BBS PhD Program in Biological and Biomedical Sciences

PhD Program
in
Biological & Biomedical Sciences

Guidelines and Information for Students
2022-23

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MAP OF HARVARD LONGWOOD AREA:
http://hms.harvard.edu/sites/default/files/assets/Sites/Parking/files/HvdCampusMap.pdf

OVERVIEW OF THE PROGRAM

Harvard BBS is a true umbrella program with no departmental boundaries. Students have the freedom to train with any one of our supportive research communities (also referred to as concentrations) composed from the basic science departments plus specialized interdepartmental research programs at Harvard Medical School (listed below). Students also have the opportunity to train in any of the Harvard HILS (Harvard Integrated Life Sciences) labs. The BBS curriculum is flexible; students can tailor their Ph.D. training to suit their scientific interests and goals. Yet it is also dedicated to the skill building so essential to contemporary bioscientists whether in industry, academia, or non-profits. These customizable features in BBS are combined with access to exceptional faculty and cutting-edge facilities to create a world-class graduate program where exciting discoveries are made every day.

The BBS program is designed to support students throughout their Ph.D. training. From first-year orientation activities to their thesis defense, we are here to help students succeed and reach their full potential as a future scientific leader. A brief overview of the Program's support structures and training activities is presented below.

BBS Research Communities (and Associated HMS Department or Affiliated Institution, if any):

- Biological Chemistry and Molecular Pharmacology (BCMP)
- Cancer Biology (DFHCC)
- Cell Biology (Cell Biol)
- Genetics & Genomics (Genetics)
- Developmental and Regenerative Biology (HSCRB)
- Leder Human Biology & Translational Medicine
- Microbiology/Bacteriology (Micro)
- Molecular Mechanistic Biology (BCMP & Cell Biol)
- Therapeutics

Overview of Training Timeline, Academic Components and Benchmarks for Degree Completion

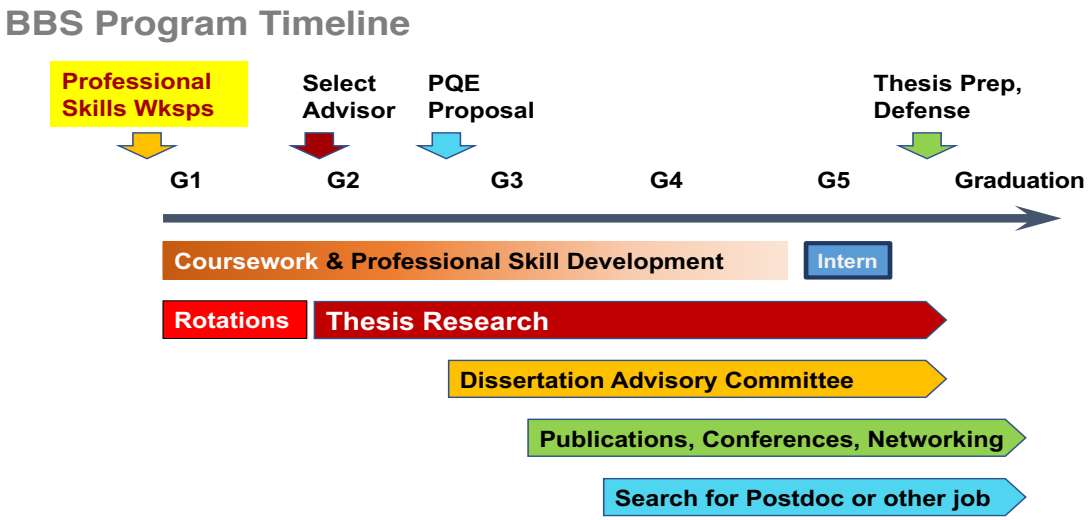
Year 1: Complete 5-6 semester-long courses along with course credit for completing rotations, complete 3 or more rotations, choose thesis lab. Complete the Year 1 IDP with a Curriculum Fellow/TF (affiliated with BBS 230A/B) and/or Program Advisor.

Year 2: Complete most course work and TF requirement. Complete Medsci 300 (RCR). Complete the PQE (January - June). Assemble the DAC, prepare the initial thesis project proposal (a refinement of the PQE proposal), and hold the first DAC meeting (~ 4 months following clear or conditional pass of the PQE). The thesis proposal should be crafted with the goal of completing all of the work required for a PhD thesis within 5.7 years. This takes careful planning and iterative evaluation of the main aims of the project and their relative feasibility. We realize that progress is unpredictable and sometimes the most fruitful approaches are also the most challenging and take longer to realize. Thus, exceptions are anticipated. Complete the Year 2 IDP with the Thesis Advisor and/or Program Advisor.

Year 3: Settle on a clear plan for a thesis project – it is understood that plans will evolve over the course of the thesis, especially given that creativity is highly encouraged yet comes with risk and often delays. Have clear evidence of progress toward meeting the goals of the thesis proposal or developing the methods required for this project in the second DAC meeting (DAC meetings occur once every 9 months or less until G5). A preliminary list of potential thesis chapter titles is encouraged as a means to start thinking about the overall dissertation hypothesis and the different ways the evolving work could be packaged as a dissertation. Complete the Year 3+ IDP with the Thesis Advisor and/or Program Advisor.

