

IBiS

**INTERDISCIPLINARY
BIOLOGICAL
SCIENCES
PROGRAM**

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Graduate Program Guide

Northwestern

The Interdisciplinary Biological Sciences (IBiS) Doctoral Program

The IBiS program - begun in 1993 - was a natural extension of increasing collaboration by research faculty in cellular, molecular, and structural biology and a number of related disciplines. The primary mission of the IBiS program is to encourage the development of our Ph.D. students as independent, creative research scientists and teachers.

The IBiS graduate program brings together basic and applied sciences faculty from Northwestern University's Judd A. and Marjorie Weinberg College of Arts and Sciences and the Robert R. McCormick School of Engineering and Applied Sciences. Participants in the IBiS program include faculty in Molecular Biosciences, Biomedical Engineering, Chemical and Biological Engineering, Chemistry, Neurobiology, Civil and Environmental Engineering, Engineering Sciences and Applied Mathematics, and Physics and Astronomy.

With approximately 60 preceptors in five academic departments on the Evanston campus, the IBiS program readily allows students to cross departmental and disciplinary boundaries in choosing courses and faculty research advisors. To provide even more flexible research opportunities for our PhD students, IBiS collaborates with our sister program, DGP, on Northwestern's Medical School campus to sponsor NULaBS. Under this umbrella, students can pursue coursework and laboratory rotations on either campus and take full advantage of the impressive array of resources available across all of Northwestern.

An important hallmark of the IBiS program is that our preceptors are deeply committed to helping students prepare for the career options that await them after the completion of the Ph.D. degree, such as further academic training, employment with a biotechnology or pharmaceutical company, teaching at the college level, scientific journalism, science policy and administration, or many other endeavors. As part of that preparation, IBiS co-sponsors BioOpportunities, BioSurvival Skills, and Pathway to the Professoriate, all aimed at preparing our graduates for successful careers.

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SECTION 1 – ALL STUDENTS: IBIS REQUIREMENTS FOR THE PH.D.

ALL STUDENTS

IBiS REQUIREMENTS FOR THE Ph.D.

Summary by Year

The [program requirements by quarter](#) can be found on the IBiS website.

- 1st year: First three quarters - six courses with grades, three rotations, seminars
End of spring quarter - selection of thesis advisor and admission to program,
summer quarter - rigor & reproducibility course
- 2nd year: Qualifying exam & admission to candidacy, ethics course, usually TA at least
one quarter and take at least one special topics course, research, seminars
- 3rd year: Usually TA at least one quarter and take at least one special topics course,
research
- 4th year+: Annual reviews, research, permission to write, final exam

IBiS Program Requirements

1. Academic:
 - 6 IBiS or comparable elective courses by the end of spring quarter of year 1. One of these courses must be IBiS 432 Statistics for Life Sciences, and at least 3 others need to be IBiS (or DGP) core courses (check the [current course offerings](#) online or from the IBiS office).
 - 2 years of seminar series, IBiS 462, in years 1 and 2 (Molecular Biosciences or Neurobiology seminar series)
 - 2 quarters of training courses, IBiS 421 & IBiS 423, in years 1 and 2
 - 2 quarters of special topics courses, IBiS 455, in years 2 and 3; B grade or better
2. Satisfactory performance (grade of B or better) in each of three different laboratory rotations (IBiS 499)
3. Thesis advisor agreement with an IBiS preceptor by the end of the third quarter
4. Successful completion of qualifying examination before the end of the second year
5. Satisfactory performance in teaching assignments (varies with total graduate student enrollment and course needs; minimum two)
6. Annual reviews
7. Acceptance of at least one first-author data paper by the time of defense
8. Approval of dissertation
9. Successful completion of final examination
10. Seminar presentation of research

Miscellaneous IBiS Requirements

- A. Research group seminars
- B. IBiS retreat (attendance required in years 1 through 4)
- C. IBiS symposia
- D. Special interest group seminars (e.g. Molecular Biology Club, Biophysics Club)
- E. IBiS recruitment

SECTION 1 – ALL STUDENTS: IBIS REQUIREMENTS FOR THE PH.D.

The Graduate School Requirements

1. Successful completion of at least 9 graded courses. A “B” average must be maintained in these courses
2. Completion of 8 quarters of residency consecutively over two years:
 - 3 quarters at 3 units per quarter including IBIS 499 during your rotations (e.g. 2 classes and 1 rotation, at 1 unit each)
 - 5 quarters of IBIS 590 at 3 units per quarter once you have joined a lab in summer of year 1
3. Once the requirements above are met, registration for TGS 500 until the completion of your Ph.D. Time to degree limited to nine years from initial registration.
4. Approval of qualifying exam and prospectus
5. Annual reviews to be completed by summer quarter of each year
6. Dissertation according to TGS standards
7. Successful completion of final examination
8. Passing score on the TOEFL IBT, Versant, or SPEAK by all students with bachelor’s degrees from non-English-language institutions
9. Registration every quarter including summer in order to receive a stipend

Please refer to The Graduate School website for further details about [PhD requirements](#).

If you have any questions, please ask the IBiS office.

SECTION 2 – ALL STUDENTS: MSTP/IBIS REQUIREMENTS FOR THE PH.D.

MSTP/IBiS REQUIREMENTS FOR THE Ph.D.

The requirements for MSTP/IBiS PhD students are very similar to those of the non-MSTP/IBiS PhD students. MSTP students should refer to Section 1 of the Program Guide for IBiS program requirements. The items on the list below address specific requirement differences of an MSTP/IBiS (MD/PhD) student. The [program requirements by quarter](#) can be found on the IBiS website.

IBiS Program Requirements

- Academic:
 - 3 IBiS or comparable elective courses by the end of spring quarter of year 1. One of these courses must be IBIS 432 Statistics for Life Sciences, and at least 1 other needs to be an IBiS (or DGP) core course (check the [current course offerings](#) online or from the IBiS office).
 - Ethics in Biological Research (IBIS 423) and Rigor & Reproducibility in Research (IBIS 421) in year 1
- Plan to take the qualifying exam in spring of year 1.
- Satisfactory performance in teaching assignments (varies with total graduate student enrollment and course needs; minimum one)

The Graduate School Requirements

1. Successful completion of at least 3 graded courses
2. Completion of 8 quarters of TGS residency consecutively: 8 quarters of IBIS 590 at 3 units per quarter

If you have any questions, please ask the IBiS office.

SECTION 3 – ALL STUDENTS: COURSES & TRAINING

IBiS COURSES AND TRAINING

Graduate Advisory Committee

Upon your arrival at Northwestern, you will be assigned a faculty advisor. Your advisor will help you to decide what classes you will take during your first year and will support you in the important task of choosing your rotation and thesis supervisors. Your advisor must approve all electives that you choose to take. The IBiS office will schedule three formal meetings between you and your advisor during your first year, prior to the start of each quarter. You should also feel free to consult your advisor as the need arises during the course of the year. It is of particular importance that you contact your advisor if you are experiencing problems with any of your courses or with a rotation.

The graduate advisory committee is also responsible for assigning your qualifying exam and thesis committees, and for ensuring that you have annual meetings with your thesis committee.

Courses

Please refer to the IBiS website for [current course offerings](#).

