DGP

Driskill Graduate Program
in
Life Sciences

Student Handbook 2017

Northwestern University
Feinberg School of Medicine

Driskill Graduate Program in Life Sciences
2017-18 Academic Year

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The DGP reserves the right to change, without notice, any statement in this publication concerning, but not limited to, rules, policies, curricula, and courses. The DGP reserves the right to implement new policies and procedures as needs arise. Students will be notified of changes in the handbook via email. Failure to read the information in the handbook or email updates does not excuse a student from knowing and complying with its content. In addition to TGS and DGP policies, graduate students are subject to and should be aware of University policies pertaining to students.

The Walter S. and Lucienne Driskill Graduate Program in Life Sciences (DGP) is a multi-departmental, multi-disciplinary doctoral training program designed to prepare students for a research career in modern biomedical sciences. Students are admitted only to a course of study leading to a PhD.

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2017-2018 Northwestern University Academic Calendar

http://www.registrar.northwestern.edu/calendars/2017_18_acad_calendar.html

2017-2018 DGP Course Schedule

Green Shading – Required Core classes for first year students
Blue Shading – Required proposal writing class (one grade combined with rotations credit) for first year students
Beige Shading – Required, non-credit RCR class

Fall	Winter	Spring	Summer
DGP 401 Biochemistry	DGP 410 Molecular Biology and Genetics		DGP 496-3 ILS / Grant Writing (Year 1)
DGP 484 Statistics	DGP 405 Cell Biology		
DGP 403 Advanced Immunology	DGP 425 Drug Discovery	DGP 420 Introduction to Pharmacology	DGP 422 Introduction to Translational Research
DGP 435 Receptors and Signaling Mechanisms	DGP 433 Advanced Microbial Pathogenesis	DGP 430 Genetics	
DGP 442 Microbiology	DGP 475 Virology	DGP 440 Immunology	
DGP 450 Tumor Cell Biology	DGP 466 Structural Basis of Signal Transduction	DGP 465 Macromolecular Structure and Function	
DGP 456 Topics in Developmental Biology	DGP 486 Adv Bioinformatics	DGP 495 Science and Society	
DGP 485 Intro. to Data Science / Bioinformatics	DGP 480 Molecular Basis of Carcinogenesis		
DGP 494 Colloquium on Integrity in Biomedical Research (Year 2; Year 6)			

Advising

Students in the DGP have both an *academic* advisor and a *research* advisor.

A. Academic Advising

The DGP assigns a member of the Program Committee as each student's first year academic advisor. Academic advisors and first year students meet before the beginning of each quarter to discuss course registration, choices for laboratory rotations, and other academic matters. Each student's course and rotation selection must be approved by the academic advisor; each student will obtain the advisor's signature on the provided form each quarter and return the form to the DGP office. Failure to obtain approval for course selections during the first year will result in probation by the DGP.

Students are also encouraged to meet with their advisor during the course of each quarter to discuss ongoing progress and formulate plans for acceptable academic progress. The academic advisor serves as the primary advisor until the student chooses a thesis lab. DGP administrators are also available for advising.

B. Research Advising

It is the goal of the DGP that all students identify a mentor, obtain outstanding research training and complete their PhD requirements in a timely fashion. In order to facilitate a good training relationship, both student and advisor are encouraged to read and adhere to the principles described in the AAMC *Compact Between Biomedical Graduate Students and Their Research Advisors*.

Once a student enters a lab full-time for thesis research, the lab head becomes the student's primary advisor from that time forward. Research advisors bear the main responsibility for monitoring the student's research progress and academic training. This responsibility, however, is also shared with the student's thesis committee. Importantly, the advisor is responsible for financial support (tuition and stipend) following the fellowship period.

The thesis committee's primary duty is to review the student's research progress and provide both scientific and personal advice and support. Nevertheless, it is also the committee's responsibility to evaluate the student's work and to report to the DGP whether or not the student is making appropriate progress towards completion of the PhD.

Faculty advisors and thesis committee members are encouraged to openly and honestly communicate to students any perceived difficulties or deficiencies so that the student may address and correct the problems. Likewise, students are encouraged to openly and honestly communicate to their advisors any mentoring difficulties or deficiencies so that the advisor may address and correct the problems.

If at any point a student chooses to leave a lab, or if the student and faculty advisor mutually agree that the student would be better served in another laboratory, the student will be permitted to find another thesis home. The decision should be communicated to the DGP office. The DGP office will aid the student as much as possible in finding a new home. The student must secure a new lab home within three months or be subject to possible dismissal from the DGP. A student who changes labs must form a new thesis committee and present a thesis proposal within six months after joining the new lab.

Situations in which the faculty advisor seeks to dismiss a student from the lab are discussed below.

Academic and Research Integrity

Academic and Research Integrity is an essential feature of academic life. Breaches of this integrity are unacceptable and cannot be tolerated. The Graduate School provides specific procedures that will be followed in cases of allegations of a violation of academic integrity. This policy is available at: http://www.tgs.northwestern.edu/about/policies/academic-integrity.html

According to the policy, any case of alleged academic dishonesty involving a student in DGP will be referred to the Associate Dean of Student Affairs at The Graduate School.

In particular, any accusations of plagiarism in course work, qualifying exams, thesis proposals or dissertations will be referred to TGS by faculty members and/or the DGP. Students found to have engaged in plagiarism may be dismissed by either TGS or DGP.

The Northwestern Provost's Principles Regarding Academic Integrity can be found at: http://www.northwestern.edu/provost/policies/academic-integrity/principles.html

Entering DGP students are asked to read and sign the statement below:

> *I will respect the principles of Academic Integrity as described by the Northwestern University Provost and the Northwestern University Graduate School. I will not cheat in any way on any course exam, course assignment, or qualifying exam. I will not plagiarize in a course assignment, qualifying exam, thesis proposal, dissertation, or any other written document during my time as a graduate student at Northwestern University.*

Any student who suspects or is witness to any acts of academic dishonesty has an obligation to report the act(s) to the relevant course director, the Director of the DGP, and/or The Graduate School Associate Dean for Student Affairs.

Research misconduct issues will be investigated by the Office for Research Integrity(ORI). The Provost will determine final sanctions in consultation with The Graduate School (TGS) once a determination has been made as to whether or not there was research misconduct. Please consult the Office for Research Integrity policy and procedures concerning research misconduct: http://www.research.northwestern.edu/ori/misconduct/

Program Requirements

A. First Year of Study

During the first year of study in the DGP, students will complete the following degree requirements:

- Core Biological Courses and Statistics; ILS
- Additional elective courses
- Attendance at all Lectures in Life Sciences seminars
- Laboratory Rotations (3 total, one per quarter)
- Selection of a Research Advisor
- Choice of Research Cluster

Individual research clusters may have their own suggested courses. Students select their course work in consultation with the academic and research advisors.

Northwestern University Graduate School requires that all DGP students complete nine graded courses (units). DGP students take at least 8 formal classes - 3 biological core classes, Statistics, and 4 electives. If desired and appropriate, students may take more graded courses. The ninth unit credit and grade are provided through registration for one unit of ILS 496-3 in Summer of year one. The grade represents a combination of the three laboratory rotations and performance in the ILS class.

1. Core Biology Courses and Statistics:

All students in the DGP complete 3 biological core courses: Biochemistry, Molecular Biology & Genetics, and Cell Biology. In addition, students complete the DGP course in statistics. Students may **NOT DROP** their registration in a core course. Any student who drops a core class will be placed on probation by the DGP.

Students who enter the DGP with a masters degree may petition to opt out of one or two core classes. Details can be found in the Transfer Credits section below.

First year students also participate in the required, but non-credit, Introduction to Life Science Research class, which has two components. In Winter and Spring quarters, students receive training in critical reading and oral presentation of research papers. In Summer quarter, the class provides training in research proposal writing.

2. Electives

The remaining required 4 graded courses will typically be selected from the DGP course menu (above). With the approval of the academic (during the first year) or the research (in subsequent years) advisor and the DGP, students may select appropriate courses from other PhD programs (e.g. IBiS, NUIN, BME, Chemistry, ChBE) that are germane to their dissertation research.

3. Lectures in the Life Sciences

Lectures in the Life Sciences (LLS) is the seminar series sponsored by the DGP. Lectures are presented by nationally and internationally renowned research scientists. First year DGP students are required to attend the LLS seminars.

4. Laboratory Rotations and lab match

Laboratory rotations provide both the student and faculty mentor an opportunity to evaluate the potential for successful thesis work. From the student's viewpoint, it is important to identify a mentor, a project, and a lab environment that will combine to provide the best possible scientific training. From the mentor's viewpoint, the rotation allows for an evaluation of work habits, interest, intelligence, dedication, and focus. The goal of the process is to match each student with a mentor who is willing and able to guide him or her throughout the graduate career. Both faculty and student have critical career decisions to make before teaming up for the many years involved in PhD training. Students are strongly encouraged to visit several faculty labs before choosing any one lab for rotation. Students may also wish to participate in one or two lab meetings as part of their decision process.

Students are expected to complete three laboratory rotations, each ten weeks in length. Rotation schedules coincide with the Fall, Winter and Spring academic quarters, and students complete one rotation at a time. Prior to beginning each quarter, the student will meet with his or her academic advisor and obtain the written consent for rotation destination and class choices. Students who do not adhere to stated deadlines for establishing and beginning any rotation will be placed on probation by the DGP.

Shortened Rotation

In rare cases, either a rotating student or a rotation advisor may determine well before the end of a ten week rotation that the lab will not be a good fit for the student. In such cases, extending the rotation beyond that determination can limit the student's chances of finding a suitable thesis home.

Any student who determines early on that a rotation is not beneficial to finding a thesis home must meet with the DGP administration and/or their Program Committee advisor to discuss the situation. At approximately the midpoint of each rotation, the student and rotation advisor will meet to discuss the student's performance and the possibility of the student joining the lab at the end of the academic year. Reminders to hold this meeting will be sent each quarter by the DGP. It is expected that in most cases, both parties will agree to continue the rotation to the ten week completion to allow time for further evaluation. No commitments regarding acceptance for a thesis home should be made by either faculty or student at this time – only a determination that both parties will benefit from more time. After this mid-point discussion, in cases where the student or advisor feel very strongly that the lab cannot serve as a thesis home, the student will be allowed to pursue a new rotation.