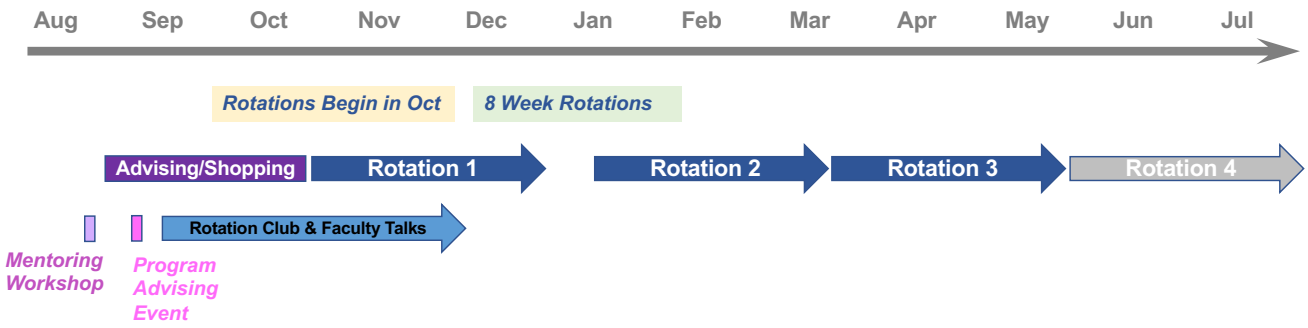
Year 4: Solidify directions as relates to thesis chapters, which should include a body of work that will form the basis of one or two first author, peer-reviewed, primary research papers. While publication is not a degree requirement, bringing a body of work through to publication is an important skill to learn, thus we encourage that a plan for possible first author publication(s) begin to be discussed at DAC meetings even as early as year 4. Please know that we strongly encourage creativity and realize that it is often accompanied by longer timelines. Complete the Year 3+ IDP with the Thesis Advisor and/or Program Advisor.

Year 5 and beyond: DAC meetings increase in frequency to once every 6 months or less. Continue adding detail to the outline of the thesis with data and discussion. Continue discussions as relates to plans for publication(s). Because bringing a story to closure in the form of a publication is a very important skill to learn, we encourage manuscript submission prior to the Ph.D. defense. If deemed helpful to the student or DAC process, an UberDAC may be initiated to provide additional faculty-student interactions. Complete the Year 3+ IDP with the Thesis Advisor and/or Program Advisor.



FIRST YEAR OF STUDY

Rotations and Thesis Lab Selection



PROGRAM ADVISORS:
During the first year (G1), you will be supported by a BBS faculty member who will be assigned to serve as your program advisor. The program advisor will serve as your guide to the program and the research environment at the medical school and beyond. They will advise you in choosing appropriate courses and rotation laboratories, and can also help you solve problems that might arise as you adjust to life in graduate school. Many students continue to solicit advice and support from their BBS Program Advisor well beyond the first year.

LABORATORY ROTATIONS OVERVIEW:
Rotations provide an excellent opportunity for you to try out a variety of labs to find the one that best fits your interests for pursuing thesis research. Rotations also offer a source of experiential training in different experimental models, approaches and technologies. BBS requires students to rotate in at least three laboratories throughout the course of the first year. The length and timing of the rotations are flexible, but we recommend that you spend 8 weeks in each lab (minimum of 6 weeks and a maximum 10 weeks). To help you identify potential rotation labs, current students organize a weekly "rotation club" in the fall each year where they present their experiences rotating in different labs and provide

advice to new students in choosing a lab. We also organize a rotation roundtable and faculty poster sessions in orientation.

Finding a Rotation:
Some points to consider when scheduling rotations include:

- Research interest
- The PI and their mentoring style and availability
- Qualifications and experience of direct supervisor in the lab (predoc, postdoc or staff)
- Lab size, location, personalities, lab culture, and local microenvironment
- Availability of funding to support the research
- Rotation timing within the academic year (this includes the rising G2 summer since you are full time students)

Because technology and research methods evolve rapidly, we discourage lab choice simply based on a specific technique or platform. The key to a robust PhD training is transferable skills in study design, assay optimization and troubleshooting, and independent navigation of the unanticipated opportunities and challenges that your research will reveal. Your ability to adapt, innovate and capture new opportunities will grow from many experiences that home your experimental judgement and scientific acuity. Please review **the BBS Rotation Guide** assembled by students, faculty and staff for further advice.

Note: BBS requires three rotations; however,

* If students worked in a lab prior to joining BBS and would like to rotate in that same lab, we require 3 other rotations before you return to that lab. Lab declarations are required on or before August 1st before G2.
* We strongly recommend that students begin rotations on or after October 15th, but by no later than Jan 2, of the G1 year. Each rotation should be planned for 8 weeks in length. If it becomes clear that the lab is not a good match, it is recommended that you discuss this with the PI of the lab, and consider ending the rotation early.
* All rotations must be registered using a BBS Rotation Registration form in order to receive credit for BBS 333R.
* All rotations should be added to the study card via BBS 333r for a minimum of 4/6 credits for the fall semester and 4/8 credits for the spring semester of G1.
* If students wish to declare a lab after only two rotations students must meet with a BBS program head to discuss their decision and receive special permission to forgo the third rotation.
* Rotations are strictly limited to faculty appointed in a HILS program. Rotations or thesis work with a PI or in a lab that is not part of HILS is not allowed under any circumstance. Although the Directors of BBS can give their permission for a co-mentorship with two advisors, both of these faculty must me HILS members.

*BBS faculty members are often first choices, but please know you are also allowed to work with faculty members within Harvard HILS. https://gsas.harvard.edu/programs-of-study/divisions/harvard-integrated-life-sciences If you do not find a faculty member on this link, then you cannot work with them.

Before students contact faculty members about rotations, please make sure the faculty are within HILS. Also, BBS only allows student to work with Harvard HILS faculty members. *We do not allow our students to work at MIT.*, unless the faculty member in question is a primary member in a HILS program (note: BIG, SSQB and SHBT have a few MIT faculty).

