insurance-enrollment.aspx](http://www.nuhs.northwestern.edu/evanston/insurance-enrollment.aspx)

**Explanation of Health Insurance for Second Year/Continuing Students**

In the first year, 50% of the annual premium is paid by NU and the student pays 50% (the annual premium for 2014-15 is $3,449).

In the second year, the student is responsible for 100% of the annual premium cost.

Students enrolled in TGS 512 are considered full time by the university.

In CAESAR, there is a section entitled “Coverage Selection” where the student can indicate if they have other coverage from parents, spouse, etc. and they must provide the exact policy number/group number information along with the name of the insurance carrier.

Aetna’s Customer Service department is also available Monday through Friday from 8:30 to 5:30 ET at 877/480-4161. Detailed Plan information is provided online through Aetna’s Student Connection at [www.aetnastudenthealth.com](http://www.aetnastudenthealth.com).

**GRADUATING OR DEPARTING STUDENTS**

**Cancellation of Health Plan**

Students enrolled in the NU health plan, who are graduating or leaving the University at the end of a term and wish to cancel their enrollment in the plan, must submit a request in writing to the Health Insurance office at 633 Emerson Street by the last day of the term they are leaving the University. They may also fax requests to 847/491-4268.
Dependent Care Grant – for PhD Students

Northwestern will pay up to $500 for dependent care (including day care while PhD students travel to a conference or do field work). For more details on this, please see http://www.tgs.northwestern.edu/financial-aid/fello-schola-grants/university-fello/dependent/index.html

Other Degree Programs or for-Credit Coursework

Enrollment in any formal degree program (J.D., M.B.A., etc.) or participation in for-credit coursework outside of the PBC curriculum requires prior approval from the program director and your advisor. Requests will be considered on an individual basis and are not automatically granted.

Outside employment

Outside employment of PhD student of any type is not allowed. Exceptions can be made by the program director for advanced students only when the employment directly helps the professional development of the student. Employment is limited to 15 hours per week and students must have approval from their advisor and the program director.

Stipend Supplements to PhD Students

Stipend supplements are generally not permitted, with the exception of extramural funding as described below. Any other supplement to a stipend must be approved by the program director, your advisor, and The Graduate School.

Academic Calendar

Please refer to the academic calendar on the Registrar’s webpage http://www.registrar.northwestern.edu/calendars
OTHER NORTHWESTERN UNIVERSITY INFORMATION

E-Mail/Computing Center Facilities
Your e-mail address should have been set up for you before your arrival at Northwestern. For more information please contact 1-HELP line (847-491-4357), or visit the NUIT Information Center, 1800 Sherman, Evanston Campus
https://snap.it.northwestern.edu/it/

ID Card/Wildcard
The Wildcard gives you access to all University facilities (e.g. the libraries, the Sports and Aquatic Center, etc.) and identifies you as a member of the Northwestern University community. It also provides some discounts at merchants in Evanston and Chicago. The Wildcard office is located in the Norris University Center on the underground level. The office is open from 8:30 a.m. - 5:00 p.m., Monday through Friday. The Wildcard office phone number is 467-6843.

Parking Permits
If you plan to park on campus, you will need a parking permit which can be obtained through the University Police parking office. It is located at 1841 Sheridan Road (south campus entrance) and is open 8:00 a.m. - 4:00 p.m., Monday through Friday. You will need your Wildcard, your car's make/model and license plate number, and your driver’s license. Less expensive parking is also available at Ryan Field. Please check with the parking office for current fees. http://www.northwestern.edu/up/parking/

TGS Activity Fee and U-Pass
The Graduate School has implemented a mandatory activity fee of $110 per quarter ($440 for 4 quarters for academic year 2013-2014) to support services for full-time students of The Graduate School. The services include:

- **U-Pass** (a special fare card to be used on all Chicago Transit Authority (CTA) transportation (the El system and Pace buses) for all full-time “resident” students in The Graduate School). Please note that the U-pass is provided for first year MS students and all PhD students.
- **Legal services** from an attorney to assist with issues such as landlord, credit or debt problems, and traffic violations
- **Community building activities and professional development opportunities** that include events such as the “TGS Night Out”

Payroll and Taxes
Stipends are automatically deposited to your bank account on the last day of each month. For questions about stipend, contact the Financial Assistant of your department for assistance.
Contact Angela Gwinn in the Payroll Department at 1-7362, or the Internal Revenue Service for answers to specific tax questions.