A student will be given at most one week between labs if a rotation is truncated. All students will complete 28 to 30 weeks of rotation in at least three labs.

Possible outcomes after a shortened rotation include:
1 – beginning the next scheduled rotation early, anticipating spending more than 10 weeks in that lab;
2 – beginning a short rotation that will cover at least 5 weeks, completing the quarter and possibly including a quarter break.

Rotation Evaluation and Written Report

Near the end of the rotation, the faculty advisor and student meet to discuss the rotation. The advisor writes a brief evaluation, which the student reviews and signs. **This evaluation is not confidential.** It will be kept in the student's file and may be used as supporting material when the student applies for other rotations, external fellowships, training grant appointments, etc. At the end of each quarter, the DGP Director may evaluate the rotation advisor's evaluation and use it to determine acceptable academic progress.

Also at the end of each rotation, the student must submit a written report (2 to 3 pages total) to the rotation advisor and the DGP that should include the following information: background and significance, methodology, results and conclusions of the project. The faculty advisor may have require specific styles or content for the report.

Rotations in IBiS

DGP students may complete one of the three rotations in a lab in the IBiS program on the Evanston campus. Typically this is done in the Spring quarter. If a DGP student chooses to conduct their thesis research in an IBiS lab, he or she must apply to transfer to the IBiS program. Students

interested in a transfer are encouraged to meet with IBiS administrators early in the rotation to discuss the process and requirements.

5. Advisor Selection

Each student must complete three full rotations. Laboratory work in the summer prior to the first year's registration may also serve as extra rotation for the purpose of choosing an advisor. However, this summer work cannot substitute for one of the three required rotations without specific permission of the DGP Director.

At the end of the rotations, each student provides the DGP office with a list (in order of preference) of the faculty with whom he/she wishes to do thesis research. Faculty are notified of students wishing to join their lab and are given the choice of accepting or not accepting the student.

The choice of thesis advisor should be made carefully and in consultation with the academic advisor, other faculty and students, and potential research advisors. Making a "deal" with one faculty member before completing all rotations is not advised, as there is a real possibility that a subsequent rotation will prove to be the best match from both the student's and the faculty member's perspective.

Students typically join their thesis research laboratories at the beginning of the Summer quarter of year one. Any student who is not accepted in a lab after three rotations will be allowed to do one or two additional rotations in the Summer of Year 1. A student who does not secure a thesis lab by the end of the Summer quarter of the first year may be dismissed from the program.

6. Individual Development Plan

After joining a thesis lab, each student should meet with their new research advisor and begin to formulate a plan for the thesis project. To aid in this important activity, each student will prepare an Individual Development Plan (IDP) with his or her advisor using the form provided by the DGP. The student and advisor should also read and discuss the *AAMC Compact Between Biomedical Graduate Students and Their Research Advisors*, available at https://www.aamc.org/download/49868/data/gradcompact.pdf, and indicate as such when they sign the IDP form. Students will turn in the completed and signed form to the DGP office by the end of the summer quarter of the first year.

Additional resources for developing an IDP are available at http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2012_09_07/caredit.a1200100 and http://www.faseb.org/portals/2/pdfs/opa/idp.pdf.

Students will update the IDP with their advisor each year at the time of the thesis committee meetings, and submit a copy to the DGP along with the annual thesis committee form.

7. Requirements for Academic Progress in Year One

The progress of each first year DGP student is reviewed at the end of each quarter by his or her academic advisor and the Program Committee as a whole. In order to be in good academic standing, students must maintain a minimum GPA of 3.0 and successfully complete their laboratory rotations. Any student who does not maintain at least a 3.0 GPA will be placed on academic probation by the DGP and The Graduate School (TGS).

When a decision to place a student on probation is made by The Graduate School, the student and DGP Director will be notified in writing. A student placed on probation will be given at most two quarters (not including summer quarter) to resume satisfactory academic standing. The Graduate School notifies students of probation status on a quarterly basis. During the probationary period, students will remain eligible to receive federal and institutional assistance (except when they have exceeded their degree deadline). At the end of the probationary period, progress will be reviewed. If a student cannot re-establish satisfactory academic standing during the two probationary quarters, the student will become ineligible to receive financial aid and will be excluded (dismissed) from TGS.

At the end of the spring quarter in year one, each student's academic performance will be evaluated by the DGP Program Committee for suitability to continue in the DGP. Students with a GPA below 3.0 by the end of Spring quarter in the first year may face dismissal from the DGP. A student who receives two grades of C or lower at any point may also be subject to dismissal.

A student who does not secure a thesis lab by the end of the Summer quarter of the first year may be dismissed from the program. The student's academic record (grades and rotation evaluations) will be reviewed by the DGP Program Committee and a determination made whether to dismiss the student or allow the student an additional 5 weeks of rotation in the Fall in order to secure a thesis lab. If the student fails to secure a lab home after the Fall rotation, he or she will be dismissed.

8. Research Clusters

Students may choose to concentrate their studies in one of the nine research clusters listed below:

- Biotechnology Systems and Synthetic Biology
- Cancer Biology
- Cell and Molecular Biology
- Chemical Biology and Drug Discovery
- Developmental Systems and Stem Cell Biology
- Genetics and Genomics
- Immunology and Microbial Sciences
- Reproductive Science
- Structural Biology and Biophysics

The nine NULABS (Northwestern University Life and Biomedical Sciences) clusters are foci of research areas in the DGP and IBiS. Each cluster serves as an organization point for training activities in that particular area. These activities may include seminars, journal clubs, super-group meetings, research-in-progress meetings, symposia, poster sessions, etc. First year DGP students are encouraged to participate in activities of one or more clusters to supplement the exposure to scientific thinking that is obtained in the coursework. Each of the clusters may have a list of recommended= coursework and additional training activities that cluster faculty members believe are critical to a student's training in that particular area.

At the end of the spring quarter of the first year, each DGP student will be asked to declare a primary cluster affiliation for purposes of enhancing their PhD training experience. Most often, the cluster choice will coincide with the area of research of the thesis advisor. It should be noted that many thesis advisors will be associated with more than one cluster. Therefore, although a student will declare a primary cluster affiliation, her/she can participate in multiple clusters as dictated by the thesis research. Students will be expected to participate in cluster activities for the remainder of their time in the DGP.

9. Transfers to the DGP from other Northwestern programs

During the first year, students enrolled in other PhD programs at Northwestern may apply to transfer to the DGP. Prior to transfer, a student first complete a rotation in a DGP lab and secure a thesis home with a DGP faculty member. Any laboratory rotations that are necessary for the student to find a thesis home will be funded by the student's home program. Once a transfer student has joined the lab, the faculty must agree to assume the full financial and academic responsibilities of a thesis advisor.

Before approving a transfer, the DGP will review the student's academic credentials to confirm that the student meets admission standards. Students wishing to transfer must be prepared to provide letters of recommendation from their home department. The student must agree to have the DGP office and the faculty advisor contact the home department for information on the student's academic or scientific performance.

Students beyond the first year may also apply to transfer to the DGP once they have secured a thesis home with a DGP faculty. The DGP does not provide funding for rotations or trial periods prior to transfer.

B. Second Year of Study

1. Course completion

During the second year of study in the DGP, students will complete any remaining courses to a total of nine units.

Second year DGP students must also complete the course on Responsible Conduct of Research (*DGP 494 Colloquium on Integrity in Biomedical Research)*. This is a zero credit course and does not count towards the 9 required units. It is offered in the Fall quarter.

2. Qualifying Examination

The DGP requires that all students seeking to enter PhD candidacy must pass a Qualifying Exam. Students with a GPA <3.0 at the end of the Winter quarter of Year 2 will not be allowed to take the Qualifying Exam and will be dismissed from the DGP. The DGP Qualifying Exam will occur in the spring of the second year and consist of (i) a written document that includes a comprehensive review of the present state of a student's chosen field of thesis research and one substantive proposed experimental aim that addresses a key outstanding question in the field and (ii) an oral defense. The question addressed must be distinct from the student's proposed thesis work. The proposed project must also be distinct from the work of others in the lab and must not be a component of any of the lab's current work or work described in a written proposal or discussed as part of the labs future directions. The proposed work should be well grounded in the published literature and not based on preliminary data generated by the student or in the student's lab.

To pass the exam, students must demonstrate:

1) A knowledge base suitable to the work they are proposing, including an intimate knowledge of their specific area of research as well as a working knowledge of their field as a whole.
2) An ability to formulate a testable hypothesis in an area of independent scholarship, outline a set of specific aims needed to test the hypothesis, and propose reasonable approaches to achieve those aims.

The exam format aims to focus the student's productivity and ensure the academic rigor of the exam. Students will immerse themselves in their chosen field of research and the literature of this field while demonstrating an ability to propose original scholarship. The format provides students a structured mechanism through which to gain a mastery of the literature of their chosen field of research precisely when it can have great potential to impact positively on their thesis research. Completion of the Qualifying Exam will facilitate timely completion of the thesis proposal, as the exam document will serve as an excellent basis for the thesis proposal itself. It is expected that in the thesis proposal, greater emphasis will be placed on the experimental approaches and less on background knowledge.

There are several important features of this format:

- The examining committee must strive to objectively evaluate the student's qualifications to enter PhD candidacy. Committees will assign a grade of Pass, Fail, or Incomplete to the student's performance (see below).

- The Exam Chairperson will be named by the DGP Director. The Exam Chairperson is charged with both coordinating the efforts of the committee in examining the student and writing the summary document.

The committee will utilize a standard form to report their evaluation of the student's performance. These documents serve as a valuable source of feedback for both the student and the advisor.