SELECTING A THESIS LABORATORY:
Laboratory choice for thesis work is arguably the most important decision students will make as a graduate student, perhaps even more important than their choice of institution. Unlike setting up an experiment, there are no standard formulas or protocols that will ensure a perfect choice. Everyone is unique and what a student desires in a lab is likely to be different from their fellow classmates. Self-reflection and knowledge of the kinds of environments in which students thrive is critical. Laboratory rotations will aid in a student's decision process by allowing him/her to try out different types

of labs and research projects. Taking full advantage of these opportunities will help students identify the features of laboratory life students enjoy and the kind environment in which students thrive best.

It is understandable to be nervous about choosing a lab. The decision is not a trivial one. However, try to keep the process in perspective. Students are not choosing the lab or the research field where they'll spend the rest of their career, just this first portion. The objective is to choose a lab where they can garner excellent training in how to think like a scientist, and where students have the freedom to develop independence yet get support when help is needed. If a thesis lab provides students with these things and students dedicate themselves to training and research, then numerous avenues will be open to students for the next phase of their career.

At the conclusion of their first year, students will choose their thesis advisor and laboratory [by August 1st]. The faculty member that directs the lab will be their primary mentor for the remainder of their graduate training. Additionally, the department and/or special interest program to which their advisor belongs will become their intellectual and community "home". These communities organize numerous activities throughout the year, including: research seminars, trainee talks, social hours, annual retreats, career workshops, and more. NOTE: even though you will officially join one department or community, you are welcome to be a part of many and attend their events and activities throughout the year.

The deadline to declare a Dissertation Lab is August 1st of a student's first year.

For more information on choosing a lab, see https://bbsphd.hms.harvard.edu/program/choosing-and-joining-lab

COURSES AND CURRICULAR OVERIVEW:
BBS requires that students complete the equivalent of eight full-semester courses during their Ph.D. training. In the first year, they will participate in a mixture of required core courses and specialized content courses of their choosing.

Four BBS "core" courses, *Analysis of the Biological Literature and Experimental Design* (BBS 230), *Principles of Genetics* (GEN 201), *Principles of Molecular Biology* (BCMP 200), and *Principles of Cell Biology* (CB 201) are required. These courses provide an experimentally-focused, graduate-level coverage of fundamental concepts and skills relevant to most areas of biological and biomedical research. These classes account for half of the 32 credits needed for graduation. The remaining 16 credits come from courses of the student's choosing to fill knowledge gaps and explore areas of interest in more detail. Much of the BBS skill and core course content is supported by our outstanding group of Curriculum Fellows dedicated to innovating and maximizing the effectiveness of each class.

Core Content Courses (4 credits each) Compulsory
"Principles of Genetics" (GEN 201)
"Principles of Molecular Biology" (BCMP 200)
"Principles of Cell Biology" (CB 201)
"Analysis of Biological Literature and Experimental Design" (BBS 230A/B) (A and B are each 2 credits)

"Analysis of the Biological Literature and Experimental Design" (BBS 230A&B): This course in experimental design and analysis is divided into two portions: A is a half-semester course that occupies the first 7 weeks of the fall semester, whereas B is a two-week intensive bootcamp that begins directly after the G1 spring semester. For each part of this course, BBS students participate in intensive small group discussions focused on the critical analysis of basic research papers from a range of fields including biochemistry, cell biology, genetics, and microbiology. Papers are discussed in terms of their background, significance, hypothesis, experimental methods, data quality, and interpretation of results. Students will be asked to propose future research directions, to generate new hypotheses and to design experiments aimed at testing them. In part B, students will consider the strengths and limitations of different experimental platforms and analytic tools to understand the constraints that they place on rigorous experimental study design.

Principles of Genetics (GEN 201): An in-depth survey of genetics, beginning with basic principles and extending to modern approaches and special topics. Examples are drawn from a variety of experimental systems, including yeast, *Drosophila, C. elegans*, mouse, human and bacteria.

Principles of Molecular Biology (BCMP 200): An advanced treatment of molecular biology and biochemical concepts critical for all biological researchers. Key concepts related to the molecular basis of information transfer from DNA to RNA to protein are covered, using examples from eukaryotic and prokaryotic systems. The course is taught in the format of lectures and research seminars and students meet in small groups of 6 students to discuss experimental design problems in an interactive chalk talk format.

Principles of Cell Biology (CB 201): An advanced course covering the molecular basis of cellular compartmentalization, protein trafficking, cytoskeleton dynamics, mitosis, cell locomotion, cell cycle regulation, signal transduction, cell-cell interaction, cell death, and cellular/biochemical basis of diseases. The course has a methodological focus on current approaches in cell biology including quantitative tools with an emphasis on experimental design.

Additional "Half" Course (4 credits) and "Quarter" Course (2 credits each) Electives
"Half" courses (including the core courses) span an entire semester (~16 weeks or half the academic year) and "quarter" courses span half that (~7 weeks or one quarter of the academic year with 18-24 classroom contact hours). Quarter courses can be designed to spread the contact hours across a whole semester, or across half a semester, or even across a few weeks (e.g., BBS 230B or "bootcamp" courses). Students choose from a range of half courses and quarter courses that are focused on topics of special interest to a particular research area. New courses are continually being developed and launched.

Nanocourse (3 nanos = 2 credits) Electives
Nanocourses allow for maximal versatility in our curricular offerings at Harvard Medical School. Nanocourses are 6-hour courses taught over two or three days, in which multiple (2-4) faculty members deliver highly specialized content. Day 1 of each nanocourse is typically open to all members of the Harvard community. Day 2 is often designed for registered students of the class, where lecturers lead students through hands-on activities and assignments that allow practice of the content introduced in the previous session. The format of this second session is flexible, and may include discussion of relevant papers, brainstorming about future research, or other activities chosen by the course director to assess student progress.