All first-year students must take a combination of IBiS core courses and elective classes. The courses described below are graduate-level courses that provide a broad foundation of life science research. All students are required to take at least four and up to six of the IBiS (or DGP) core courses. Students are required to earn a grade of B or better in each of the courses, and to complete the selected courses by the end of the first academic year. Any variation from these requirements, or others described below, requires the approval of the graduate advisory committee. Refer to the IBiS website for [registration requirements](#).

Courses are subject to change each quarter, and up-to-date information can be found in [CAESAR](#) prior to each quarter. Additional classes either on the Evanston campus or Chicago campus may be appropriate as electives.

IBiS CORE COURSES

IBIS 401 Molecular Biophysics

Protein structure; nucleic acids structure; forces that determine macromolecular structure; transport and diffusion; macromolecular assemblies; molecular machines and single molecule studies; x-ray crystallography; electron microscopy and image reconstruction; nuclear magnetic resonance; spectroscopy

IBIS 402 Eukaryotic Molecular Biology

Genome structure and regulation; transcription and its control, RNA processing, and translational regulation; DNA replication and its control; genome rearrangements; developmental control of gene expression; molecular analysis of disease

SECTION 3 – ALL STUDENTS: COURSES & TRAINING

IBIS 403 The Human Proteome: Defining Variation and Modifications of Protein Molecules

The focus of the class is on the Human Genome and mass spectrometry-based proteomics. *Not offered in 2017-18*

IBIS 404 Principles and Methods in Systems Biology

Systems biologists use mathematical-based experimental analysis and modeling to study biological problems. They do this to better understand the nature of systems-based mechanisms that control development, physiology, biochemistry, and behavior. Quantitative techniques and computational tools help investigators analyze heterogeneous complex data about molecular networks to uncover meaningful relationships about key components. These studies inspire a framework for understanding the activity of living states. Related principles about dynamic biological systems are the focus of the systems biology course.

IBIS 406 Cell Biology

This course is intended to provide IBIS students with detailed knowledge of selected areas of modern eukaryotic cell biology through analysis of scientific literature and in-depth background research. Students will investigate current hot topics in eukaryotic cell biology, including the methods and reagents used in cell biology research, and will critically evaluate primary data from recent scientific publications. Students are expected to think judiciously about cell biology research and confidently present their ideas in both oral and written form.

IBIS 407 Genetics & Epigenetics

Exploration of the classic and contemporary scientific literature on genetic and epigenetic control of phenotype, genetic analysis, genetic interactions, genetic model systems and genetic experiments. The focus of the course will be on learning to think about genetic data and to design genetic experiments and screens to answer biological questions.

IBIS 410 Quantitative Biology

Quantitative approach to molecular and cell biology, focused on developing an understanding of connections between biomolecule structure and dynamics, and behavior of cells. The course will also include review of topics from statistics of random variables and statistical data analysis relevant to biology and biophysics.

IBIS 432 Statistics for Life Sciences

Statistics course with emphasis on the application of statistical methods and data analysis techniques to the life sciences. Topics include descriptive statistics, normal distribution, random variables, sampling distribution, confidence intervals, hypothesis tests, p-values and multiple correction, linear regression, model selection, diagnostics, logistic regression, contingency tables, resampling, clustering, dimension reduction, and genomics data analysis.

ELECTIVE COURSES

Students can tailor their curriculum to their specific interests by substituting up to two of the IBiS core courses with electives from Biological Sciences, Chemistry, Chemical & Biological Engineering, or other departments. These courses should be 300-level or 400-level courses. All electives must be approved by the faculty advisor of the graduate advisory committee.

SECTION 3 – ALL STUDENTS: COURSES & TRAINING

SEMINARS

Departmental Seminar

Students must register for the departmental seminar, IBIS 462, each quarter, excluding summer, during their first two years. All students are required to attend the Molecular Biosciences departmental seminar (Thursdays at 12:30pm) or the Neurobiology departmental seminar (Tuesdays at 12:45pm).

Informal Seminar Programs

In addition to the formal seminar series, numerous informal seminar programs are offered within the University. These include special departmental seminars, symposia, laboratory group meetings, various journal clubs, and meetings of special interest groups, such as the Molecular Biology Club and the Biophysics Club. Participation in such activities is considered an important part of graduate training in IBiS.

SPECIAL TOPICS COURSES

Special topics courses are offered regularly for small groups of graduate students. The teaching faculty and topics change during each academic quarter. Each student takes a total of two special topics courses in the 2nd and/or 3rd years.

TRAINING COURSES

All students are required to take IBIS 421 Rigor & Reproducibility in Research and IBIS 423 Ethics in Biological Research in their first and second years, respectively.

Proficiency

The IBiS Program requires that all students demonstrate a basic proficiency in all areas of modern biology. This requirement is satisfied by successful completion of all the required graduate coursework with grades of B or better. In some circumstances, the graduate advisory committee, in consultation with the student, may require an individual student to take or teach additional courses. Students are expected to read widely in the primary literature related to their area of research.

International students who did not complete their undergraduate education in an institution in which the language of instruction was English must demonstrate English proficiency before being able to serve as teaching assistants. Students need a score of 26 or more on the speaking portion of the TOEFL internet-based test, a score of 65 or more on the Versant English test, or a score of at least 50 on the SPEAK test. Students with scores below these thresholds may be enrolled in [Integrated Academic Skills](#), and will need to retake the exam. The IBiS program will not subsidize the cost of any English-language exams.

SECTION 3 – ALL STUDENTS: COURSES & TRAINING

Academic Integrity

Both the University and the IBiS graduate program take academic integrity very seriously. Cases of suspected academic dishonesty, including suspected plagiarism, will be referred directly to The Graduate School for follow-up, and may result in expulsion from the IBiS program. Among the most important goals of graduate education are maintaining an environment of academic integrity and instilling in students a lifelong commitment to the academic honesty that is fundamental to good scholarship. Standards of academic honesty are violated whenever a student engages in any action that jeopardizes the integrity of scholarly work. Such actions include, without limitation, cheating in the classroom or on examinations, including PhD qualifying examinations; the intentional and deliberate misuse of data in order to draw conclusions that may not be warranted by the evidence; fabrication of data; omission or concealment of conflicting data for the purpose of misleading other scholars; use of another's words, ideas or creative productions without citation in either the text or in footnotes; paraphrasing or summarizing another's material in such a way as to misrepresent the author's intentions; and use of privileged material or unpublished work without permission. For more information please refer to [The Graduate School website](#).

SECTION 4 – FIRST-YEAR STUDENTS: ORIENTATION

FIRST-YEAR STUDENTS

ORIENTATION

Typically, first-year students are expected to be available on the Evanston campus on September 1st. The first weeks at Northwestern University will include a number of orientation activities. The schedule of the activities is available from the IBiS office and changes from year to year. First-year students should plan to participate in the orientation activities listed below and are encouraged to participate in additional orientation events at Northwestern.

General Schedule

- Orientation meeting held on first day
- IBiS scientific retreat held off campus
- Appointment with the Life Sciences business office to fill out required paperwork
- The Graduate School new student orientation
- New international student orientation
- Lab safety training
- Conversations with faculty about fall quarter rotations
- Appointment with IBiS academic advisor
- Formalizing fall quarter research rotation agreements
- Registration for courses

Selection of Fall Quarter Courses and Lab Rotations

During the beginning of September, you will meet with a member of the graduate advisory committee to determine your coursework and to discuss rotation choices. During this same time period, you should meet with faculty to discuss rotations. You must have met with each of your rotation advisor choices and discussed your interest in rotating in their labs.