The proposal must be the work of the student. Naturally, many ideas contained in a proposal may have been formulated during interactions between the student and the advisor or other scientists, both from within and outside the lab. As a natural part of a student's lab experience, the scope, aims, and experimental approaches for a project may have been discussed. The student alone, however, must come up with the topic suggestions and write the proposal. Neither the faculty advisor nor any other individual (students, post-doctoral fellows, etc) should provide input on the suggested topics or edit the proposal prior to its submission. The student will affirm the originality of the document by placing the following passage on the cover page of their proposal:

"The work in this proposal represents the original work of (insert student's name) who received only general help in regard to the proposed aims and the overall preparation of the proposal."

A student will receive a grade of FAIL if it is determined that he or she did not follow these rules and obtained substantial help. Students with knowledge of such cheating should report violations to the DGP office.

Questions during the oral exam may be comprehensive in nature to allow the committee to ascertain whether the student has mastered the knowledge base required to conduct the proposed experiments and to understand the background and significance of the proposal. No outside help on preparing the presentation or preparing for potential questioning is permitted.

Overview of Qualifying Exam requirements and expectations

Committee: Committee members will be drawn from the DGP faculty at large, and each committee will consist of three members (not to include the student's advisor). Each participating faculty member will be asked to examine two to three students to provide a level of consistency across the entire class.

Approximately one month before submitting potential topics for the qualifying exam, students will submit to the DGP office a brief description of their intended thesis project. This information will

enable the DGP to form an examining committee with expertise on the student's specific field of research.

The student will later submit a document to the DGP office with a more extensive description of their thesis project, as well as a description of two proposed topics for the qualifying exam. The total document may be up to 1.5 pages. The submitted topics should be ordered by student preference. The committee will approve one topic and indicate the choice to the DGP office. If neither of the proposed topics are acceptable, the committee may choose one of the proposed topics and indicate a slight modification or suggestion to make it adequately different from the student's thesis work. If the student finds this acceptable, he/she may proceed. He/she may also choose not to accept the modified topic and will then be given an additional three days to resubmit new topics. The committee will choose one of these within 4 days, and the student will then be given a one week extension to complete the document.

Timeline: Each year, the precise calendar dates will be communicated in advance to students and faculty by the DGP office. Approximate dates are below.

March 1 – Student submits brief summary of thesis work to DGP
April 1 – Two topics and detailed description of thesis project (including abstract and specific aims) submitted to DGP and relayed to committees
April 7 - Approved topics reported to all students by DGP office
April 30 – Written documents submitted to DGP office and made available to committees; oral exam date is communicated to the DGP
May 15 to June 15 – Oral exams, 2 hours each, scheduled by student at convenience of committee members

Late submission of the document to the DGP office will place a student on probation and may result in failure of the exam. Students with extenuating circumstances that impact their ability to complete the exam are advised to notify the DGP office as soon as possible, preferably at the outset of the qualifying exam timeline (i.e. March 1). Accommodations to deadlines will be considered, but will be extremely rare.

Note that students must have scheduled their oral exam by the time they submit the final document. Students encountering extreme difficulties in scheduling must notify the DGP office. Failure to attend a scheduled oral exam will place a student on probation and may result in failure.

Written Document

A. Length requirements: The document shall not exceed 11 pages, single-spaced, including figures but excluding references. It is expected to describe approximately 2 years' worth of work. One of the 11 pages will be a Specific Aims page.

B. Abstract and Specific Aims: The Abstract should succinctly describe the general area of study, the main question(s) addressed in the experimental aim, the rationale behind the choice of this experimental approach, the approach, and the significance of the study. This page will also indicate the hypothesis and specific aims of the proposal.
C. Comprehensive review: This section of the document should constitute approximately one-third to one-half of the entire text of the document ($\leq$5 pages) and should be similar in depth and breadth to reviews published in *Trends in Genetics/Cell Biology* journals and to short reviews published in *Development*, *Cell*, or *Genes and Development*. The review should outline the present state of

knowledge in the field, preferably with some historical perspective for how the field arrived at this point, and identify key outstanding questions in the field.

Towards the end of this section, the student should focus the reader's attention around one key question (the one addressed in the proposed aim), and the student should put forward a hypothesis – an unproved statement – as a premise for the proposed experimental aim that addresses this question. In this section, the student should also detail the logic and rationale behind their choice of the question on which to focus (justification/significance). This discussion should reflect the context of the preceding points raised in the review and will thus serve to transition the reader's attention from the review section to the experimental section.

D. Experimental Aim Section: This section should be roughly one-half to two-thirds of the written document (≥6 pages). As noted, the detailed experiments should be organized around a clearly stated hypothesis. Although the precise format of this section can vary, students should discuss the rationale/logic behind each major aim or subaim (why are you doing this experiment? What do you hope to learn from it? Why is this important to know?), the experimental or methodological approach, expected/anticipated results, interpretations, conclusions and significance thereof, potential pitfalls, and alternative approaches. Students are encouraged to focus attention on developing a well-argued rationale for each aim and subaim, as this is an area often found lacking in NIH Predoctoral Fellowships. Please note that there should be no preliminary data from your lab or your own work.

Students are encouraged to create original figures that present models or summaries.

E. To ensure in-depth knowledge in the proposed field of research, students are required to read at least 50 of the most important papers in the field of interest as a necessary antecedent to writing the paper. When such papers are referenced within the text of the written document they should be explicitly identified as such in the bibliography section of the paper; when such papers are not referenced in the document (as may occur in some cases), they should be placed in a distinct reference list immediately following the bibliography.

Submission of the qualifying exam written document after the stated deadline may result in a Failure of the exam. Submitted documents that cannot be opened on DGP computers or do not meet the format instructions may also result in a Failure.

Once submitted, all qualifying exam documents will be analyzed by the DGP (using software available in Canvas or other sources) for plagiarism. Plagiarism from any source, either published or unpublished, is prohibited. This includes, but is not limited to, the work of other students in classes, qualifying exams, or thesis proposals. Students who submit documents that contain substantial plagiarism may be subject to a failure on the qualifying exam. In addition, any case of alleged plagiarism involving a student in DGP will be referred to the Associate Dean of Student Affairs at The Graduate School according to the policy at:
http://www.tgs.northwestern.edu/about/policies/academic-integrity.html

Oral Exam The total time for the oral exam is typically two to three hours. The student will prepare a presentation (20-25 minutes) that will generally follow the outline of the written document.

A. Introduction – focus audience's attention on the broad/general question(s) early in the talk.
B. Provide strong and polished overview of the present state of the field of interest while emphasizing significance/importance of this research.
C. Identify key questions in field and explain rationale behind focusing on a specific question.
D. State your thesis.

E. Explain your experimental approach, expected results, etc.

The Committee will very likely ask questions throughout the talk, or may save questions until the end. Questions will focus both on a student's knowledge of the general field of study as well as the specific experiments proposed.

Committee Conference: After questioning has concluded, the student will be asked to leave the room and the committee will confer in order to decide whether the student has demonstrated sufficient knowledge in the general area of research and of the proposed experiments.

Expectations

A. The document should be the best paper written to date in a student's academic career. It is also possible that in some cases the document can be converted into a short review article for a journal.

B. The questioning in the exam is expected to be rigorous because the area of study is the student's chosen field of thesis research and thus the student should be the expert in the room on the subject.

Evaluation of Performance

The DGP Qualifying Exam evaluation system allows the committee to provide detailed and direct feedback to the student and advisor. All comments will be summarized by the examination committee chairperson and provided to the student and the thesis advisor following the exam. A copy of this report will also be forwarded to the DGP Director. The evaluation, as recorded on the form, will address the criteria below.

Criteria for Grading the Written Examination

Comprehensive review

Is the background concise and relevant to the proposal?
Is the relevant literature reviewed and critically evaluated and are primary references (as opposed to review articles) cited where appropriate?
Is the proposed project technically and/or conceptually innovative?

Experimental Aim

Is there a clearly stated and acceptable hypothesis?
Do the proposed experiments adequately test the hypothesis?
Does each of the experiments have a rationale?
Are the proposed experiments feasible, properly controlled, and of reasonable scope?
Are the experiments prioritized and do they follow a logical progression?
Does the proposal predict all potential outcomes of the experiments and are alternative experimental approaches proposed when necessary?
Are the experiments merely descriptive or do they address mechanism?

Written Communication Skills

Is the proposal clearly written and carefully edited, and does it comply with the conventions of proposal writing?

Criteria for Grading the Oral Examination

General
Does the student possess a fund of knowledge, both specific and general, that would be expected of a graduate student who has completed the first two years of classes in the student's chosen field?
Is the student able to modify the proposal in light of criticisms and suggestions of the committee?

Comprehensive Review
Is the student familiar with and able to critically evaluate the pertinent literature?
Does the student have an appreciation of how the proposal relates to current state of the field?
Is there a convincing argument that the proposal is technically and/or conceptually innovative?

Experimental Aim
Is the student able to clearly state an acceptable hypothesis?
Is the student able to describe experiments that adequately test the hypothesis?
Does the student understand the rationale for each of the proposed experiments?
Does the student understand the technical aspects of the proposed experiments as well as their feasibility and scope?
Is the student able to design appropriate controls?
Is the student able to anticipate the outcomes of the experiments and design alternative experimental approaches when appropriate?

Oral Communication Skills
Is the student able to engage in a positive scientific discussion with the committee?
Is the student able to verbally express sophisticated scientific concepts?

Possible Qualifying Exam Outcomes
Based on both the written proposal and the oral defense of the written proposal, the qualifying exam committee will assign one of these three outcomes: pass, incomplete or fail.

• A grade of ***Pass*** means no additional work is required and indicates that the student has:
1) written and defended a proposal that meets the criteria described above;
2) mastered sufficient skills in experimental design, scientific writing, and public speaking such that further examination is not required;
3) demonstrated sufficient knowledge in both the narrow and broad fields of their research.

In this case, the committee will recommend that the student be admitted to candidacy.

• A grade of ***Incomplete*** is assigned when the examining committee feels a student has deficiencies that can be corrected by the student within a short period of time. Such deficiencies may lie within the written and/or oral sections of the exam. The committee may request resubmission of the written proposal, reexamination with an oral defense, or both. The committee will communicate to the student, through the exam chair, a set of clear instructions for correcting the identified problems. A time limit for completion of the corrections will be provided. Students are encouraged to talk with any or all members of the examining committee if there are any questions about the problems to be addressed. As with the first submission and oral defense, the student must work alone in correcting the written document or preparing for a second oral defense. Upon further evaluation, the Incomplete grade will be changed to either a Pass or a Fail.