"Bootcamp" (2 credits each) Electives
Boot camp courses merge hands-on lab experience with lectures over a one-to-three-week period. These courses typically run during the January term, and provide students the opportunity to interact with several different faculty in their labs spanning a range of experimental and biological topics. Most of the research communities that make up the BBS program organize or participate in one or more bootcamps. A quantitative methods bootcamp course (QMBC) using MATLAB or R is also offered to rising G2 students in August.

Responsible Conduct of Science (Medical Sciences 300qc) -- Compulsory
This is a discussion-based quarter course covering topics on aspects of responsible conduct of research and the ethical and moral principles that underlie research. Training in the responsible conduct of science is a required part of the BBS PhD program in the Division of Medical Sciences. Not only is such training a necessary element in the academic development of everyone who will become a responsible member of the scientific community, it is also mandated by the National Institutes of Health. *This requirement is in addition to the 8 semester-long course equivalents needed for BBS Ph.D. completion*.

Additional Courses at Other Harvard Schools and Partner Institutions
In addition to the core content courses, a range of advanced course offerings are provided by the various departments and programs within Harvard Medical School. Students may also choose from many graduate-level courses offered at Harvard College in Cambridge, the Harvard T.H. Chan School of Public Health, and MIT.

Curriculum Fellows
Curriculum Fellows (CFs) are PhD-level scientists pursuing careers focused on teaching, improving, and supporting science education. The Curriculum Fellows Program (CFP: https://curriculumfellows.hms.harvard.edu/) functions as an educational laboratory that both researches and improves the learning experience for graduate students and postdoctoral trainees in the HMS community. Like postdoctoral fellows in a science lab, the CFs work with faculty members to bring new energy, creativity, and innovation to graduate and medical coursework. As trained research scientists, the CFs take a scientific approach to curricular redesign and course improvement, observing and identifying challenges, and then

designing and implementing modifications. The CFs work together as a community, sharing their novel strategies for curricular revisions to promote integration across graduate courses and bringing their insights gleaned from current educational scholarship into HMS classrooms.

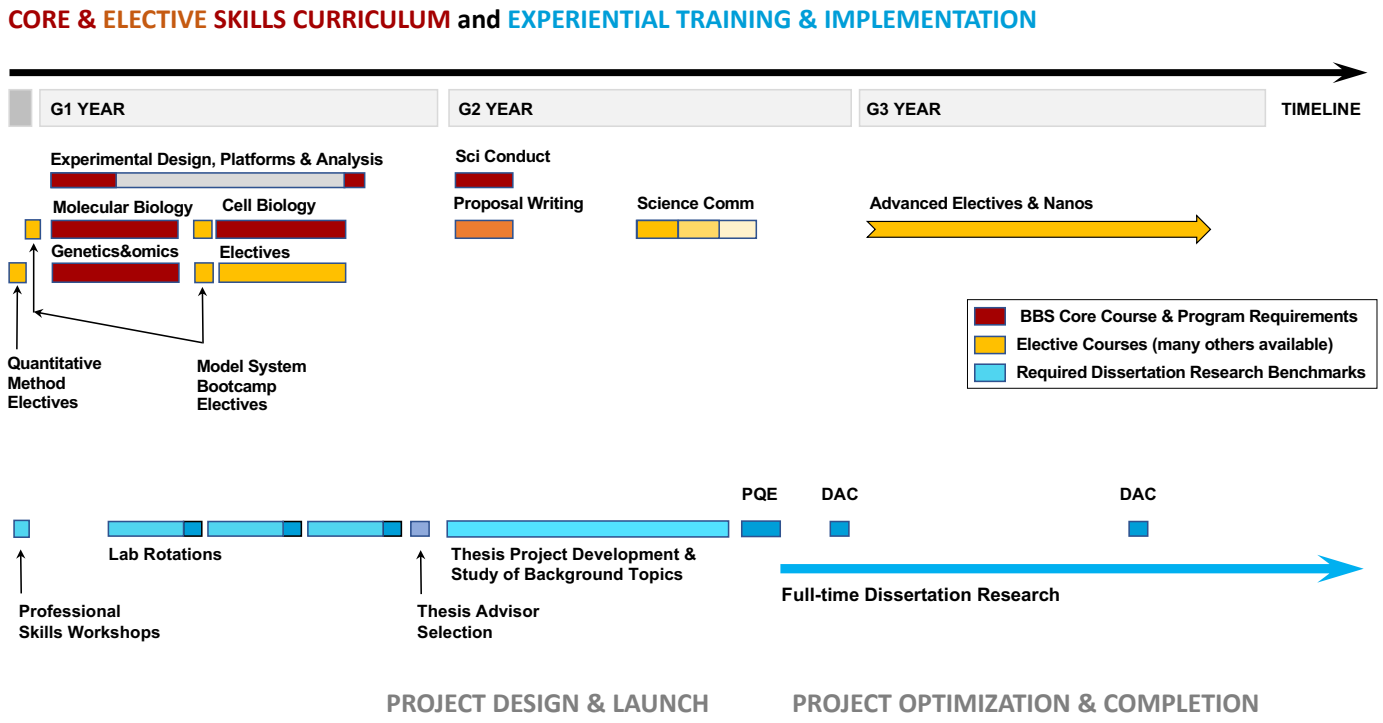
BBS TUTORING PROGRAM:

The BBS Tutoring Program is open and free of cost to all BBS students. If students find themselves needing and/or wanting extra help in a course, students can work with a BBS Tutor who has prior experience with the course material.

There are several ways to be connected with a Tutor:

- TFs may suggest to students that a Tutor would benefit students;
- the Course Director may suggest it to students;
- or finally, students may decide to seek additional help themselves.

If you decide that you want to work with a Tutor, please contact the BBS Program Office to request one. We really want to encourage students to take advantage of the program and if it helps students to do so, students can do it under conditions of strict confidentiality. In addition, if students would like to have their Program Advisor follow up with them, they would be happy to do so.