Submit four rotation choices ranked in order of preference to the IBiS office by the deadline. The program will then match students to one of their four choices. Every effort will be made to give students their first or second choices, but this may not always be possible. Submit the signed "[Independent Research Advisor Agreement](#)" to the IBiS office.

SECTION 5 – FIRST-YEAR STUDENTS: REGISTRATION

REGISTRATION

Courses usually carry one unit of credit except for research, which may earn 1-4 units of credit. Full-time registration consists of either three or four units per quarter.

See the [current program requirements](#) on the IBiS website for further details.

Typical Profile, Year 1

YEAR 1- FALL QUARTER:

IBIS 499-0 Independent study (1st laboratory rotation); **1 credit** – minimum grade: B
IBIS 462-0 Seminar in Biological Sciences (Molecular Biosciences or Neurobiology seminar series); **0 credits** – Satisfactory/Unsatisfactory

2 additional courses

IBiS core course(s) offered in fall; **1 credit** – minimum grade: B; see [current course offerings](#) and/or **related elective(s)** (requires graduate advisor approval); **1 credit** – minimum grade: B

YEAR 1- WINTER QUARTER:

IBIS 499-0 Independent study (2nd laboratory rotation); **1 credit** – minimum grade: B
IBIS 462-0 Seminar in Biological Sciences (Molecular Biosciences or Neurobiology seminar series); **0 credits** – Satisfactory/Unsatisfactory

2 additional courses

IBiS core course(s) offered in winter; **1 credit** – minimum grade: B; and/or **related elective(s)** (requires graduate advisor approval); **1 credit** – minimum grade: B

YEAR 1- SPRING QUARTER:

IBIS 499-0 Independent study (3rd laboratory rotation); **1 credit** – minimum grade: B
IBIS 462-0 Seminar in Biological Sciences (Molecular Biosciences or Neurobiology seminar series); **0 credits** – Satisfactory/Unsatisfactory

IBIS 432-0 Statistics for Life Sciences; **1 credit** – minimum grade: B

1 additional course

IBiS core course offered in spring; **1 credit** – minimum grade: B; or **related elective** (requires graduate advisor approval); **1 credit** – minimum grade: B

YEAR 1- SUMMER QUARTER:

YOU MUST REGISTER EVERY SUMMER IN ORDER TO RECEIVE YOUR STIPEND

IBIS 421-0 Rigor & Reproducibility in Research; **0 credits** – Satisfactory/Unsatisfactory
IBIS 590-0 Research; **3 credits** – Pass/No Pass

SECTION 5 – FIRST-YEAR STUDENTS: REGISTRATION

Online Registration

All new students must register by the deadline communicated by the IBiS office or they may not be paid correctly.

1. Go to <https://www.caesar.northwestern.edu/>

If you have any login/access problems, please contact registration tech help at (847) 491-HELP (they can walk you through registering online), and if you have course questions, contact the IBiS office at (847) 491-4301.

2. Clear any holds

Holds are indicated once you log in to CAESAR. You are responsible for clearing any holds before attempting to register. You will not be able to register with a hold on your student account. To clear a financial hold, please consult with the Life Sciences Financial Services office.

3. Obtain permission from the department offering the course for any restricted courses

Permission can be obtained from the appropriate department. Obtaining permission before attempting to register will facilitate the process.

SECTION 6 – FIRST-YEAR STUDENTS: ROTATIONS

RESEARCH ROTATIONS

Each student conducts independent research in three different laboratories prior to selection of a thesis advisor. This research complements the formal coursework taken during the first year and exposes the student to different research programs within IBiS. Research rotations also provide the faculty with an opportunity to evaluate the investigative performance and research potential of each student. The evaluations of each student are a major factor in the decision concerning their formal admission to the IBiS program in June of the first academic year.

The most important function of the research rotation is to aid students and faculty in establishing mutually agreeable student/thesis advisor partnerships. The faculty member and student discuss available research projects in the lab and decide on a rotation project. Rotation projects generally do not form the basis for a thesis project, but provide valuable hands-on laboratory experience. By participating in the daily routine of the laboratory, students are able to judge how comfortable they feel in that laboratory environment. Meanwhile, faculty members use several criteria to judge whether a student will prove to be an asset to their laboratory. Among these are:

1. **Commitment.** Scientific research is not a 9-to-5 job. Projects often require students to work in the evenings and on weekends.
2. **Execution and documentation of experiments.** A research career depends on the clear and reliable execution of experiments that are often complicated. These experiments have to be fully documented in protocols and lab books.
3. **Interest.** A hallmark of independent investigators is that they are motivated by curiosity, driven by the “need to know.” Students are encouraged to seek out published information relating to their projects and to think critically about how their project relates to the overall scientific enterprise.
4. **Maturity.** Scientific research depends on effective communication among laboratory workers. Common sense, cooperation, and courtesy are essential qualities for the proper functioning of a research laboratory.

Selection of Winter and Spring Quarter Rotations

The arrangements for independent research other than the fall quarter rotations are made directly between the student and the faculty member. The graduate advisory committee can help students in this important task. The obligation of approaching individual faculty members lies with the student. Each faculty member may accommodate one student in the fall and winter quarters, and may accommodate more than one student during spring quarter. Each faculty member will accept the student for independent research on the basis of direct discussions with the student. Students should approach as many faculty members as is necessary to select a rotation advisor. In the winter and spring quarters, research rotations outside IBiS (with faculty in the DGP) may also be arranged and should be coordinated with the student’s academic advisor.

SECTION 6 – FIRST-YEAR STUDENTS: ROTATIONS

Arrangements for independent research advisors for the winter and spring quarters must be made by the last day of classes of fall and winter quarters, respectively. **No formal commitments can be made prior to two weeks before the end of fall and winter quarters.** Agreements made prior to this two-week period are not binding for either the student or the preceptor. The completed “[Independent Research Advisor Agreement](#)” should be submitted to the IBiS office by the deadline to formalize the agreement.

Students can gather information necessary to select independent research advisors in the following ways:

1. Discussion with individual faculty members. Discussions with the faculty are essential in selecting an advisor. This is an opportunity to discuss in some depth the research projects available in the laboratory. Students should meet with all faculty members whose research programs are of possible interest to them. Such meetings do not constitute a formal agreement, and the student should therefore meet with multiple faculty members each quarter.

2. Reading the literature. A great deal can be learned about the research being pursued in each laboratory by reading recent papers describing that research. Reprints and preprints of recent manuscripts can be obtained online or from individual faculty members; the faculty member may also provide a short list of other recent research papers and review articles of particular interest.

3. “Brown Bag” lunch talks. These short seminars are presented by IBiS preceptors and provide an excellent forum for students to get to know the program faculty and learn about the many exciting areas of research represented in IBiS. These seminars are also intended to help students identify laboratories in which they would like to rotate. **First-year students are expected to attend these seminars.**

4. Discussion with graduate students and postdoctoral fellows. First-year graduate students can learn a great deal from the students and post-docs at more advanced levels in the program. They are usually eager to talk about their research and their experiences. The IBiS Student Organization conducts a graduate student seminar series wherein members describe their research accomplishments and goals to fellow students; this is an excellent source of information about individual research projects and the general laboratory environment.