• A grade of ***Fail*** is assigned when the examining committee feels the student does not demonstrate a minimum proficiency in the written proposal, oral defense, or both. This grade implies that the student cannot correct the identified deficiencies without extensive remedial training. By default, a student failing the Qualifying Exam will be subject to dismissal from the DGP for failure to maintain adequate progress toward the completion of the degree requirements. The student and their advisor may appeal to the DGP Program Committee for permission to remain in the program and retake the qualifying exam. If the student's advisor is not supportive of the student remaining in his or her lab, then the appeal cannot go forward. The appeal must be submitted within two weeks following notification of failure on the exam. The appeal should include identification of the critical deficiencies as well as a plan for correcting them. The Program Committee may accept or deny the appeal, taking into account the entirety of the student's academic and research record. If the appeal is granted, the Program Committee may dictate specific training activities to help correct deficiencies as part of their approval.

If there is no appeal, or if the Program Committee does not approve the appeal, the student will be asked to withdraw from the program. If the student does not withdraw, the DGP will undertake formal dismissal.

If a student's appeal is granted, the student must pass the Qualifying Exam outright (no Incomplete) on the second attempt. The Program Committee will determine whether the second exam document will be written on the student's other submitted topic, if that topic was approved by the committee. If the second topic was not approved, or if the Program Committee requires, the student will submit two new topics for approval. The examining committee for the second exam should consist of the original chair plus one original member, and a new member to be named by the DGP. In addition, the exam will be monitored by a member of the Program Committee. The Program Committee will determine the timeline for remedial training and retaking of the exam.

Failure of the exam on the second attempt will result in dismissal and no further appeal to DGP will be allowed.

If failure of the qualifying exam is due to either a determination of plagiarism, late submission, or improper submission of the written document, the student will be subject to dismissal from the DGP for failure to maintain adequate progress toward the completion of the degree requirements. The student and the advisor may appeal to the DGP Program Committee for permission to remain in the program and retake the qualifying exam as described above. If the appeal is granted, the Program Committee will determine whether the student will write a document based on the second topic or will be asked to submit new topics. As this is the first oral exam for the student, a grade of Incomplete will be allowed. Nevertheless, failure of the exam on the second attempt will result in dismissal and no further appeal to DGP will be allowed.

In cases in which the three exam committee members do not reach a unanimous decision on Pass or Fail, the committee members will submit their comments to the exam chair, who will then assemble a detailed final report indicating the votes and opinions of the committee members. The final decision on the outcome of the exam will be made by the DGP Program Committee, after reviewing the report from the committee. In such cases, the DGP will communicate to the student and advisor the decision, and will pass on the committee report. Students who are given a Pass without a unanimous exam committee vote will be encouraged, with input from their advisor, to develop a plan to address any deficiencies identified by the committee.

The examining committee will complete the DGP Qualifying Exam Final Report and submit it to the DGP office. Faculty will maintain confidentiality regarding the exam as required by FERPA regulations. Once the exam is complete, students are free to seek feedback on their written document from any source. The student and advisor are strongly encouraged to meet to discuss the exam and the report.

2. Formation of The Dissertation Committee

Students will typically enter a lab full time at the beginning of Summer quarter of their first year. During the Fall quarter of the second year, each student (in consultation with the advisor) should form a thesis committee consisting of four or five total faculty members (including the advisor). This committee will be instrumental in directing the thesis research over the next few years, and early interaction with the committee members will facilitate the development of a viable thesis project. Committee members should be chosen for their ability to help facilitate and evaluate the thesis research. The student will submit their thesis committee member request to the DGP Director for approval or modification. Any subsequent changes to the thesis committee (additions, deletions or replacements) must be approved by the DGP Director.

Two of the thesis committee members, including the Chair, must be on the Graduate Faculty. The committee must include faculty from more than one academic department. Inclusion of faculty from other institutions is encouraged but there are no funds available to pay for travel or lodging. Faculty members with research level appointments are eligible for membership on dissertation committees but cannot serve as Chair. At least two of the committee members (including the advisor) should be drawn from DGP faculty.

The thesis committee chair will be a committee member (not the advisor) chosen by the student after consultation with the advisor and with approval of the full committee. The chair will be chosen prior to the first committee meeting. Whenever possible, the chair should be a senior member of the DGP faculty. Primary duties of the Chair include 1) directing meetings of the committee and 2) writing a summary report of the meeting that is signed by the student and all committee members. A copy of this report is provided to the student and a copy is transmitted to the DGP office.

If a student changes labs after having passed the qualifying exam, he or she must form a thesis committee and present a thesis proposal within six months of joining the new lab.

C. Third Year of Study and Beyond

1. Admission to Doctoral Candidacy

Admission to the DGP and TGS does not constitute or guarantee a student's admission to candidacy for the PhD degree. Admission to candidacy is contingent upon the recommendation of the student's department or program and approval of the Graduate Faculty.

DGP students typically enter candidacy in the Fall quarter of their third year. Admission to candidacy requires completion of at least eight graded courses and passage of the Qualifying Exam. Following admission to candidacy, each student typically spends two or more years conducting research and writing and defending a thesis before earning the PhD.

2. Thesis Proposal

No later than the Fall quarter of the third year, each DGP student must submit a thesis proposal and give an oral presentation of their completed and proposed work to their thesis committee. The student and committee will meet for discussion, feedback and refinement of project aims. The thesis proposal will largely be in the format of an NIH NRSA grant application. It is expected that the Comprehensive Review from the Qualifying Exam will be useful in constructing the background section. The Results & Research Plan section, however, will be written to describe the student's actual thesis project. Preliminary data should be included.

Students are encouraged to complete the thesis proposal as soon as feasible. However, strict deadlines are:

- Committee names provided to DGP Office by **September 1**
- The student must schedule the thesis committee meeting by **September 1**, and communicate the date to the DGP office along with the committee members' names.
- The written proposal must be submitted to committee and to the DGP office no less that 2 weeks prior to meeting.
- Meetings must be completed by **December 1.**

Students who fail to hold the thesis proposal meeting by December 1 without permission from the DGP may be placed on probation. A deadline for completing the meeting will be established by the DGP. Failure to meet this deadline, or violations of other DGP policies, may result in dismissal.

This will be the first meeting of the thesis committee and does not constitute an exam. Nevertheless, the student will be expected to write a document and give an oral presentation of sufficient quality reflecting the stage of their graduate career. The committee may require resubmission of poorly written documents. Approval of the thesis proposal is required for continued progress towards the degree.

Proposal Format

Overall Page limit — 1+6	
Abstract and Specific Aims	1 page.
Background, Significance, Innovation, Preliminary Results & Research Plan (including integrated figures and figure legends)	6 pages
References	Not counted in 7 page limit

Page and Font Formatting

- Acceptable fonts include Arial, Garamond, Georgia, Helvetic, Palatino Linotype, Times New Roman, Verdana.
- Font size must be 11 points or larger (smaller text in figures, graphs, diagrams and charts is acceptable as long as it is legible when the page is viewed at 100%). Some PDF conversion software reduces font size. It is important to confirm that the final PDF document complies with the font requirements.
- Type density must be no more than 15 characters per linear inch (including characters and spaces).
- Line spacing must be no more than six lines per vertical inch.
- Text color must be black (color text in figures, graphs, diagrams, charts, tables, footnotes and headings is acceptable).
- Provide at least one-half inch margins (top, bottom, left, and right) for all pages.

Propose a focused set of experiments that are clearly linked to one another and comprise a carefully delineated set of goals. Be explicit—do not assume the reader understands your thoughts without a good written explanation. Once you decide on a topic, keep focused on the main question—do not take a global approach and try to answer everything about this topic in a short proposal. Be creative! The proposal must not exceed 7 pages (11 point font, 0.5" margins). The suggested format is:

Abstract

1/2 page - Describe the problem being addressed (WHAT), its significance (WHY) and your overall approach to achieve your goals (HOW).

Specific Aims

1/2 page - Describe your hypothesis and the specific goals and approaches you will take to achieve the goals. This section should delineate (usually as numbered statements) what SPECIFIC goals your proposed experiments will address. The reader should be able to get a clear sense of what you want to do by reading your "Specific Aims". This section is often described as the most important section in a research proposal. It is also useful here to tell the reader WHY the experiments are important to do.

Background, Significance, Innovation and Preliminary Results

1 - 2 pages - Provide sufficient background, in a clear, concise manner, so that the reader will not have to go off to the library to read the original papers. Try to envision someone else reading it that might not be familiar with the subject. Tell the reader what has been accomplished, what has not, and point out what is novel and technically and/or conceptually innovative. In doing so, set up the context of what needs to be accomplished in your particular area of interest. Provide supporting evidence (your own preliminary data) that led to the hypotheses and convincing information that suggests the approach is logical and likely to succeed. The preliminary data figures and figure legends must be integrated into the text. The figure legends can be of smaller font than the text of the proposal (10 pt).

Research Plan

4-5 pages - Describe the research plan to achieve each one of the specific aims. Clearly explain the "rationale" behind the experiments. Usually this section is written to follow, temporally, the individual Specific Aims. Be sure that the experiments proposed will unambiguously address the goals outlined in the Specific Aims. Do not describe the details of routine experimental approaches but rather the overall design. In cases where innovative technologies will be used, describe the plan in sufficient detail so that the reader can evaluate it. In addition to proposing ways to address the specific aims, propose alternate strategies in case the first line of experiments fails at an early stage. It is very important to give the reader some idea of anticipated results and how they will be interpreted. Give careful thought to and describe significant control experiments. A timetable and ordering of priorities is also a good thing to include. An appropriate rule of thumb is that all the proposed aims should be independent tests of the overarching hypothesis. Aims should be of sufficient independence that one does not rely on the outcome of another.

References

Cite key references for the background and research plan. Include the entire author list of each citation, full titles of papers, year of publication, journal, volume and inclusive pagination. Another appropriate rule of thumb is to cite original research articles and not reviews or textbooks.