SECOND YEAR OF STUDY

COURSES AND CURRICULUM:

You typically complete your course requirements in your second year by taking additional courses of interest (electives). In year two, you will take Conduct of Science (Medical Sciences 300qc) in the fall. A strongly recommended course for the fall of year two is Critical Thinking and Research Proposal Writing (BBS 330), which will prepare you for writing your qualifying exam.

TEACHING REQUIREMENT:

The BBS program requires that you fulfill one semester as a non-paid teaching fellow. Each spring, the BBS office will send a survey to ask all G1s what their preferences are for TF options prior to a matching process in consultation with the core course directors. In most cases, you will be invited to serve as a teaching fellow in one of the BBS Core Courses; however, there are many other approved courses and options from which to choose. All BBS first time TFs are required to

participate in a preparatory short course in pedagogy prior to their service. As an alternative to being a TF, we have established the Community Education Initiative, which provides several approved teaching opportunities for BBS students to work with K-12 or collegiate level students the Boston area. For more information on our TF requirement: https://bbsphd.hms.harvard.edu/program/teaching-requirement

PRELIMINARY QUALIFYING EXAM:
During year two, you will prepare a written research proposal based on your thesis research. This proposal is then defended orally to an examination committee of three program faculty members. The goals of the exam are three-fold: (i) to strengthen written and oral communication skills, (ii) to help you build strategic skills in formulating a rigorous and thorough research project plan and (iii) to confirm your possession of the scientific fundamentals and field-specific knowledge necessary to successfully complete the proposed thesis project. Areas needing further study may be identified by your committee, along with suggested strategies to provide additional support.

In addition to assessing your foundation in genetics, molecular biology, cell biology and biochemistry, the PQE will test your ability to:

- Develop hypothesis- or technology-driven research plans likely to advance your chosen field
- Prepare a compelling and detailed research plan to test these hypotheses or technologies, including describing the overall strategy, methodology and analyses to be used to accomplish the aims as well as discussing potential problems, and alternative strategies and contingencies
- Develop creative and forward-thinking aim(s) likely to advance fundamental knowledge in your field
- Orally explain and defend these hypotheses and your research plan
- Critically analyze and interpret data, including the application of relevant statistical tests or computational approaches

BBS Students nominate the faculty members of their exam committee for approval by the BBS program team. More information about the PQE is on our website: https://bbsphd.hms.harvard.edu/program/preliminary-qualifying-exam

THIRD YEAR OF STUDY AND BEYOND

Most students complete course requirements by the end of year two. In year three and beyond, effort is largely dedicated to making exciting discoveries in the laboratory and completing thesis research. The thesis advisor and Dissertation Advisory Committee (DAC) will be your primary mentors during this process, but the program heads and BBS Office staff are always available should you wish additional support or advice. The average time to degree for the program is ~5.7 years.

DISSERTATION ADVISORY COMMITTEE (DAC):
Upon passing the qualifying exam, you will choose three faculty members to serve as your Dissertation Advisory Committee (DAC) along with your PI to oversee your dissertation research. Your DAC Chair must be a BBS Faculty Member and should have served on at least 1 previous DAC; two of the three members of the DAC must be BBS Faculty Members; and the third can be BBS or outside Faculty Member* (*official member of an institution's faculty). Dissertation advisors (PIs) are not members of the Dissertation Advisory Committee, but are expected to attend Dissertation Advisory Committee meetings. The DAC will typically meet once or twice annually to provide advice on your thesis project. The committee will be your advocate and serve as an additional set of mentors. The DAC's role is to support you in accomplishing your training goals and in successfully completing your thesis research.

The DAC will meet every 6 to 9 months. It is your responsibility to arrange these meetings in a timely fashion. If you are significantly late in arranging DAC meetings, you will not be permitted to register for the following semester. The DAC Chair will be responsible for sending a report of the meeting to the program office. The report is then sent to the Division of Medical Sciences, members of the Committee and you. If dissertation progress is unsatisfactory, the Director of the BBS Program will be notified and meetings will be scheduled with you, with the dissertation advisor, or with both to review any issues.

Timing and frequency of DAC meetings

Initial meeting: The initial DAC meeting must be held ~4 months after passing the PQE – preliminary data can take the form of work completed by you and/or others in the lab. All work completed by you should be included, even if scientific

goals have changed and your work is no longer the basis for future experiments – in this way, all accomplishments can be acknowledged. You should start the process of scheduling this meeting within 2 months of the PQE given the complexities and time often required to establish a date workable for all.

- Subsequent meetings (through G4): must be held every 9 months, or earlier pending DAC recommendations.
- G5 and G6: DAC meetings must be held every 6 months or even more frequently pending DAC recommendations.
- G7+: DAC meetings must be held every 3 months until the box is checked.

DAC Oversight for Granting the Ph.D.

GSAS requires each student to complete a body of primary research of publishable quality. While a first-author research paper is not required to attain the degree, many graduating students will have at least one first-author primary peer-reviewed research paper published, or at least submitted or largely prepared prior to graduation. In addition, the DAC committee should evaluate the scientific maturity, independence and original thinking in considering your readiness to graduate. **When the DAC committee agrees that you have met the requirements for earning a Ph.D. and are ready to begin writing your dissertation, the Committee will "check the box" on your DAC meeting form that indicates this. Your dissertation defense must take place within 3-6 months of the date on which the box is checked.**

UberDAC committee

Should concerns (e.g. surrounding progress to degree, conflict of interest with your PI, or other complications) be raised by you, the DAC chair, or your PI that might benefit from an elevated level of attention, and UberDAC will be initiated as a supportive mechanism to resolve the issues within the context of your advising team. One of the BBS program directors will join your DAC in order to facilitate establishment and execution of a plan for helping you move forward. Such a plan will routinely involve greater delineation of experimental goals, a timeline by which they are expected to be completed, more frequent DAC meetings, and meetings with a program director to help support the process. The UberDAC can be transient or sustained until your progress is stabilized and your trajectory is considered positive by all stakeholders.