5. Annual IBiS retreat. The annual IBiS retreat is held off campus. Students are introduced to faculty and their research programs in short seminars and through informal discussions. Graduate students and postdoctoral research fellows also participate in this retreat, and are a valuable source of information for incoming students.

6. Research group seminars. Most laboratories hold regular group meetings. You may want to inquire about attending the meetings of a laboratory in which you may wish to rotate during a future quarter. Some research groups also participate in joint research seminars, such as the Molecular Biology Club and the Biophysics Club, which provide excellent opportunities to gather information.

SECTION 6 – FIRST-YEAR STUDENTS: ROTATIONS

Rotation Reports

The research advisor assigns a letter grade based on the student's investigative performance during the quarter. Part of this grade is the evaluation of a written research report submitted by the student at the end of the quarter. The written research report along with the research advisor's critique of the report will be placed in the student's file and will contribute to the evaluation of the student for admission to the IBiS program. The research report (single spaced) should be composed according to the following guidelines:

- a. Title page. The title of the research project and the student's name should be printed on a separate cover page.
- b. Specific aims. Provide a clear, concise point-by-point summary of the aims of the research project. Do not exceed one-half page.
- c. Background and Significance. Briefly sketch the background of the research project. Indicate how this project relates to the long-term objective of the advisor's research. Include relevant references. Do not exceed two pages (not including references).
- d. Experimental Design and Methods. Describe the procedures and biological materials used in the project. Clearly indicate the contributions of others currently involved in the project. Do not exceed two pages.
- e. Results. Describe the results of all experiments. Use tables and figures to present data; include figure legends.
- f. Conclusions/discussion. Discuss interpretation of results, significance of findings, problems and limitations of the procedures used, and future research directions. Do not exceed two pages.
- g. References. List all references cited in the text, including all authors and the full title of the publication. Use the reference format of the journal *Cell*.

Research rotation reports are to be turned in to the advisor and a copy submitted to the IBiS office no later than the last day of exams for each quarter.

SECTION 6 – FIRST-YEAR STUDENTS: ROTATIONS

Selection of a Thesis Advisor

The selection of a thesis advisor is the responsibility of the student and is mandatory for formal admission to the IBiS program. It is expected that each student will have made the arrangements necessary for designation of the thesis advisor by the last day of classes for spring quarter. No formal commitments can be made prior to two weeks before the end of the quarter. Agreements made prior to this two-week period are not binding for either the student or the preceptor.

Selection of a thesis advisor does not strictly require prior rotation in the preceptor's laboratory. Likewise, a research rotation in a particular laboratory does not constitute a commitment on the part of either the student or the research advisor concerning a permanent thesis laboratory assignment. Any student is free to approach any IBiS faculty member concerning thesis advisor agreements.

Students are encouraged to inform more than one faculty member of an interest in conducting thesis research in their laboratory; however, a single commitment must be initiated by returning a signed [thesis advisor agreement](#) to the IBiS program office. Final approval for all arrangements rests with the IBiS program director and the chairperson of the department in which the selected thesis advisor holds his or her primary appointment, and is not formalized until the student is granted admission to the second year of the IBiS program. The same type of information described previously for research rotations also applies to the selection of an advisor. Remember that one-on-one discussions with the faculty are extremely important. Students are encouraged to explore all laboratories in the IBiS program in which they might like to perform independent thesis research.

In exceptional circumstances, a student who is in good standing may be granted permission by the graduate advisory committee to pursue a fourth rotation during the summer of the first year. This requires the permission of the fourth rotation advisor and does not represent a formal commitment for a thesis advisor agreement.

SECTION 7 – FIRST-YEAR STUDENTS: ADMISSION TO THE PROGRAM

ADMISSION TO THE IBiS PROGRAM

Formal admission to IBiS is not granted until the student has adequately demonstrated scientific potential based on performance in coursework and effectiveness in independent research, and secured a thesis advisor. Decisions concerning formal admission to the doctoral program are made in June of the first year. The faculty evaluates each student's accomplishments during the first year. Minimal requirements for admission include six courses completed with grades of B or better, and the completion of three quarters of independent research (laboratory rotations) with grades of B or better. The grades for the rotations will be based on the student's investigative performance. Each student's effectiveness in independent research will be judged on the basis of the evaluations by the first-year research advisors. The material evaluated in considering formal admission will include the research advisor's critique of the research report and each research advisor's comments on the student's potential in the graduate program.

Students will be notified in writing during June of the first academic year of the decision concerning their formal admission to the doctoral program. Arrangements regarding thesis research are not considered final until the student is formally admitted to the IBiS doctoral program.

SECTION 8 – SECOND-YEAR STUDENTS: THE QUALIFYING EXAM

SECOND-YEAR STUDENTS

THE QUALIFYING EXAMINATION

Before the end of spring quarter of the second year, each student should complete the Ph.D. qualifying examination, which consists of a written thesis research proposal and an oral exam.

Qualifying Exam Committee Membership

At the end of winter quarter of the second year, the chairperson of the graduate advisory committee determines the membership of each student's committee. The qualifying examination is administered by a faculty committee consisting of a chairperson, two members, and the advisor as an observer. At least three members of the qualifying exam committee, including the chairperson, must be IBiS faculty and also members of the Northwestern Graduate Faculty. The committee chairperson must be someone other than the student's advisor. This qualifying exam committee will normally continue as the thesis committee to monitor the student's progress at formal annual reviews. A student and their advisor may request changes to the thesis committee from the chairperson of the graduate advisory committee.

The Written Proposal

The written proposal should be submitted to the members of the qualifying examination committee at least two weeks before the oral examination.

Research proposals follow guidelines similar to those of an NIH pre-doctoral fellowship application. The proposal should be typed, single-spaced, on standard-size (8½" x 11") paper with one-inch side, top and bottom margins and a font size not smaller than 12. Sections **c.** through **e.** should not exceed 15 pages. Be sure to reference all sections appropriately. Good proposals are clear, precise, and succinct.

- a. Title Page.** The title of the proposal and the student's name should be printed on a separate cover page.
- b. Summary.** The summary should be a brief synopsis of the proposed research. It should include a statement of specific aims and objectives, the scientific background of the proposal, the methods or procedures to be used, and the potential significance of the research. Limit to one-half page.
- c. Specific Aims.** Provide a clear, concise point-by-point summary of the aims of the work proposed in the form of hypotheses to be tested. Limit to one page.
- d. Background and Significance.** Sketch the background of the present proposal, critically evaluate existing knowledge, and specifically identify the gaps which the project is intended to fill. State the importance of the research described in this proposal by relating the specific aims to longer-term objectives. (approximately six pages)

SECTION 8 – SECOND-YEAR STUDENTS: THE QUALIFYING EXAM

e. Experimental Design and Methods. Discuss in detail the experimental design and the procedures to be used to accomplish the specific aims of the project. Describe the protocols to be used and provide a tentative sequence or timetable for the investigation. Include the means by which the data will be analyzed and interpreted. Describe any new methodology and its advantage over existing methodologies. Discuss potential difficulties and limitations of the proposed procedures and alternative approaches to achieve the aims. (approximately eight pages)

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

g. Appendix. If it is necessary, enclose diagrams or figures not included in the main text that might be helpful to the reviewers of the proposal. Limit the number of such items to six.