3. Student seminar requirements

Developing oral presentation skills is an important component of graduate student progress. During their time at NU, DGP students must present:

a. One full (45-60 minute) seminar that is advertised and open to the entire school. These seminars typically occur as part of a departmental or program-related seminar series. The student's annual thesis committee meetings are often held in conjunction with the seminars.
b. Either a second full seminar **OR** three or more talks of shorter duration presented to a limited audience. These could include, but are not restricted to, short talks at national or international meetings, talks in interdepartmental groups based on specific research topics (CIGS, Virology Club, Epithelial Biology Club, etc), research groups in departments or divisions, etc.
c. A final, formal openly advertised seminar to publicly defend the thesis.

Failure to fulfill the seminar requirement may lead to probation by the DGP.

4. Teaching Responsibilities

Teaching is an important aspect of graduate training, as most scientists are likely to work in teaching environments throughout their professional lives. Students are required to serve as teaching assistants for at least one quarter during their studies. Teaching assignments may be in either undergraduate classes on the Evanston campus or in graduate classes on the Chicago campus. Assignments are made by the DGP Associate Director in consultation with course directors. Student preferences for teaching opportunities will be solicited and considered before assignments are made. The teaching assistantship usually occurs in the third year of study. Students who fail to satisfactorily complete the teaching assignment may be placed on probation by the DGP. The student will be given a new assignment by the DGP Director. A second failure to complete the teaching assignment may result in dismissal.

5. Annual thesis committee meetings

Following admission to candidacy, satisfactory progress in thesis research is monitored in several ways. Foremost, the advisor will meet with the student on a regular basis, and the student should present research progress in frequent lab meetings. Students should seek specific evaluation, feedback and direction from their advisors on a regular basis in order to monitor their own progress.

Students are required to meet at least once each year (within a 12 month period) with their dissertation committees. The student will distribute a brief (1-3 pages) summary of work progress and future plans to the committee at least one week in advance of the annual committee meeting. After each dissertation committee meeting, the committee chair summarizes the discussion and recommendations of the committee and secures the signatures of the committee members using the DGP annual committee meeting report form. This annual progress report is forwarded to the DGP office and kept in the student's file. Both student and advisor should also keep a copy of the report. The written meeting report will serve as the official programmatic acknowledgement and notification of adequate academic/research progress to the student, the advisor and TGS

Students and their advisors will review and update their Individual Development Plan (IDP) each year, and submit a copy to the DGP along with the annual committee report form.

Beginning in year three, in conjunction with the annual thesis committee meeting, students will schedule a time to meet privately with Pam Carpentier and Steve Anderson. These short annual meetings will provide students a confidential opportunity to discuss research, academic, professional or personal issues. They will also help the DGP collect important feedback on the thoughts and concerns of students.

Any student who does not hold a committee meeting in each 12 month period following the thesis proposal meeting will be subject to probation by the DGP. Permission to delay the meeting beyond the 12 month deadline requires permission from the DGP Director.

6. Refresher course in Responsible Conduct of Research

Students remaining in the DGP during a sixth year of study will be required to attend a refresher course in the Responsible Conduct of Research.

D. Failure to make adequate academic progress

Students who fail to make adequate progress at any stage are subject to dismissal.

1. Progress prior to qualifying exam and/or thesis proposal

Following the rotation period, students enter a thesis lab. As stated above, the lab head at this point becomes the student's primary advisor. Research advisors bear the main responsibility for monitoring the student's research progress and academic training, although adequate progress in course work (GPA at or above 3.0) during this period will be monitored by the Program Committee. Before the formation of a thesis committee, the advisor, perhaps with input from other lab members, will evaluate the student's progress in the lab. As most students are inexperienced at this point of their training, efforts should be made by the advisor to meet regularly with the student to clearly communicate all research expectations and to carefully monitor progress.

If an advisor determines that a student has failed to make adequate progress, the advisor should document specific failures in writing, meet in person with the student and communicate the necessary changes that will satisfy a determination of adequate progress. A copy of this document should be transmitted to the DGP. A reasonable time frame, such as three months, should be provided for the student to make corrections in their research progress. If after this period, the advisor determines that changes or progress are not adequate, the advisor will notify the DGP and meet with the student to inform him or her of the desire to dismiss the student from the lab. The DGP office will aid the student as much as possible in finding a new home. The student must secure a new lab home within three months or be subject to possible dismissal from the DGP.

If an advisor feels that a student who has been dismissed from the lab presents severe problems that will jeopardize completion of the PhD in any lab, he or she will communicate these concerns to the DGP. These concerns will be reviewed by the DGP Program Committee. The Program Committee may choose to dismiss the student from the DGP, or may allow the student an opportunity to secure a new thesis lab.

2. Progress following thesis proposal

It is the thesis committee's responsibility to evaluate a student's work and to report to the DGP whether or not the student is making appropriate progress towards completion of the PhD. In a case where the committee determines that a student is not making adequate progress appropriate for the stage of their graduate career, the committee will complete an evaluation report that indicates the specific deficiencies.

Following a committee meeting report that indicates a lack of progress toward completion of the degree, the advisor will inform DGP in writing of the problem and submit copies of other supporting documentation. Such documentation might include, but would not be limited to, written communication with the student outlining the problem areas, email correspondence between the advisor and student, notes of private or lab meetings at which the student was informed of problems with their work, or any other such materials that notify the student of problems in their performance and progress.

If such documentation does not exist, at this time the advisor should notify the student and the DGP in writing of any problems in their performance and progress.

The advisor will meet with the student's dissertation committee in the absence of the student to formulate a plan for improvement. This plan will be communicated to the student in writing and should include the scheduling of another committee meeting within three to six months The student may meet with the committee members in the absence of the advisor to learn firsthand the expectations of the committee. Importantly, such a meeting allows the student to articulate their view of the problems, some of which may be due to the advisor.

If at the next full meeting (within six months) the committee determines that the student has failed to make adequate progress, the committee will complete an evaluation report indicating the failure. The advisor will notify the DGP Director of his/her intent to dismiss the student from their laboratory. The DGP Director will make sure the appropriate documentation is in place and procedures have been followed. The advisor can then elect to dismiss the student from the laboratory without further obligation.

The DGP Director will advise the student on his/her options. A student who is dismissed from a lab for academic reasons may petition the DGP Program Committee for permission to seek a new thesis lab home. The Program Committee may choose to dismiss the student from the DGP, or may allow the student an opportunity to secure a new thesis lab. Where appropriate, the Program Committee may allow a student up to three months to find a new lab and thesis advisor. Failure to secure a new lab in that time frame will result in dismissal from the DGP.

The TGS policy on adequate academic progress and dismissal (exclusion) can be found at:
http://www.tgs.northwestern.edu/academics/academic-services/satisfactory/

3. Satisfactory academic progress after completing experimental research

A student who has completed all experimental research and is no longer working on the thesis project may in some cases depart the lab prior to completing all requirements. Typically, such students will be in the process of writing the dissertation. Before leaving the lab, the student must obtain "Permission to Write" from his or her thesis committee. The student will not be eligible for stipend or salary from the lab, and must remain registered in TGS 512 during Fall, Winter and Spring quarters. The student should remain in contact via email with the advisor and the DGP office to update progress on their work. The student must complete and defend the dissertation within two quarters (six months) of leaving the lab. If the student does not complete the thesis requirement by the six month deadline, he or she will be considered to not be making adequate academic progress and may therefore be placed on probation by the DGP for two quarters. If the student has not completed the requirements by the end of the probation period, he or she will be subject to dismissal from the program.

E. Probation

The DGP will place students on **probation** for various violations of program policies. These include:

Failure to obtain advisor approval for course selections during the first year
Failure to complete any required core class
Failure to maintain a minimum GPA of 3.0
Failure to adhere to deadlines for establishing and beginning a rotation
Failure to properly submit the qualifying exam document by the stated deadline
Failure to complete thesis proposal meeting by the stated deadline
Failure to fulfill the seminar requirement
Failure to adequately fulfill the teaching requirement
Failure to hold an annual thesis committee meeting

Any student who repeatedly engages in behavior that is contrary to the professional conduct described in the AAMC Compact, this handbook, or the Northwestern University Student Handbook, will be subject to probation by the DGP.

Dismissal from the DGP is a possible outcome, to be determined by the Program Committee, for any student who is repeatedly the subject of DGP probation.

A student whose overall grade average is below B (3.0 GPA) or who has more than three incomplete (Y or X) grades is not making satisfactory academic progress and will be placed on **academic probation** by the Graduate School. When a decision to place a student on probation is made by The Graduate School, the student will be notified in writing, along with the program's Director of Graduate Study, and will be given at most two quarters (not including summer quarter) to resume satisfactory academic standing. The Graduate School notifies students of probation status on a quarterly basis. Other issues that can result in academic probation by TGS can be found at: http://www.tgs.northwestern.edu/about/policies/satisfactory-academic-progress.html

F. Student Conduct Issues

1. Disruptive Behavior

As stated in the *Compact Between Biomedical Graduate Students and Their Research Advisors*, students are expected to maintain a high level of professionalism, self-motivation, engagement, scientific curiosity, safety and ethical standards. DGP students are also subject to the code of conduct detailed in the Northwestern University Student Handbook.

If student acts in a manner that disrupts normal lab function, the advisor should notify both the student and the DGP office in writing of the problem behavior and request a meeting of the student, advisor, and DGP representative(s) in order to identify ways to remedy the problem. If appropriate, support staff from another University office(s) can also be included in this meeting. If, after this meeting, the student does not correct the behavior in a timely manner, the advisor may notify the DGP Director in writing of the details of the continuing problems and submit a petition for permission to dismiss the student from the lab. The DGP Director will meet with the student, the advisor and any relevant parties to make a final determination on dismissal.