DISSERTATION AND DEFENSE:

After you have your box checked by your DAC committee, you will sign up for a **Packet Meeting with DMS**. This meeting will review all dates and requirements for your defense.
https://dms.hms.harvard.edu/dissertation-and-defense

In preparing to defend your dissertation, you must review the University/FAS requirements as outlined in "Form of the Doctoral Dissertation" with guidelines published at the Graduate School of Arts and Sciences.
https://registrar.fas.harvard.edu/files/fas-registrar/files/form_of_dissertation_spring_2015.pdf

Formatting the dissertation: https://gsas.harvard.edu/degree-requirements/dissertations/formatting-your-dissertation

COMMENCEMENT:

Commencement takes place on the fourth Thursday of May each year, with additional commencement events on the preceding Wednesday. All students who receive November, March or May degrees are invited to walk in the May ceremony. Graduating BBS students are invited and encouraged to participate in several ceremonies in May at GSAS, Harvard University and the Division of Medical Sciences (DMS), in particular the DMS Hooding Ceremony. Please note that DMS organizes Commencement activities for BBS students.

- GSAS Breakfast with the Deans
- Morning Exercises, Harvard Yard
- Graduate School of Arts and Sciences Ceremony
- Graduate School of Arts and Sciences Luncheon
- DMS Hooding Ceremony

ADDITIONAL RESOURCES FOR BBS STUDENTS

INDIVIDUAL DEVELOPMENT PLAN (IDP):

To help you get the most out of your graduate education, the BBS program asks all students to complete an individual development plan (IDP) each year. An IDP provides you with the opportunity to think about your training objectives, your progress towards them, and to set and/or refine goals for the future. The IDP also includes a self-assessment section designed to help you think about your skills: what are your areas of strength versus areas needing further development as you progress with your training.

Benefits of an IDP

Just as the process of writing a research article or proposal focuses your work at the bench, the IDP helps you develop an efficient training plan tailored to support your specific career ambitions. The act of completing the IDP will stimulate you to define your goals in more specific terms for both the short and long term, and will motivate you to identify resources which can help students meet them.

Sharing IDPs with mentors

To gain the most benefit from the IDP, you must think deeply about the questions and answer them frankly. Sharing is therefore not a program requirement, nor will the IDP be kept on file by BBS. You are free to share as much or as little of the plan as you feel comfortable. However, the IDP process will be most effective if used to guide candid discussions with your mentor/advisor. Some students find it helpful to use their Program Advisor or an additional mentor for IDP review.

Program Requirements

Your completion of the IDP –privately or with a mentor– along with a corresponding yearly training/career-planning meeting with your mentor is a requirement of the BBS program. We ask that G2+ students complete the IDP in April each year, and have the yearly planning meeting before the end of May each year, which will help prepare for the next G year. For G1 students, IDPs will take place in concert with BBS 230 in consultation with one of the 230 teaching fellows.

Visit our website for more information on IDPs. https://bbsphd.hms.harvard.edu/program/individual-development-plan

PROFESSIONAL DEVELOPMENT:

BBS students have numerous opportunities throughout the duration of the program to hone your scientific speaking, writing and presentation skills in a variety of settings. These include:

- G1 Rotation Club

  Two to three G2 students will give a 15–20-minute presentation on their lab rotations, sharing the techniques they have learned, the data they have acquired, and the scope of the project. Rotation club is held on Fridays from September through December with lunch provided for students and speakers.

- G1 Faculty Seminar

  New BBS Faculty members are invited to give a seminar on Wednesdays, in an informal setting, with lunch provided for students and the speaker.

- G2 PQE Data Club

  Students meet weekly with a student presenting their data in an informal setting with dinner provided.

- BBS Retreat

  All current BBS Students are invited to attend the annual retreat. The schedule for the weekend will be planned by students and will include student talks, a poster session, a guest speaker and social gatherings.

CAREER RESOURCES:
In BBS, we are keenly aware of the many excellent career options open to Ph.D. scientists outside of the academic research environment. To help our students explore this landscape, the Division of Medical Sciences organizes a career exploration course called Pathfinder (https://www.hms.harvard.edu/dms/paths/pathfinder/index.html), for students to begin exploring options for future professional development. Available throughout your time at Harvard and beyond, Dr. Jason Huestis runs a series of Professional Development Days (PDDs) such as workshops on key career skills that are posted on the Career and Professional Development Navigator website along with a huge number of other career resources and links (https://careernavigator.gradeducation.hms.harvard.edu/). The new Navigator tool "CogCity" offers a way to explore and record resources of interest. In addition, there are certificate programs such as the Science Education and Academic Leadership (SEAL) program run by the CFP (https://curriculumfellows.hms.harvard.edu/seal-teaching-certificate). Finally, Harvard GSAS students organize many career-relevant clubs and events, including the Harvard Biotechnology Club, Science-in-the-News, or The Journal of Emerging Investigators. GSAS/FAS provides you help in preparing for your professional futures. FAS has the Office of Career Services which has resources that range from 1-1 advising appointments to career fairs to recruitment outreach. https://ocs.fas.harvard.edu/gsas-advising

GSAS STATEMENT ON ACADEMIC DISHONESTY AND PLAGIARISM
All work submitted for credit is expected to be the student's own work. In the preparation of all papers and other written work, students should always take great care to distinguish your own ideas and knowledge from information derived from other sources. The term "sources" includes not only published primary and secondary material, but also information and opinions gained directly from other people.