The Oral Examination

The oral exam consists of a thesis presentation to the exam committee and discussion in response to questions from the committee. Details of the format of the oral examination are at the discretion of the committee chairperson. **Each student should consult with the committee chairperson one month before their exam to establish the expectations for the exam.** The student typically prepares a 45-minute slide presentation of the thesis proposal. The entire exam normally lasts about two hours. The oral examination focuses on the thesis research proposal as well as basic aspects of modern biology. The student is expected to demonstrate proficiency in topics covered in the IBiS core courses and departmental seminars.

Making arrangements for the oral examination is the responsibility of the student. The student should contact exam committee members and identify a suitable exam date, and reserve a room and a projector, if needed. All members of the qualifying exam committee must be physically present for the qualifying exam and may not participate remotely. Once the exam date has been determined, the student should:

- 1) Access the PhD Prospectus form (this can be found under TGS Forms in CAESAR) and add the requested information.
- 2) Complete the appropriate sections of the "[Report of the Committee Conducting the Qualifying Examination](#)," and bring the form to the qualifying examination.

SECTION 8 – SECOND-YEAR STUDENTS: THE QUALIFYING EXAM

Evaluation Guidelines

The qualifying examination committee will evaluate the student in three areas: written proposal, preliminary data and oral presentation. The qualifying exam must be focused. At the same time, the student should include sufficient preliminary data to convince the committee that the aims can be achieved over the next four years.

General guidelines

- **Written thesis deadline:** two weeks prior to exam
- **The project is focused.** Have clearly defined hypotheses, specific aims and experiments that test the hypotheses.
- **Present the literature.** Understand the background and details of the area of study.
- **Explore the problem** thoroughly rather than providing superficial details.
- **Present as much specific preliminary data as possible.** The committee needs to be convinced that enough preliminary work has been done, and that the proposed project can be accomplished in 4 years.

Written proposal should contain

- clear hypotheses
- specific aims and an explanation of why they matter
- specific experiments that test hypotheses using positive and negative controls
- expected outcomes
- alternative directions, different approaches
- timeline

Preliminary data

- experimental data with controls
- If preliminary data are unavailable, consult with the graduate advisory committee chairperson *before* the exam on how to proceed.

Oral Presentation

- typically a 45-minute slide presentation to the committee
- Discuss the details and expectations of the exam committee with the chairperson as the presentation is prepared.

Discussion and questions

- Be prepared to defend the proposal and the preliminary data, and to demonstrate understanding of the background and details of the subject area.
- Alternative approaches or experiments should be considered.

SECTION 8 – SECOND-YEAR STUDENTS: THE QUALIFYING EXAM

Outcome of the Exam

The committee must evaluate performance in coursework and rotations, as well as research accomplishments during the first year of thesis research, in addition to the written research proposal and performance in the oral examination.

Advancement to candidacy

Students must demonstrate satisfactory performance in all categories, and pass the qualifying exam, in order to be admitted to candidacy and remain in the program.

At the end of the exam, the committee chairperson will discuss the student's performance with them, inform them of the outcome, and whether there are any conditions to be fulfilled. The "[Report of the Committee Conducting the Qualifying Examination](#)" must be signed by each of the committee members and returned, completed, to the IBiS office. A copy of the final proposal must also be provided to the IBiS office. In addition, the chairperson will provide a brief, confidential, summary of the discussion of the student's performance to the advisory committee chairperson.

After the student has successfully completed the qualifying exam, the IBiS program will formally recommend the student to The Graduate School for admission to candidacy for the Ph.D.

Failure to advance to candidacy & the master's degree

Students whose performance in each of the four qualifying exam categories (advanced understanding of biology, teaching skills, research aptitude, and research accomplishment) is judged insufficient for advancement to candidacy but sufficient to merit consideration for a terminal master's degree may petition the program director for permission to write and defend a master's thesis. If the petition is granted, the thesis proposal must be rewritten in the format of a master's thesis and defended before a master's degree exam committee, which is generally reconstituted from the qualifying exam committee. The awarding of a terminal master's degree by IBiS should reflect significant achievement by the degree recipient. A terminal master's degree will be awarded by The Graduate School upon recommendation by the program director acting on the advice of the chairperson of the graduate advisory committee and the master's degree exam committee.

Students whose performance was not satisfactory in any one of the categories mentioned above are normally not eligible for a master's degree, and are dismissed from the program. For example, a student who has demonstrated a good understanding of biology, but who did not perform satisfactory research during their first year is not eligible for a master's degree.

A summary of minimal requirements for the master's degree is available from the IBiS office.

SECTION 9 – SECOND-YEAR STUDENTS: OTHER REQUIREMENTS

OTHER REQUIREMENTS

Selection of Research Clusters

Once students have identified a dissertation laboratory, they will also choose cross-campus [research clusters](#) in which to participate in order to facilitate collaboration and depth of training in their area of specialization. These clusters serve as foci for training activities (e.g. symposia, poster sessions, journal clubs) and specialized coursework, and bring together students and faculty with common research interests from across Northwestern.

Individual Development Plan

Students should complete the [IDP](#) (with their advisor) in fall quarter of their second year, and update it prior to each annual review. The IDP is designed to foster communication in a variety of areas to ensure that the student and advisor are discussing short- and long-term training goals, and that the student is receiving comprehensive guidance on how best to achieve these goals and make efficient progress towards earning their degree. Both research and training goals should be discussed, as well as the level of effort and commitment necessary to meet these goals. Training goals are expected to evolve over time.

Bioethics Course

All students are required to take a bioethics course in their second year. The skills learned in bioethics must be refreshed every four years.

Teaching Responsibilities

Many students will eventually pursue a career that involves both research and teaching. Experience as a teacher is therefore a valuable part of the IBiS graduate program. Participation in teaching is profitable for the student because it provides further expertise in the subject material of the course and enhances the student's verbal communication skills. Each student will participate in the teaching program beginning in the second year, regardless of the method of support of the student. The IBiS program currently requires two quarters of teaching for the Ph.D. degree, although the requirement may vary with total graduate student enrollment. Teaching assignments require that the student work with the course instructor to organize and conduct quiz, discussion, and/or laboratory sections for one quarter. Teaching assignments are arranged by the director of undergraduate laboratories. The TA requirements are usually met in year 2 and/or year 3.

SECTION 10 – UPPER-LEVEL STUDENTS: ANNUAL REVIEWS

UPPER-LEVEL STUDENTS

ANNUAL REVIEWS

After a student has passed the qualifying examination in the spring quarter of year 2, the same committee will meet with the student annually until the student graduates. The meetings provide an opportunity for the student to discuss his or her work with scientists from outside the student's laboratory. They serve to assess the student's progress towards the Ph.D. degree, but are not intended to be examinations.

Annual review meetings should be held in the fall quarter of each academic year.

Students are responsible for scheduling the annual meetings with their committee. The [annual review forms](#) must be signed by all committee members. A copy of the annual review form will be kept in each student's program file. The student's Individual Development Plan should also be updated at this time.