In the event that a student's behavior is more than simply disruptive, additional actions may be warranted. If a student is being abusive or threatening (in person or through written communications) or if a student acts in a violent manner towards people or property, the advisor will notify the DGP and may immediately temporarily exclude the student from the laboratory. Exclusion from the lab will remain in place pending further investigation and possible disciplinary action by the DGP, including permanent dismissal from the lab. The advisor and/or the DGP will also contact appropriate University officials, including the Behavioral Consultation Team, University Police and/or the Dean of Students Office, to investigate the behavior and help determine any appropriate sanctions to insure that the student's behavior does not further impact any members of the lab or broader community. As outlined in the Northwestern University Student Handbook, consequences for such behavior may include dismissal from the University.

A student who is dismissed from a lab for the behavior described above reasons may petition the DGP Program Committee for permission to seek a new thesis lab home. Upon reviewing the relevant information, the Program Committee may choose to dismiss the student from the DGP, or may allow the student an opportunity to secure a new thesis lab. When appropriate, the Program Committee may allow a student up to three months to find a new lab and thesis advisor. Failure to secure a new lab in that time frame will result in dismissal from the DGP.

Any faculty, students or staff who observe behavior that disrupts the university community should notify the Behavioral Consultation Team, the DGP office and/or TGS immediately. Cases in which a student's communications or actions suggest that the student may harm themselves or others will be referred to the Behavioral Consultation Team and/or Northwestern University Dean of Students Office.

2. Research Misconduct

All students are expected to adhere to the highest standards of ethical research. If a student's advisor makes a formal allegation of research misconduct against a student to the Office of Research Integrity, and if ORI determines that an Inquiry Committee will be formed to review the allegations, the student's advisor may dismiss the student from the lab. A student who is dismissed from a lab for misconduct allegations will be given up to three months to seek a new thesis advisor and lab home. Failure to secure a new lab in that time frame may result in dismissal from the DGP.

In the event that ORI finds that a student has engaged research misconduct, the student may be dismissed from the DGP. The student will also be subject to any sanctions determined by appropriate university officials.

G. Graduation Requirements:

1. Publications

The awarding of the PhD from the DGP requires the student to have published (or have in press) at least one first author, peer-reviewed, original research paper in the primary literature (i.e., not a review article) that contains substantial data stemming from the student's dissertation research.

A paper that is submitted and reviewed (but not published or in press) can fulfill the requirement if the reviewers' and editor's comments indicate that only minor editorial revisions (formatting, additional discussion, reference corrections, etc.) are needed before acceptance. A submitted paper that requires substantial changes (e.g., additional experiments or resolution of disagreement between the reviewer(s) and the authors concerning experimental interpretation) will not fulfill the requirement. The student and advisor will submit the reviews and editor's comments to the DGP office. Determination of whether the student has met the publication requirement with a paper needing minor revision will be at the discretion of the DGP Director.

A paper on which a student is a co-first author will not automatically fulfill the requirement. Co-first authorship **can** meet the publication requirement in many, if not most, cases. The policy will require that the student and advisor explain to the thesis committee the student's contribution to the paper. As with a sole author publication, the contribution should represent both a substantial amount of the work of the paper as well as a significant representation of the student's thesis. If the committee determines that the student's contribution meets the spirit of the requirement, they will petition to the DGP to allow the publication to meet the requirement.

If the student has not met any of the above conditions at the time of the dissertation defense, the student and advisor, with agreement of the thesis committee, can petition the DGP Director and DGP Program Committee to allow the student to graduate prior to completion of the requirement. The petition should provide a compelling explanation for why the body of work in the thesis has not been able to meet the publication requirement thus far, and specific plans for a successful publication. At a minimum, the student's manuscript should have been submitted and gone through at least one round of review in order for the thesis committee to comment on the likelihood of publication after revision. Manuscript reviews and author rebuttals should be included in the petition package. Unanimous

consent of thesis committee is preferred but not required to submit a petition. The thesis committee members should indicate their approval (or disapproval) to a petition by initialing the appropriate boxes on page 3 of the Thesis Defense form. Specific comments from the thesis committee may also be included in a petition package.

The petition package should be submitted via email to the DGP office. As the Program Committee will need to meet for discussions, any petition must be submitted at least four weeks before the PhD materials submission date published by TGS for each quarter. The DGP Program Committee expects that such exceptions will be granted only rarely.

A student with a paper under review who leaves the lab or university prior to completing the publication requirement will not officially graduate until all requirements are fulfilled.

2. Permission to write dissertation

The thesis committee will be responsible for determining when a student has met the research requirements necessary to submit a completed dissertation. This is a multistep process, as the committee meets at least once per year to monitor student progress and provide direction towards meeting research goals.

When a student and advisor determine that all or most of the experiments required of the thesis have been completed, the student will convene the thesis committee to request permission to write the dissertation. This is usually done within six months of the anticipated date of final completion.

The student will submit to the committee an outline of the proposed dissertation, including a list of the likely figures. At the meeting, the student will present a comprehensive overview of the research he/she has accomplished and plans to accomplish prior to graduating. Based on the dissertation outline and the oral summary, the thesis committee will determine whether the body of research is sufficient and consistent with a PhD degree or whether additional experiments are necessary. If additional work is required, the extent and nature of this work will be listed on the report form. In some situations, the remaining work may be judged to be so extensive or ill-defined that completion is not possible in the near future. The meeting will have three possible outcomes:

(i) **Approval** —the completed work is of sufficient quality and significance to support a PhD thesis. This option will be used when the student's body of work is essentially complete. Signed approval from the committee will then be provided at the end of the meeting.

(ii) **Conditional** —additional experimentation is necessary to complete a dissertation, but the student should be able to complete these experiments within the next six months. This option would be used when the student has already completed substantial and significant research but when a few experiments are required to bring the work to conclusion. Signed approval from the committee will be obtained after the additional work is completed or after the student provides an accounting of his/her attempts at completing the additional work and an explanation of why the additional work could not be completed. Committee approval at this stage may not require an additional meeting, although a follow-up meeting can be requested by any committee member prior to the student receiving signed approval.

(iii) **Incomplete (Reschedule)** —The student's graduate work remains incomplete and considerable progress is necessary before a dissertation can be written. The meeting should be rescheduled once substantial progress has been made.

If a student does not yet have a first author publication in press at the time the thesis committee grants permission to write the dissertation, a plan for completing the publication requirement before graduation must be included on the committee report form. The plan should include the likely date of

submission of the paper, and indicate what will be the student's expected participation in any revisions for resubmission.

Permission to Write may be revoked if new information is discovered after the "permission to write meeting" that was not known or available at the time of the meeting, but would change the outcome of the decision to grant permission to write.

3. Dissertation and final examination

The student will list the thesis committee members on the Final Exam Form in CAESAR. If any members have been added or have left the committee since the thesis proposal, approval must be obtained from the DGP Director.

Once the student's body of work is judged by the committee to be adequate for a PhD thesis and permission to write is granted, the student will complete the writing of the dissertation. Once the dissertation is finished, the student will convene the committee for the final defense.

Two of the thesis committee members, including the Chair, must be on the Graduate Faculty. The committee must include faculty from more than one academic department. Faculty members with research level appointments are eligible for membership on dissertation committees but cannot serve as Chair.

The student must provide a final version of the dissertation to his or her advisor with sufficient time for feedback and editing before the scheduled defense date. The advisor must approve the final version before it is submitted to the committee. The student must then provide the committee with the final version of the dissertation at least two weeks before the earliest possible defense date. Once the student provides the committee with a **final, completed** document, the committee will:

- Evaluate the thesis to determine if it is acceptable in style and content to proceed to defense
- Convene a private meeting with the student for a discussion of the research and the dissertation
- Determine whether the student should present their final seminar to the university community
- Submit their decisions to the DGP via the signed Approval of Dissertation and Defense form

This final committee meeting will consist primarily of a discussion of the written document and a discussion of the broad aspects of the student's work. Given that the student has presented the entirety of his or her work at the Permission to Write meeting, it is not be necessary for the student to give a presentation reviewing all the work.

Committee members should convey any desired revisions to the dissertation to the student in writing, and indicate an expected date for completion. If the dissertation requires more than minor corrections (typos, etc), the committee members should not sign the Approval form they are satisfied that the document is in the final form. Both minor and major revisions must be confirmed by at least one member of the committee (typically the student's advisor), and indicated by a signature on the Approval form before submission to the DGP.

The DGP Director will review the committee's decision. If all DGP requirements have been met, the Director will approve the student's graduation. However, the Director may delay the final approval if the publication requirement has not been fully met.

A final thesis seminar is also required for graduation but cannot be presented without permission from the thesis committee. Students should expect to make any corrections to the written document that are suggested by the Committee before the public seminar.

Scheduling the final examination and the seminar is the responsibility of the student and the members of the committee. The date of the examination should be early enough to allow the student sufficient time to meet the published deadlines for submitting the completed dissertation and all supporting materials to TGS.

All forms should be completed and returned to the DGP Associate Director prior to, or at the same time as, the dissertation is submitted.

4. TGS requirements

Every candidate for the PhD degree must present a dissertation that gives evidence of original and significant research.

The TGS Academic Calendar provides the final dates for submission to TGS of the documents required to entitle a student to receive the PhD degree in June, August, March or December. A student who wishes to submit a dissertation should contact their TGS Student Service Representative

Students pursuing the Ph.D. must also file the required documents. Below is the list of forms that need to be filed for the PhD degree prior to graduation. These forms should be submitted via TGS Forms in CAESAR (see the Forms for Current Graduate Students page).

Application for Degree
PhD Final Exam Form

Students are encouraged to complete these additional forms:

The Graduate School PhD Exit Survey
Survey of Earned Doctorates (SED)

Dissertations are submitted electronically to The Graduate School via ProQuest. For formatting instructions, the *Guidelines for Students* is available from the TGS web site http://www.tgs.northwestern.edu/about/policies/phd-degree-requirements.html#filling .
If the dissertation does not conform to these instructions, it will not be accepted by The Graduate School.

Once the dissertation is submitted, a Student Services Representative will review the formatting and confirm via email that the dissertation is acceptable or if changes need to be made.

5. TGS Dissertation Embargos and Acknowledgement Policy

Dissertation Embargos Policy: Doctoral dissertations may be embargoed upon request of the author and endorsement by the dissertation's director. For authors concerned with the publication issue, ProQuest and the University Library offer a number of embargo options to meet the needs.