The responsibility for learning the proper forms of citation lies with the individual student. Quotations must be properly placed within quotation marks and must be fully cited. In addition, all paraphrased material must be completely acknowledged. Whenever ideas or facts are derived from a student's reading and research, the sources must be indicated.

The amount of collaboration with others that is permitted in the completion of assignments can vary, depending upon the policy set by the head of the course. Students must assume that collaboration in the completion of assignments is prohibited unless explicitly permitted by the instructor. Students must acknowledge any collaboration and its extent in all submitted work.

Students who are in any doubt about the preparation of academic work should consult with their instructor or the dean for student affairs before it is prepared or submitted. See the guidebook entitled "Harvard Guide to Using Sources."

Students are expected to record honestly and accurately the results of all their research. Falsification of research results includes misrepresentations, distortions, or serious omissions in data or reports on research, and is considered a serious violation of academic honesty. Plagiarism or falsification of research results will ordinarily result in requirement to withdraw from the Graduate School.

The University is deeply concerned for the integrity of science by students and faculty, and with sound and safe research practices. Student and faculty researchers are, individually and collectively, expected to safeguard and maintain the University's policies and practices with respect to scientific misconduct. All researchers are reminded that sponsoring agencies also have such concerns, and that the University must inform sponsors of serious transgressions of sponsors' policies as well as of any investigations related to sponsored research, and that sponsors may take action independent of the University.

DISCRIMINATION AND HARASSMENT
It is unlawful, contrary to Harvard University's policy, and a violation of the **Resolution on Rights and Responsibilities** to discriminate on the basis of race, color, sex, gender identity, sexual orientation, religion, age, national or ethnic origin, political beliefs, veteran status, or disability unrelated to job or course of study requirements, pregnancy, or any other legally protected basis. The Faculty Council condemns all forms of discrimination or harassment, whether subtle or overt, and asserts that all members of the University community should join in assuring that all students are accorded the dignity and respect called for in the Resolution.

Students who believe they may be victims of any form of discrimination or harassment have recourse to grievance procedures developed by the Faculty of Arts and Sciences. An individual also may contact the US Department of Education's Office for Civil Rights (OCR):

Office for Civil Rights
US Department of Education
5 Post Office Square, 8th Floor
Boston, MA 02109-3921
617-289-0111
OCR.Boston@ed.gov

Harvard also complies with Massachusetts laws that protect individuals from discrimination on the basis of sexual orientation, as well as on the basis of gender identity. Questions or concerns about possible discrimination based on sexual orientation and/or gender identity under state law may be directed to a School or unit-based Title IX Resource Coordinator or to the University's Title IX Coordinator.

Graduate students have the right to conduct their learning, research, and scholarship in an environment free from discrimination and harassment. No graduate student can be discriminated against on the basis of race, color, sex, gender identity, sexual orientation, religion, age, national or ethnic origin, political beliefs, protected veteran status, or disability.

Academic Retaliation against Student Workers

If a student is engaging in conduct protected by the HGSU-UAW bargaining agreement, or if they are participating in any investigation or proceeding arising under the agreement, it is unacceptable and prohibited to use an academic assessment or other academic actions as a means to retaliate against that student's protected conduct. The FAS provides more information on the **Academic Retaliation Policy**.

Complaints of Discrimination

Before making a formal complaint, a student should first seek a resolution of a matter involving discrimination or affirmative action through an appropriate officer, such as a department chair, advisor, director of graduate studies, director of the Accessible Education Office, or the GSAS dean for student affairs. If the matter is not satisfactorily resolved by informal methods, the student may lodge a formal complaint with the dean of GSAS. Depending on the circumstances, the dean may appoint a special committee to resolve the problem or may refer it to the appropriate agency or office for resolution.

If the matter cannot be satisfactorily resolved through these channels, either the student or the GSAS dean may refer it to the dean of the Faculty of Arts and Sciences for final resolution. The disposition of the dean of the faculty will be final. Students are expected to exhaust institutional grievance procedures before seeking redress under public law. If students would like to discuss their concerns in a confidential setting, the **Harvard Ombuds Office** is a neutral and independent resource.

Sexual Harassment and Other Sexual Misconduct

GSAS is committed to fostering a learning community that is inclusive and supportive of everyone and promotes an environment in which no member of the community is excluded from participation in, denied the benefits of, or subjected to discrimination in any University program or activity on the basis of sex, sexual orientation, or gender identity. The FAS provides clear **policies and procedures** regarding sexual harassment or other sexual misconduct, including sexual assault. Anyone with questions about these policies and procedures or about sexual harassment or other sexual misconduct or concerns should reach out to:

Seth Avakian, Program Officer for Title IX and Professional Conduct
414A University Hall
617-495-9583
avakian@fas.harvard.edu

GSAS students may contact the **Office for Gender Equity** (OGE) to engage in one or more of the offerings provided by the office. These include:

- Prevention and education initiatives
- Support through confidential SHARE counseling
- Making a disclosure to a Title IX resource
- Submitting an anonymous disclosure, or
- Filing a formal complaint

Office for Gender Equity
Smith Campus Center, Suite 901
Cambridge, MA 02138
Phone: +1 (617) 496-0200

oge@harvard.edu
Office hours: 9:00 a.m. to 5:00 p.m.

To file a formal complaint, please submit your complaint in writing to the University Title IX Coordinator at **oge@harvard.edu**. OGE provides more information on **how to file a formal complaint**.

GSAS students who want to process and understand their experiences in a confidential setting have several options, including OGE: **SHARE Counselors**.