SECTION 11 – UPPER-LEVEL STUDENTS: DISSERTATION & FINAL EXAM

DISSERTATION AND FINAL EXAMINATION

The advisor, the student, and the thesis committee together determine the appropriate time to write and submit the dissertation. Each student must complete an original research study and produce a dissertation that is acceptable to the final examination committee. Doctoral research usually begins in the summer quarter of the first academic year and continues uninterrupted until all the requirements for the Ph.D. degree have been met, and a satisfactory dissertation has been completed.

Requirements for the Ph.D. Degree

All requirements for the Ph.D. degree must be met within nine years of initial registration in the doctoral program. A comprehensive list of the requirements can be found in sections 1 and 2 of the program guide. Also, please refer to the [graduation checklist](#) on the IBiS website for important procedural steps and required forms.

The IBiS program expects students to have authored multiple publications over the course of their degree and requires at least one first-author data paper that must be accepted by the time of defense. Two co-first author publications are equivalent to one first author publication. If a student's thesis examination committee feels that an exception to this policy is warranted at the time of the "permission to write" meeting, the committee may make an appeal to the director to make this exception.

Final Examination Committee

The final examination committee is usually the same as the qualifying exam committee. Changes to the membership can be made with the approval of the chairperson of the graduate advisory committee. The same rules apply to the composition of the final exam and qualifying exam committees (see section 8 for details). In addition, just as with the qualifying exam, all members of the committee must be physically present for both the "permission to write" meeting and final exam and may not participate remotely.

Permission to Write Meeting

Approximately three to six months before the expected final examination date, the student will schedule a "permission to write" meeting with the examination committee. At least two weeks prior to the meeting, the student will submit an outline for a dissertation to all committee members. The outline should include the dissertation title and provide a detailed breakdown of each chapter.

At the "permission to write" meeting, the student will discuss the experimental results and defend the conclusions to be described in the dissertation. The committee will determine whether additional experiments or substantial alterations to the proposed dissertation outline are required prior to scheduling the final exam. Where appropriate, contingencies regarding the outcomes of requested experiments should be agreed upon during this meeting and indicated on the "[Permission to Write](#)" form. At the conclusion of the meeting, the form should be signed by all committee members and then submitted to the IBiS office.

Once permission to write has been granted, the student may begin to write the dissertation and schedule the date of the final examination.

SECTION 11 – UPPER-LEVEL STUDENTS: DISSERTATION & FINAL EXAM

Final Examination

Two weeks prior to the final exam, the student will present the committee with the written dissertation. A complete [guide to the writing of the dissertation](#) is available from The Graduate School and should be consulted for stylistic requirements. It is expected that the dissertation will be in a fully edited and corrected form. The student's advisor must have read and approved the dissertation prior to its submission to the committee.

The final exam will include a discussion of the experimental results that have been completed since permission to write was granted, and an evaluation of the dissertation as a whole. The specific format of the final exam may differ for each student. It is therefore recommended that the student meet with the committee chairperson beforehand to discuss any additional expectations for the exam. If the committee judges the dissertation to be satisfactory, the dissertation can be approved at this meeting, although final corrections, revisions, or editing may be requested. The committee's decision is recorded on the "[Committee Report on Examination of Candidate for the Degree of Doctor of Philosophy](#)" form. Possible outcomes are an unqualified pass, a conditional pass requiring no re-examination, a mandatory re-examination, or a failure to pass the exam. At the conclusion of the exam, the completed form must be signed by each committee member and returned to the IBiS program office.

Dissertation Submission

If the student receives an unqualified pass on the final exam, the student and the student's advisor must carefully proofread the dissertation. If a conditional pass is granted, all conditions must also be addressed and approved by the committee. Once proofread, both the student and the advisor must sign the "[Certificate of Careful Editing](#)" and submit it to the IBiS office. At this point, the dissertation may be submitted to The Graduate School.

The Graduate School has additional [requirements for doctoral degree completion](#). Please note that the IBiS "Committee Report..." form replaces the TGS Final Exam form. However, the student must:

- 1) complete and submit the Application for a Degree form through CAESAR.
- 2) submit the dissertation via ProQuest. The dissertation must conform to all TGS formatting standards. Note that it is possible to delay the publication of the dissertation for 6 months, 1 year, or 2 years. This is a useful option if the dissertation contains sensitive data that will be included in patents or peer-reviewed journals in the near future.

Public Seminar

Once the student has received a pass, a public seminar can be scheduled in consultation with the committee. This is a formal seminar presented to the IBiS program members and invited guests. The seminar must be arranged through the IBiS office, and will typically take place on Fridays at 3:00 p.m. The program staff will assist in advertising the public presentation. It is recommended that the arrangements be made at least 14 days prior to the presentation.

SECTION 11 – UPPER-LEVEL STUDENTS: DISSERTATION & FINAL EXAM

Exit Interview

After the student has passed their final exam and before they leave Northwestern, they should schedule an exit interview with the IBiS office.

Petitions and Appeals

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

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

SECTION 12 – CAREER & PROFESSIONAL DEVELOPMENT PROGRAMS

CAREER AND PROFESSIONAL DEVELOPMENT PROGRAMS

The IBiS program is committed to providing its graduate students with the tools they need to embark on rewarding science careers after completing their training. To that end, IBiS, in conjunction with other life sciences programs, has developed a comprehensive set of career and professional development programs for life scientist trainees, called BioProfessionals. Additional programming and resources are available through the Searle Center for Advancing Learning & Teaching, The Graduate School, and Northwestern Career Advancement.

BioProfessionals

To foster the career development of graduate students training in the life sciences at Northwestern University, the IBiS Graduate Program co-sponsors [BioProfessionals](#), which includes BioSurvival Skills, BioOpportunities, and Pathway to the Professoriate.

BioSurvival Skills are a series of workshops on topics such as presentation skills, grant and CV writing, and job hunting. The workshops take place quarterly, on both campuses. The BioOpportunities program regularly invites alumni and other professionals to talk about the diversity of careers available to the PhD student. These talks take place quarterly on alternating campuses. Pathway to the Professoriate touches on issues important for successful academic careers including lab management, startup package negotiations, and the tenure-track process. These conversations take place monthly.

Searle Center for Advancing Learning & Teaching

The [Searle Center for Advancing Learning & Teaching](#) is a valuable resource for students interested in improving their teaching skills in preparation for an academic career. IBiS supports teaching development opportunities for advanced graduate students in collaboration with the Searle Center and the Program in Biological Sciences by opening course sections for students to co-teach, such as a biology-related Freshman Seminar or BIOL SCI 164 Genetics and Evolution. Since the IBiS Program is only able to guarantee a few teaching spots each year, students need to [apply to IBiS](#) for these opportunities.

The Graduate School

The Graduate School's [professional development](#) program is a collaborative effort with faculty and staff across campus to offer a comprehensive series of events that contribute to the professional development of graduate students.

Northwestern Career Advancement

[Northwestern Career Advancement](#) (NCA) provides comprehensive career services to all life sciences graduate students considering non-academic as well as academic careers. Career counselors assist students with career decision-making by helping them explore and re-clarify interests, values, and skills through one-on-one counseling meetings and career assessments.