**Social Security Card**
If you are an international student, you will need to get a social security card as soon as possible. The nearest Social Security office is located at 2116 Green Bay Road, Evanston. Office hours are 9:00 a.m. - 4:00 p.m., Monday through Friday. To apply for a card, you need to bring at least two pieces of identification and a letter from the IBiS office, to verify the following:
- Age
- Identity
- Citizenship
- Current address (lease/utility bill)

**Student Leave Policy**
Please refer to The Graduate School website for the latest information on student leave: [http://www.tgs.northwestern.edu/academics/leaves-withdrawal-readmission.html](http://www.tgs.northwestern.edu/academics/leaves-withdrawal-readmission.html).

*The following is a minimum leave policy available to all PBC students in good standing:*

1. Parental leave for birth or adoption of a child – 6 weeks leave with pay
2. Family leave to attend to a sick family member (child, spouse, parent) – 6 weeks leave with pay
3. Personal or family illness or emergency – 6 weeks leave with pay
4. Extended medical leave of absence – Up to one year without pay (Graduate School policy)
5. Additional leave may be negotiated between a student and his/her advisor

**Student Counseling Services**
Free and confidential counseling services are available to all students from Counseling and Psychological Services (CAPS). If you need CAPS services, call 847-491-2151. [http://www.northwestern.edu/counseling/](http://www.northwestern.edu/counseling/).

In case of an emergency after hours, please call the Crisis line at 847-491-8100.
PBC FACULTY COMMITTEES AND STAFF

The administrative staff of PBC is a valuable resource for information on stipends, taxes, registration, teaching, and departmental activities. A partial listing of the staff is found below. Faculty and staff are located at either NU (Hogan Building) or CBG.

Nyree Zerega  PBC Director  847-467-1266  nzerega@northwestern.edu
Susan Black    PBC Program Assistant  847-467-1118  seb451@northwestern.edu
Yvette Davis   Life Sci Financ. Serv. Admin.  847-491-4216  nya@northwestern.edu
Sharlene Andrewin  Life Sci Financ. Serv. Admin  847-491-5764  s-andrewin@northwestern.edu

Executive Committee
Patrick Herendeen  847-835-6956  pherendeen@chicagobotanic.org
Gregory Mueller   847-835-8226  gmueller@chicagobotanic.org
Nyree Zerega       847-467-1266  n-zerega@northwestern.edu

Curriculum Committee
Patrick Herendeen (chairperson)  847-835-6956  pherendeen@chicagobotanic.org
Nyree Zerega       847-835-6956  n-zerega@northwestern.edu
Krissa Skogen      847-835-6919  kskogen@chicagobotanic.org
Stuart Wagenius    847-835-6978  swagenius@chicagobotanic.org

Student Representatives to Executive Committee
Elliot Gardner (PhD)  elliotgardner2012@u.northwestern.edu
Adrienne Basey (MS)  adriennebasey2015@u.northwestern.edu

Graduate Admissions Committee (rotating)

MS Program
Nyree Zerega (chairperson)  847-467-1266  nzerega@chicagobotanic.org
Patrick Herendeen       847-835-6956  pherendeen@chicagobotanic.org
Andrea Kramer           847-835-6971  akramer@chicagobotanic.org

PhD Program
Nyree Zerega (chairperson)  847-467-1266  nzerega@chicagobotanic.org
Kayri Havens-Young      847-835-8358  khavens@chicagobotanic.org
Norman Wickett          847-835-8280  nwickett@chicagobotanic.org

PBC Governance Committee
Nyree Zerega (chairperson)  847-467-1266  nzerega@chicagobotanic.org
Richard Gaber           847-491-5452  r-gaber@northwestern.edu
Gary Galbreath          847-491-8775  qg853@northwestern.edu
Neal Blair              847-491-8790  n-blair@northwestern.edu
Patricia Beddows        847-491-7460  p-beddows@northwestern.edu
Andrew Jacobson         847-491-3132  adj@northwestern.edu
Norman Wickett          847-467-2769  nwickett@northwestern.edu

Roles of PBC Program Assistant

The PBC program assistant, Susan Black, is an invaluable resource for students. Please consult with Susan for all of the following:
- All academic matters
  - Courses
  - Degree completion requirements
  - Research permission for PBC 499
• Questions about how to spend money on your research grants
• Lab supply purchases from a grant
• Assistance with completing travel expense reimbursements
• Permission numbers for 300-level classes
• Setting up a student webpage