SHARE Counselors (confidential)
Smith Campus Center, Suite 624
Cambridge, MA 02138
Phone: +1 (617) 496-5636
24-7 Crisis Hotline: 617-495-9100 (this line is forwarded to the Boston Area Rape Crisis Center during the summer months)
oge_share@harvard.edu

GSAS students may also contact the Office for Dispute Resolution (ODR). ODR is a neutral body that impartially investigates complaints of sexual harassment and/or other sexual misconduct against students, staff, and, with most Schools, faculty. ODR investigations are handled by professional investigators working with the involved Schools and units. Any member of the Harvard community may reach out to ODR to request information or advice, including assistance in filing a formal complaint or in seeking information resolution after a complaint has been filed.

Office for Dispute Resolution
Smith Campus Center, Suite 901
Cambridge, MA 02138
Phone: +1 (617) 495-3786
odr@harvard.edu
Office hours: 9:00 a.m. to 5:00 p.m.

Racial Harassment and Discrimination

GSAS is committed to fostering an environment free from racial harassment, defined as actions on the part of an individual or group that demean or abuse another individual or group because of racial or ethnic background. Such actions may include but are not restricted to using racial epithets, making racially derogatory remarks, and using racial stereotypes.

Any member of the GSAS community who believes that they have been harassed on account of race should contact GSAS staff:

Sheila Thomas, Dean for Academic Programs and Diversity and Interim Dean of Students
Richard A. and Susan F. Smith Campus Center
1350 Massachusetts Avenue, Suite 350
617-496-9909
studaff@fas.harvard.edu

Patrick O'Brien, Assistant Dean of Student Affairs
Richard A. and Susan F. Smith Campus Center
1350 Massachusetts Avenue, Suite 350
617-495-1814
jpobrien@fas.harvard.edu

Director of Student Services
B2, GSAS Student Center
617-495-5005
stuserv@fas.harvard.edu

Cases of alleged harassment by graduate students are adjudicated by the GSAS **Administrative Board** or by the **Student-Faculty Judicial Board**.

The procedures for dealing with incidents of racial harassment fall into two categories: informal resolution and formal complaint, and the complainant may choose between an informal or formal process. When harassing behavior becomes a matter of public information and concern, formal procedures of investigation and resolution may be used.

GSAS's investigation and adjudication process is designed to be careful and fair. No person will be reprimanded or discriminated against in any way for initiating an inquiry or complaint in good faith. The rights of any person against whom a complaint is lodged will be protected.

ABBREVIATIONS & USEFUL URL'S

BBS: PH.D. PROGRAM IN BIOLOGICAL AND BIOMEDICAL SCIENCES
Offered via the Graduate School of Arts & Sciences (GSAS) and located at Harvard Medical School (HMS)
https://bbsphd.hms.harvard.edu/

DMS: DIVISION OF MEDICAL SCIENCES
https://dms.hms.harvard.edu/

BBS CURRICULUM AND COURSE REQUIREMENTS
https://bbsphd.hms.harvard.edu/program/flexible-curriculum

GSAS HOME PAGE
http://www.gsas.harvard.edu/

HARVARD MEDICAL SCHOOL HOME PAGE
https://hms.harvard.edu/

FAS / GRADUATE SCHOOL OF ARTS & SCIENCES REGISTRAR'S OFFICE HOME PAGE
http://www.registrar.fas.harvard.edu/

GSAS PEOPLE AND ADMINISTRATIVE OFFICES
https://gsas.harvard.edu/about/staff

ACADEMIC LIFE
https://gsas.harvard.edu/academics

GSAS FORMS
https://gsas.harvard.edu/forms

GSAS ACADEMIC CALENDAR
HTTPS://GSAS.HARVARD.EDU/ACADEMIC-CALENDAR-2021-2022

HARVARD INTEGRATED LIFE SCIENCES (HILS)
https://gsas.harvard.edu/programs-of-study/divisions/harvard-integrated-life-sciences

STUDENT INFORMATION SYSTEM
HTTPS://MY.HARVARD.EDU/

GSAS PUBLICATIONS AND NEWS
https://gsas.harvard.edu/news

GSAS HANDBOOK/POLICIES
https://gsas.harvard.edu/student-life/harvard-resources/gsas-policies

SCHOLARLY PURSUITS: A GUIDE TO PROFESSIONAL DEVELOPMENT DURING THE GRADUATE YEARS
https://gsas.harvard.edu/sites/default/files/atoms/files/Scholarly%20Pursuits%2015th%20Edition-Fall%202021_0.pdf

HARVARD GRADUATE STUDENT COUNCIL
https://gsc.fas.harvard.edu/home

HARVARD CATALYST - CLINICAL AND TRANSLATIONAL SCIENCE CENTER (CTSC)
http://catalyst.harvard.edu/

HARVARD SCIENCE AND ENGINEERING NEWS
https://news.harvard.edu/gazette/section/science-technology/

STUDENT LIFE
https://gsas.harvard.edu/student-life

HARVARD UNIVERSITY HEALTH SERVICES
https://huhs.harvard.edu/

DIVERSITY RESOURCES:
HTTPS://GSAS.HARVARD.EDU/DIVERSITY/DIVERSITY-RESOURCES

RESPONDING TO SEXUAL HARASSMENT AND ASSAULT
https://gsas.harvard.edu/codes-conduct/discrimination

FOR NEW STUDENTS
HTTPS://GSAS.HARVARD.EDU/STUDENT-LIFE/ADVICE-NEW-STUDENTS

HARVARD UNIVERSITY INFORMATION TECHNOLOGY
http://huit.harvard.edu/

HARVARD CAMBRIDGE MAP
http://www.map.harvard.edu/

LONGWOOD MEDICAL AREA MAP
http://hms.harvard.edu/sites/default/files/assets/Sites/Parking/files/HvdCampusMap.pdf

MYIDP – SCIENCE CAREERS
http://myidp.sciencecareers.org/