SECTION 13 – RESEARCH CENTERS & TRAINING PROGRAMS

RESEARCH CENTERS AND TRAINING PROGRAMS

Centers

IBiS faculty members participate in many research centers at Northwestern University. These centers provide additional training opportunities for IBiS students through conferences, symposia, and workshops. The list below includes some of the centers with which our faculty and students are currently involved.

CENTER FOR CELL AND DEVELOPMENTAL SYSTEMS BIOLOGY

Richard Carthew, Director

The goal of the [Center for Cell and Developmental Systems Biology](#) is to provide the ability for Center labs to embark on new directions for research, and provide the organizational and material support to make those visions a reality. In addition, the Center provides support for collaborations between labs within CDSB, with their colleagues at Northwestern University, with their counterparts in the region, and around the world. Its mission is to make the fundamental new discoveries that expand knowledge and provide the basis for medical therapies in this new century.

CENTER FOR REPRODUCTIVE SCIENCE

Teresa Woodruff, Director

Established in 1987 in recognition of Northwestern's strength in reproductive biology, the [Center for Reproductive Science](#) (CRS) is an interdisciplinary collaboration of medical and science scholars at the forefront of reproductive research, medicine, and technology. The Center's mission is to enhance and enable research in reproductive science and medicine across disciplines, to apply state-of-the-art research and technologies to human reproductive health, and to train the next generation of research, clinical, and thought leaders in our field. The center works closely with students pursuing the Ph.D. degree in any of Northwestern's three Life Sciences graduate programs (IBiS, DGP, and NUIN).

CENTER FOR STRUCTURAL BIOLOGY

Alfonso Mondragón, Director

The mission of the [Center for Structural Biology](#) is to foster leading-edge research in this exciting interdisciplinary field. Center researchers carry out fundamental studies on the structures, dynamics, actions, and interactions of important biological macromolecules. The Center's research space fosters collaborative and interdisciplinary research through open, interconnected laboratories and shared space for instrumentation. Center researchers have access to state of the art major instrumentation, including a 600 MHz NMR facility and a beamline for macromolecular crystallography at the Advanced Photon Source (at nearby Argonne National Laboratory), which is the most powerful X-ray source in the world.

SECTION 13 – RESEARCH CENTERS & TRAINING PROGRAMS

ROBERT H. LURIE CANCER CENTER

Kathleen Green, Associate Director for Basic Sciences Research

The [Robert H. Lurie Comprehensive Cancer Center](#) is a National Cancer Institute-designated Center with programs in basic and clinical sciences. The IBiS faculty participate in the four basic science programs of tumor invasion, metastasis and angiogenesis; signal transduction in cancer; cancer cell biology; and cancer and physical sciences. Through its grants program, the Center funds research projects, the purchase of equipment, and graduate student travel to national meetings.

The Center also supports the operations of shared facilities for transgenic mice, two-dimensional gel electrophoresis, oligonucleotide synthesis, histology, cell imaging, tissue culture supplies, and DNA and protein sequence analysis. Another important function of the Center is education. The Center hosts two annual symposia, one on basic science and one on clinical oncology, which bring scientists from around the world to speak at Northwestern. In addition, Cancer Center laboratories present their work at a yearly poster session.

CHICAGO REGION PHYSICAL SCIENCES-ONCOLOGY CENTER

Thomas O'Halloran, Principal Investigator

Using non-traditional, physical sciences-based approaches to better understand the molecular changes leading to cancer, the [Chicago Region Physical Sciences-Oncology Center](#) represents a new strategy in the quest to overcome one of mankind's leading killers. Animated by a mission that emphasizes discovery, innovation, multi-disciplinary collaboration, and education, the Center seeks both to generate new bodies of knowledge and to train the next generation of researchers working at the intersection of the physical sciences and cancer biology. The CR-PSOC receives its funding from the National Cancer Institute and is the product of a partnership between the Robert H. Lurie Comprehensive Cancer Center and the Chemistry of Life Processes Institute.

Training Programs

Contact the Director of Training Grant Support at The Graduate School for the latest information on training grants. Recent training grants that have supported IBiS students include:

- Cellular and Molecular Basis of Disease Training Program
- Biotechnology Predoctoral Training Program
- Chemistry of Life Processes Predoctoral Training Program
- Molecular Biophysics Training Program
- Carcinogenesis Training Program
- Training Program in Oncogenesis and Developmental Biology
- Training Grant in Circadian and Sleep Research
- Collaborative Learning and Integrated Mentoring in the Biosciences (CLIMB)
- Medical Scientist Training Program (MD/PhD Program)

SECTION 14 – GENERAL PROGRAM INFORMATION

GENERAL PROGRAM INFORMATION

IBiS Program Office

The IBiS program office will assist you during your graduate education. Contact the office for any curricular or registration questions. Financial questions regarding payroll, paycheck, registration holds, etc., are best directed to the financial assistant(s) of your department. The Molecular Biosciences and Neurobiology departments' financial office is Life Sciences Financial Services (LSFS). The Chemistry, ChBE, and BME departments have their own financial assistants. If you are unsure where to go for help, come to the IBiS program office.

The IBiS program office should receive originals of any academic paperwork (rotation agreements, thesis advisor agreement, annual reviews, etc.) to be put into your file. You should inform the office of any academic changes (lab, thesis committee members, etc.) While you are a student, please make sure that the IBiS program office has your current contact information. Every quarter, the IBiS program office distributes the latest NU contact information. When you graduate, stay in touch, providing us with your most recent contact information, so we can add you to our alumni database.

Financial Information

1. The stipend for 2017-18 is \$31,716 for 12 months.
2. IBiS stipend and tuition support for first-year students is for 9 months, September 1-May 31. Further support is contingent upon formal admission to the IBiS program.
3. The payday is the last working day of every month. Pay statements are available in myHR Self Service two days prior to each paycheck date. You can access [Self Service](#) through Human Resources from both work and home. To view your direct deposit statement, log in to Self Service and click the "Pay" link.
4. Questions regarding your pay can be addressed to the financial assistant of your department. For the Molecular Biosciences and Neurobiology departments, inquiries can be made of the Life Sciences Financial Services staff in room 2-150 Hogan during regular business hours (8:30 a.m. - 5:00 p.m.)

SECTION 14 – GENERAL PROGRAM INFORMATION

Health and Dental Insurance Benefit Overview

Northwestern University requires all full-time students to maintain health insurance that meets the University's standards. This requirement is designed to protect students from extraordinary medical expenses that could result from an injury or illness. For those students who do not have minimally acceptable health insurance through an outside source, the University has currently contracted with the Aetna Student Health insurance plan.

All students must enroll in this plan or indicate they have equivalent health insurance through another source.

The Graduate School pays the health insurance premium for the student plan offered by Northwestern University in full. IBiS graduate students may also be reimbursed for [dental plans offered through Delta](#). The Graduate School and the IBiS program do not subsidize any other insurance plan premiums.

IBiS is not responsible for your enrollment in an insurance plan or your premium payment. You are responsible for ensuring you are properly enrolled in a health and dental insurance plan and paying any premiums in a timely manner.

Detailed information regarding Northwestern's health program through Aetna can be found on the [Aetna website](#). You will also find insurance information for TGS students on the [Student Health Insurance](#) website.