Dissertation Editing Policy: All dissertators should consult with their advisors about appropriate forms of assistance before assistance is rendered. Dissertations should acknowledge assistance received in any of the following areas:

- Designing the research
- Executing the research
- Analyzing the data
- Interpreting the data/research
- Writing, proofing, or copyediting the manuscript

Failure to do so constitutes grounds for an academic integrity violation. This would normally be indicated in the acknowledgement section of the dissertation.

Related and Dual Degrees

A. Dual Degree Requirements

The DGP includes two dual degree programs leading to the PhD and Masters in Public Health (MPH) or the PhD and Masters of Science in Clinical Investigation (MSCI). Applications are accepted directly for the PhD-MPH program (L21PH) through the TGS on-line application. Applications for the PhD-MSCI (L22PH) are currently taken from DGP students during their first year. Students in these dual degree programs are required to complete only six PhD courses. Credit for two electives is given for masters level classes. All other PhD requirements (qualifying exam, thesis proposal, dissertation, etc.) must be completed in the same time frame as PhD-only students. Students in these programs should check with the MPH or MSCI administrators for full details on current masters requirements. Further information about these programs can be found at http://www.publichealth.northwestern.edu/ (MPH) and http://www.nucats.northwestern.edu/education-career-development/graduate-programs/master-of-science-in-clinical-investigation/ (MSCI).

It is important to remember that students in L21PH and L22PH are admitted to formal dual degree programs, with the full expectation that they will of complete both degrees. The PhD and MPH or MSCI are to be awarded simultaneously. Whereas a dual degree student who chooses not to complete the masters degree requirements will be allowed to continue in the DGP for completion of the PhD, any dual degree student who leaves the DGP before completing the PhD requirements will not be allowed to continue in the respective masters program. Students who complete the MPH or MSCI requirements will not be granted the MPH prior to completion of all PhD requirements. Graduation will be simultaneous for both degrees, even in cases where the MPH requirements are fulfilled in time for an earlier graduation date. Completion of the MPH or MSCI, however, may follow the awarding of the PhD. A student who withdraws from the dual degree program prior to completing the PhD requirements will not be allowed to continue with MPH or MSCI work, transfer to the MPH or MSCI programs, or receive the MPH or MSCI.

B. MSTP Requirements

Students who enter the DGP as part of the Medical Scientist Training Program (MSTP) are required to complete three PhD courses. All other PhD requirements (qualifying exam, thesis proposal, dissertation, teaching experience, etc) must be completed. MSTP students will complete their qualifying exam and teaching requirement in their first year of graduate study. They will complete the thesis proposal in the Fall quarter of their second year.

C. Masters of Science Degree

The Driskill Graduate Program (DGP) in Life Sciences provides a Masters of Science (MS) degree option for students in good standing who, due to special circumstances, are unable to complete the PhD program. It is appropriate to acknowledge the accomplishments of these students, and the awarding of a masters degree will have a tangible benefit to their future employment and career prospects. A student seeking this degree, in addition to having successfully completed all required courses and having passed the Qualifying Exam, must have:

1. completed the thesis proposal process successfully;
2. held at least one annual thesis committee meeting after the thesis proposal;
3. completed sufficient research towards their PhD to write a masters thesis.

Students who have not had a thesis committee meeting beyond their thesis proposal must convene their committee to present their research progress and request permission to petition for a masters degree.

Advanced students who are dismissed from their lab (see page 18-19) may either seek a new lab or petition for a masters, provided they meet the requirements above.

Any student considering this option must discuss the decision with their PhD advisor and members of their thesis committee before proceeding, as the masters committee will be drawn from members of the PhD committee.

Instructions

1. Petition

A student in good academic standing who wishes to obtain a terminal Masters degree will first submit a petition by email to the Director of the DGP. The petition must include:

- A brief explanation of why the student does not wish to continue in the PhD program.
- An outline of the research that will be included in the thesis.
- The names of at least two members of their current PhD thesis committee who will serve as the masters committee. In most cases these names will include the PhD advisor, indicating the advisor's approval of the process.

The email petition should be copied to the Masters thesis committee members.

The DGP Program Committee will consider both the nature of the circumstances and the quality of the research in determining whether the student will be allowed to write a thesis and continue to seek the MS degree. Permission to pursue the degree will be only granted to a student whose body of research will reasonably result in a masters thesis.

In the absence of financial support by their PhD advisor, a student seeking the masters degree may petition the DGP for a maximum of two months stipend support.

2. Graduate School Requirements

A student who receives permission to proceed from the DGP program Committee will use CAESAR to:

- Complete the Application for Degree Form, choosing the MS option.
- Complete the Maters Completion Form, listing their committee members and thesis title.

3. Thesis and Oral Defense

A student who is granted permission will submit a masters thesis to a committee comprised of at least two members of their original PhD thesis committee. A member of the DGP Program Committee will also read the thesis and participate in the oral defense. The thesis, approximately 25 to 50 pages, will include the following elements:

1. Abstract
2. Introduction with Background and Significance
3. Materials and Methods
4. Results
5. Discussion
6. References

The student must submit the thesis to the committee at least two weeks before a scheduled meeting in which the student will present their work and defend the thesis. The committee will then determine whether the written document and oral defense are sufficient to warrant the degree. Revisions to the document or additional meetings may be required. Upon notification by the committee that the student has submitted a suitable thesis and passed the oral defense, the DGP office will approve the Masters Completion form and notify the Graduate School. The MS will be awarded by TGS at the next graduation date.

Dual degree students (PhD-MPH, PhD-MSCI) who choose to leave the PhD will not be allowed to complete the corresponding masters degree portion of their dual degree but may petition for the general MS degree as detailed above.

Graduate School Policies

A. Transfer Credits

The Graduate School does not provide direct course credit for graduate level work completed at another institution. However, the DGP may reduce a student's required course load by a maximum of two courses based on suitable graduate courses. For consideration, such courses must have been taken within the last three years prior to enrollment at Northwestern, and a grade of B or better must have been earned. The student's Program Committee advisor will evaluate the student's graduate transcript and the syllabi from relevant courses in order to make a recommendation to the DGP Director. In addition, the syllabi will be reviewed by the relevant DGP course directors to determine equivalency to DGP classes. Upon approval by the DGP, the student may be allowed to opt out of a maximum of two classes, either core or elective classes. To meet the Graduate School's required number of letter-graded classes, the student will then be enrolled in DGP 499 Independent Study for a maximum of two units.

B. Registration

During the first eight quarters, students register for courses and/or DGP 590 Research to a total of 3 - 4 Units. All 590 Research registrations are taken on a P/NP basis rather than for a letter grade.

DGP students will typically fulfill all course requirements within the first two years. Students may continue to take required classes during year three with permission. Students may register for non-required course work in any year. **Students may not DROP registration for any class after the deadline set by the Northwestern University Registrar.**

After eight quarters, students will register for **TGS 500**. This is full time registration and continues until graduation if the student remains at Northwestern.

Any student not registered for TGS 500 or TGS 590 during a fall, winter, or spring quarter who is actively working towards degree completion must register for TGS. Per the continuous registration policy, all doctoral students must be registered at Northwestern University in each of the fall, winter and spring terms until all degree requirements have been completed, including dissertation submission to The Graduate School. Full-time registration is required for use of University facilities, access to the Student Health Service, and insurance coverage. Any alterations in the residency timeline can be managed through Leave of Absence requests.

C. Leaves of Absence

A DGP student who needs to interrupt his or her progress towards the degree may petition for a leave of absence. A leave of absence is defined as a temporary separation from the University for a minimum of one quarter and a maximum of one year. The Graduate School (TGS) provides three types of leave:

- **Personal Medical Leave of Absence (MLOA)**: For students who must temporarily interrupt progress toward the degree due to a personal physical or mental health need. Students apply to the Northwestern University Dean of Students for approval of the MLOA. Approval for MLOA will include some treatment expectations that will be individually tailored to meet each student's situation.

- **Family Medical Leave of Absence**: For students who must temporarily interrupt progress toward the degree to extend absence post-childbirth, care for a newborn, adopt a child, or care for a family member. Students apply to the DGP and TGS for approval of the family leave.

- **General Leave of Absence**: For students who elect to temporarily interrupt their progress toward degree for a non-medical and non-family care reason. Students apply to the DGP and TGS for approval of the general leave.

Note that Parental Accommodation is not considered a leave of absence. Students may wish to utilize a Leave of Absence in addition to (either before or after) a Parental Accommodation. Students who require medically necessary time away due to pregnancy or childbirth may request a Medical Leave of Absence. Students who wish to have additional time for the care of a child may request a Family Medical Leave of Absence.

Students should keep in mind that ongoing research projects require advanced planning and carry an expectation of steady progress. Communication between a student and advisor, both before and during a leave, will help minimize disruption of expected progress. A student who is considering applying for a leave of absence should discuss the leave with his or her research advisor at least 30 days before the anticipated start date. The student should also indicate, as accurately as possible, the anticipated date of return. This discussion will help the advisor make plans for changes in funding, continued progress of the project during an absence, required changes in personnel, etc.

For the MLOA, an application for reinstatement must be submitted to the Dean of Students office no later than six weeks before the beginning of the term in which the student wishes to return. Applications for reinstatement will NOT be considered after the deadline. For a family or general LOA, the student must petition for reinstatement by contacting TGS student services via email at least 6 weeks before the start of the quarter in which he or she plans to return.

For all three types of leave, the student must also notify the DGP and his or her advisor of the planned return at least six weeks prior to the expected return date. Students on leave are encouraged to keep in touch with their advisor on a regular basis, and to be responsive to communications from the DGP or the advisor.