GRADUATING OR DEPARTING STUDENTS

Students enrolled in the NU health plan, who are graduating or leaving the University at the end of a term and wish to cancel their enrollment in the plan, must complete and submit a 2017-2018 Insurance Cancellation Form by the relevant deadline date.

Student Grants

The following [internal grants](#) are available to students to support their training:

The IBiS Travel Award enables students to present their work at research meetings, conferences and symposia. Awardees will acknowledge the IBiS Travel Award in their posters or oral presentations and will also present at poster sessions during the IBiS retreat and recruitment visits.

The Rappaport Award for Research Excellence recognizes scientific achievement of advanced graduate students in the biological sciences.

SECTION 14 – GENERAL PROGRAM INFORMATION

The IBiS Career Support Grant assists with the costs of dependent-child care for IBiS graduate students who are attending learned society meetings, academic conferences, workshops, and other scientific activities related to their research projects as well as professional development events.

Other Degree Programs or For-Credit Coursework

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

Outside Employment

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

Stipend Supplements

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

IBiS students who receive prestigious extramural awards (as determined by the IBiS program, e.g. HHMI, NSF, Ford Foundation, AAUW, etc.) will receive a one-time achievement bonus that is equivalent to 10% of the first year's award (salary + discretionary/research funds, tuition excluded).

Facilities

A lounge is available for student use. It is located on the sixth floor of the Hogan building, Room G150, and contains computers and printers for the use of all IBiS students.

IBiS student mailboxes are located across from the IBiS office, in Hogan 2-108.

The [Life Sciences Scheduling System](#) is used to reserve rooms and equipment within the Life Sciences departments. If you do not have an account, you may request one on the login page. "Username" is your NetID and "Password" is your current NetID password. Specific questions can be addressed to the Molecular Biosciences program assistant.

SECTION 14 – GENERAL PROGRAM INFORMATION

IBiS Student Organization

The [IBiS Student Organization](#) (ISO) was created to provide a unified voice for the graduate students within the program. ISO is currently led by a board of seven graduate students in addition to liaisons with graduate student groups in related fields and larger student involvement program-wide.

ISO's mission is threefold. It includes addressing academic and administrative procedures at Northwestern, research issues in the life sciences, and social events. For example, ISO has successfully lobbied for better health care provisions. ISO currently hosts prominent speakers from the scientific community and has established several graduate student seminar series, informal venues in which students present their research to other students in the absence of faculty. These sessions are held monthly at lunchtime. Finally, several social events are planned to promote interactions outside of the lab, not only among IBiS students, but also graduate students from other departments. These include a monthly movie night, an organized Cubs or Sox outing, and promotion of Graduate Student Association (GSA) sponsored events.

ISO meets once a month to discuss current issues affecting grad students. Everyone is encouraged to bring ideas to that forum, or discuss them with others so their concerns can be addressed. The success of this group depends on participation. Significant achievements have already been made as a result of student efforts.

SECTION 15 – GENERAL UNIVERSITY INFORMATION

GENERAL UNIVERSITY INFORMATION

Academic Calendar

Please refer to the [academic calendar](#) on the Registrar's webpage.

ID Card/WildCARD

The [WildCARD](#) gives you access to all University facilities (e.g. the libraries, the Sports and Aquatic Center, etc.) and identifies you as a member of the Northwestern University community. The WildCARD office is located in the Norris University Center on the underground level. It is open from 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number is 7-NUID (847-467-6843).

Parking Permits

If you plan to park on campus, you will need a parking permit, which can be obtained from [Parking Services](#), located at 1841 Sheridan Road, between 8:00 a.m. - 4:00 p.m., Monday through Friday. You will need a valid WildCARD, driver's license, vehicle registration and proof of address. Less expensive parking is also available at Ryan Field. Please check with the parking office for current fees.

Payroll and Taxes

Stipends are automatically deposited to your bank account on the last day of each month. For questions about your paycheck, contact the Financial Assistant of your department. Contact the Payroll Department at (847) 491-7362, or the IRS for answers to specific tax questions.

Social Security Card

If you are an international student, you will need to get a social security card as soon as possible. The nearest Social Security office is located at 2116 Green Bay Road, Evanston. Office hours are 9:00 a.m. - 3:00 p.m. To apply for a card, you will need to obtain a letter from the IBiS office. Please visit the [International Office website](#) for further requirements.

Student Leave Policy

Please refer to The Graduate School website for further information on [student leave](#).

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

1. Parental leave for birth or adoption of a child – 12 weeks leave with pay
2. Family leave to attend to a sick family member (child, spouse, parent) – 6 weeks leave with pay
3. Personal or family illness or emergency – 6 weeks leave with pay
4. Extended leave of absence – Up to one year without pay (Graduate School policy)

Except in the case of an extended leave of absence, additional leave may be negotiated between a student and her or his advisor.

SECTION 15 – GENERAL UNIVERSITY INFORMATION

Student Counseling Services

Free and confidential counseling services are available to all students from [Counseling and Psychological Services](#) (CAPS). If you need CAPS services, call (847) 491-2151.

Tech Support: Email and NetID

New students will receive NetID and email account information during the summer months. Your NetID will be used to access the University student services system (CAESAR), your email, and many other University web sites. Information regarding NUIT Support is available via the [NUIT web site](#). For more information, contact 1-HELP (847-491-4357), or visit the NUIT Support Center at 1800 Sherman.

TGS Activity Fee

The Graduate School has implemented a mandatory activity fee of \$110 per quarter (\$440 for 4 quarters) to support services for full-time students of The Graduate School. The services include:

- [U-Pass](#) (a special fare card to be used on all Chicago Transit Authority transportation (the “el” and CTA buses) for all full-time “resident” students in The Graduate School)
- [Legal services](#) from an attorney to assist with issues such as landlord, credit or debt problems, and traffic violations
- [Community building grants](#), and activities that include events such as [“TGS Day Out”](#)

SECTION 16 – IBIS STAFF & FACULTY COMMITTEES

IBiS Staff and Faculty Committees

The administrative staff of IBiS is a valuable resource for information on stipends, taxes, registration, teaching, and departmental activities. A partial listing of the staff is found below; all are located on the second floor of the Hogan building.

Cathy Prullage	IBiS Asst Director	(847) 491-4301	c-prullage@northwestern.edu
Deborah Klos Dehring	IBiS Assoc. Director	(847) 467-0451	d-klos@northwestern.edu
J.J. Davis	IBiS Program Asst	(847) 467-1826	janina.davis@northwestern.edu
Jason Brickner	IBiS Director	(847) 467-0210	j-brickner@northwestern.edu
Ginger Gilmore	LSFS Financial Coord.	(847) 491-5764	g-gilmore@northwestern.edu

Fall Retreat Committee

Xiaomin Bao	(847) 467-1833	xiaomin.bao@northwestern.edu
Reza Vafabakhsh	(847) 467-0435	reza.vafabakhsh@northwestern.edu

Graduate Advisory Committee

Chris Petersen (Chair)	(847) 467-3553	christian-p-petersen@northwestern.edu
Curt Horvath	(847) 491-5530	horvath@northwestern.edu
Heather Pinkett	(847) 467-4048	h-pinkett@northwestern.edu
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Graduate Admissions Committee

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