A student who takes a leave of any length should be aware that the research project he or she is working on might be substantially changed by the time of the return. Return to the same project cannot be guaranteed. Moreover, a student who is absent for an extended period may not be able to return to the same lab, due to changes in funding, personnel, or other unforeseen events in the lab. Any student on leave for an extended period will be allowed to return to the DGP, and will receive financial support if he or she needs to transition to a new lab home. This process typically takes three months or less.
TGS policies can be found at:
http://www.tgs.northwestern.edu/about/policies/leaves-of-absence.html

D. Completion in Nine Years

TGS requires that all students successfully complete their Ph.D. within nine years of matriculation. Students who do not complete degree requirements by the established deadlines will not be considered in good academic standing, will be placed on probation, and will be subject to TGS 513 (advanced continuous registration). TGS registration policies and timeline can be found at:
http://www.tgs.northwestern.edu/about/policies/phd-degree-requirements.html - completion

E. English proficiency requirement

All international PhD students whose primary language is not English are required to fulfill The Graduate School's spoken English proficiency. Students may fulfill this requirement in one of 4 ways:

- **Score 26 or higher on the Speaking Section of the TOEFL iBT**. Students who score 26 (out of a possible 30) on this section of the TOEFL internet-based test fulfill the English proficiency requirement, and are not required to participate in English proficiency testing at Northwestern.
- **Score 65 or higher on the Versant English Test**. The Versant test is administered to all incoming international PhD and MFA students upon entering Northwestern. Those who score lower than 65 (out of a possible 80) are given the opportunity to re-take the test in a later quarter, and continue to participate in Versant testing roughly every 6 months until they have fulfilled the English proficiency requirement. Based on Versant score, certain students may be required to participate in services offered by Northwestern's English Language Programs. *Students who score 63 or 64 on two separate Versant tests will be considered to have fulfilled the English proficiency requirement.*
- **Score 50 or higher on the SPEAK test**. The SPEAK test is offered twice per year, and is available only by department request. Students who score 50 or higher (out of a possible 60) fulfill the English proficiency requirement.
- **Pass a teaching demonstration at the conclusion of LING 480**. Linguistics 480, The Language of Teaching and Teachers, is a course co-taught by faculty from Northwestern's English Language Programs and the Searle Center for Teaching Excellence. It allows students to work on improving their English proficiency while preparing them to be effective teachers and TA's. Students who demonstrate the required level of English proficiency during a teaching demonstration at the conclusion of the course fulfill the English proficiency requirement.

F. Appeals to TGS

A student who is dismissed from the DGP for any reason may appeal the decision to TGS. To appeal a program decision, students should submit a request in writing to the attention of the Director of Student Services within ten days of the date of the program's final written determination of dismissal to the student and include any supporting materials at that time. If no appeal is filed within the ten-day appeal period, the program's decision becomes final and not subject to appeal.

Appeals are reviewed by the Dean of TGS (or his/her designate), who may request additional information from, or a meeting with, the student and/or program before making a final decision. The Dean's decision will be made within 30 days of the submission and will be communicated in writing to both the student and the program. When resolution cannot be achieved within 30 days, students and programs will be informed in writing of the delay and the final disposition will be achieved as quickly as possible.

The Dean's decision is final in both program and TGS dismissals with the exception of academic dishonesty/misconduct findings, where the student has 10 days to appeal the Dean's decision to the Provost. This policy can be found at: http://www.tgs.northwestern.edu/about/policies/academic-integrity.html.

Vacation and Absence Policy

DGP students should consider their participation in their own training as a full time commitment. Each student must determine appropriate work habits (work hours during weekdays, weekends, nights; arrival time, departure time; meeting attendance, seminar attendance; etc) in consultation with their thesis advisor. The DGP recommends that each student be allowed two weeks of vacation time each year. Appropriate time on and around holidays should not be counted in these two weeks. Additional time away from the lab should be negotiated with the advisor.

In all cases, students should discuss with and get permission from their advisor for any absences from the lab well in advance of the absence. Students should notify their advisor in a timely manner when they cannot be in lab due to sickness or emergencies.

Student Council

A Student Council was formed in 2013 to give input and advice to the DGP on a regular basis and help set the agenda for student town hall meetings. Student representatives from years 1-6 will be nominated and elected. The student council will meet with the DGP administration twice per year in January and July. Student town hall meetings to which the entire DGP student body is invited are also held each year.

Financial Support

A. University Fellowships and Scholarship Regulations

Fellowships and scholarships are funded by general University appropriations, endowments, and other outside sources. All awards are based upon merit.

Students who receive fellowships or scholarships from Northwestern should be engaged in programs of study leading to the Ph.D. degree. Every fellow and scholar in The Graduate School must:

- register each quarter as a full-time graduate student, defined as registration for no fewer than three graduate-level course units or, if appropriate, for TGS 500;
- complete course registrations within the required period for minimum residency, which is the equivalent of eight quarters;
- maintain at least a B average each quarter;
- keep a record free of incomplete grades;
- inform The Graduate School of any other sources of University-based support, including research assistantships;
- refrain from remunerative work, unless a written request for a waiver is approved by The Graduate School after a thorough review of the circumstances; and
- adhere to all regulations as stipulated in the TGS Policy, Program and Course Catalog.

If any of these conditions is violated, financial support may be withdrawn by TGS or the DGP.

Fellows and scholars are not expected to teach or assist in laboratories in return for their awards, except when such duties are required of all doctoral students in the program. University support may be adjusted if a student receives an external award. A student who is offered both a University fellowship and an external award is expected to accept the outside support and should consult TGS before a decision is made.

B. Note on Tax Withholdings

Scholarship/fellowship payments for U.S. citizens, Permanent Residents, and U.S. tax residents are taxable but not subject to tax withholding unless a student specifically requests that taxes be withheld via federal and state W-4 forms. The payments may be considered taxable income and must be reported when filing U.S. federal and state tax returns. IRS publication 970 can assist in determining which portion of these payments is considered taxable income. Students that would like Payroll to withhold taxes must complete the Federal W-4 Employee's Withholding Allowance Certificate and IL W-4 Employee's Illinois Withholding Allowance Certificate forms by entering a specific dollar amount on line 6 for the federal W-4 and line 3 on the Illinois W-4.

Once a student adds the additional tax withholding, this extra withholding will continue on each payment they receive from the University until they submit new federal and state W-4s removing the additional amount. When a student later switches to an assistantship payment (GA, RA, TA) or any other type of employment income (prize, additional pay, etc.) where regular federal and state taxes are withheld, they will then be taxed on the payment for BOTH the normal tax withholding and the additional amount they entered on the W-4s. To avoid this, students must submit the federal and Illinois W-4 forms to the Payroll Office by the monthly payroll deadlines for the tax change to be effective for that month.

C. DGP Fellowships

DGP Fellowships support entering DGP students for the first 18 months of study and include tuition and stipend support as well as NU student health insurance and a one-time moving allowance.

D. Teaching Assistantships

The DGP supports a limited number of students as Teaching Assistants. Teaching Assistants are expected to conform to the same standards that apply to fellows and scholars as described above.

E. Research Assistantships

Support as research assistants is determined by individual faculty members. Faculty members may choose to adjust a research assistant's salary if the student has any other sources of support.

F. Travel Grants for Scientific Meetings

The DGP will provide a travel grant to all students in years 4 and beyond. This can be taken as a onetime $1000 grant, or two $500 grants for separate meetings. Eligible students must be first author on the abstract and must be presenting primarily their own work (oral or poster). Students can only receive $1000 total while at Northwestern.

Applications will consist of:

- Completed application form, listing the meeting, dates, abstract title, authors, oral or poster, and signatures of student and advisor
- Abstract
- Estimate of costs for meeting registration, travel, room, and incidentals.
- Copy of notice of acceptance to meeting or indication as to when the notification will arrive

The student should also provide a chartstring into which the DGP can deposit the funds.

Students applying for DGP grants should also apply for additional travel grants or awards from other Northwestern University sources. Non-competitive travel grants are available from TGS, and travel awards are available from the Robert H. Lurie Comprehensive Cancer Center (the Katten Muchin Rosenman Travel Scholarship Program, Center for Genetic Medicine Travel Fellowship Program, and Cancer Prevention and Control Travel Scholarship Program) and the Center for Reproductive Science. All students conducting relevant research are eligible for and encouraged to apply to these travel awards regardless of their application for a DGP travel award.

G. Driskill Research Awards

Driskill Scholar Award. Two students each year will each receive a $750 award to recognize outstanding research achievement. Nominees can be drawn from students currently in their 4th year (PhD) or 3rd year (MSTP) and beyond. Students must be active (not yet graduated) on the date of the award. Students are nominated by their faculty advisors.

Driskill Alumni Award. Two recent graduates will each receive a $750 award in recognition of their outstanding research achievements. Nominees can be drawn from students who graduated between March of the previous year and June of the current year. The criteria for DGP nomination are that the student published at least one first author, highly impactful and influential paper that largely formed the basis of the dissertation. Nominating letters should make reference to any additional commentary (News & Views, e.g.) that resulted from the paper. However, commentary is not a requirement. Alumni can be nominated by either their former faculty advisor or by any member of their thesis committee.

H. Bonus for individual fellowships

The DGP will provide a bonus to students who secure funding through an individual fellowship from outside Northwestern. The bonus will consist of a one-time payment of 10% of the first year's stipend. Eligible awards include, but may not be limited to, NSF Graduate Research Fellowship, NIH NRSA award, American Heart Association fellowship, American Cancer Society fellowships, HHMI International fellowship, and other similar individual fellowships.

The bonus will be added to the student's paycheck for the month in which the award is activated. Students must submit a Notice of Award to the DGP office.

Students who come to the DGP with an individual fellowship will receive the same bonus in September of their first year.

I. Student Loans

Student loan funds are available to help finance the cost of education. International students are not eligible for federal student loans. A student should consider loan funds as a supplementary resource rather than the primary means of financing an advanced degree. Detailed information regarding loans may be obtained by calling or writing:

Student Financial Services
555 Clark St.,1st Floor
Evanston, IL 60208
FAX (847)467-2451

http://www.tgs.northwestern.edu/funding/loans/

All applicants for loan funds must submit a Free Application for Federal Student Aid (FAFSA) form annually. This form is used by The Graduate School to determine a student's expected contribution to the cost of education and to monitor total indebtedness.

Federal regulations require that a loan recipient make satisfactory academic progress and be enrolled in a degree program at least half time, defined as two units per quarter, during any period of time covered by a loan.