Biotechnology Graduate Student Handbook
MS in Biotechnology
(Revised AY2022-2023)

****Important Note Regarding COVID-19:** Due to the uncertain direction of the COVID-19 situation, please note that the contents in this handbook are subject to change. If there are any changes, we will notify you as soon as possible by email. Please make sure you check your Brandeis email regularly, at least once a day. For GSAS COVID-19 updates, please consult their website. **

Director of Graduate Studies, Biotechnology Program:

Neil Simister, Bassine 203, simister@brandeis.edu

Program Administrator:

Jane Theriault, DivSci Graduate Affairs Office, jtheriault@brandeis.edu

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Program Summary

The two-year Professional Science Master's program in Biotechnology at Brandeis University aims to prepare students in the best possible way for careers in biotechnology, pharmaceuticals, and medical research. The program includes a summer internship at a biotechnology or pharmaceutical company or non-profit research center or in one of many biological sciences research laboratories on the Brandeis campus. Research areas on campus include genetics, molecular biology, developmental biology, cell biology, chemical biology, biophysics, structural biology, immunology, and neurobiology. Students should enroll in BIOT 212 for credit for the internship.

Key elements of the program include:

- Hands-on laboratory experience with state-of-the-art bioscience technologies.
- Integrated coursework in molecular and cell biology, with opportunities to pursue individual interests in courses taught by world-class faculty in biology and biochemistry.
- Courses that aid understanding of the biosciences industry, including a biotechnology industry overview, business fundamentals, managing technology, and ethics.
- Development of professional skills through writing, oral presentations, research practice, data analysis and team projects.
- A summer workforce or research internship.
- Individual advising and mentoring at each stage.

There is an optional thesis for the MS in Biotechnology. Interested students should speak with the DGS.

Students must receive grades of B- or better in all courses and may be terminated if their records are unsatisfactory.

Students may not take more than four 4-credit courses in any semester without permission of the DGS.

Courses:
A total of thirteen courses are required for the program. Five lecture courses are mandatory for all biotechnology students. These are Biol 101 (Molecular Biotechnology)*, Biol 205 (Masters Proseminar), Biot 201 (Business of Biotechnology), Bus 261 (Managing Technology Innovation), and Biot 203 (Management for Biotechnology). *Students who previously have taken a course equivalent to Biol 101 Molecular Biotechnology may substitute an elective course with the consent of the DGS.

All biotechnology students are required to take one of the following courses: Bchm 100 (Biochemistry), Biol 100 (Advanced Cell Biology), Biol 102 (Structural Molecular Biology), or Biol 103 (Mechanisms of Cell Function).

Two laboratory courses are mandatory. These are Biol 156 (Biotechnology Project Laboratory) and Biol 151A 1 (Project Laboratory in Protein Biochemistry).

All students will take two biology, biochemistry, chemistry, or neuroscience electives numbered 100 or higher.

The remaining two courses may be additional biology, biochemistry, chemistry, or neuroscience electives (as above), or relevant business‡, computer science, economics, Heller School for Social Policy and Management, or sociology courses at appropriate levels approved by the program directors, or additional laboratory courses. The laboratory courses may be project laboratories (e.g. Project Laboratory in Cell Biology, Biol 158) or research in laboratories approved by the program directors (students should enroll in Biotechnology Research, Biot 293). Two 2-credit business modules, e.g. Bus 226f (Managing Global Human Capital), Bus 228f (Management Communication), may be taken in place of a 4-credit course. Electives in a wide variety of fields can be chosen in consultation with the DGS.

All students must enroll in BIOT 212, the summer internship, during the summer between Year 1 and Year 2.

Summer Internships:
In the summer between the first and second years of the program, students are required to find an internship in a company, not-for-profit research institution, or academic research laboratory. There are numerous opportunities close to Brandeis and in the greater Boston area.

The process of finding an internship is student-led; the DGS and administrator are here to help, but students are expected to find their own internships. General guidelines on how to do this, a list of possible companies, and example cover letters and resumes will be provided.

Students are also encouraged to work with the office of Career Services of the Graduate School of Arts and Sciences, and the Hiatt Career Center to craft strong applications. Some students who do internships in industry find their employers through the Massachusetts Life Sciences Center Internship Challenge or by applying directly to the companies. Most students who do academic internships find labs by networking.

Residency Requirement:
The minimum residence requirement is two years.

Chemical and Safety Trainings:
All students must complete the appropriate chemical and safety trainings before they may begin in the lab. More information about these requirements will be explained during New Student Orientation. In addition, all students are required to attend the Division of Science Responsible Conduct of Research workshop.

Yearly Timeline

A typical curriculum includes:

Fall Year One
- BIOL 101 (Molecular Biotechnology)
- BIOL 156 (Biotechnology Project Laboratory)
- BIOL 205 (Masters Proseminar)

Spring Year One
- BCHM 100 (Biochemistry) or BIOL 100 (Advanced Cell Biology) or BIOL 103
- BIOL 151A (Project Laboratory in Protein Biochemistry)
- BIOT 203 (Management for Biotechnology)
- Division of Science Responsible Conduct of Research workshop

Summer - BIOT 212 Summer Internship

Fall Year Two
- BIOL 102 (Structural Molecular Biology)
- Business elective
- Additional elective, BIOT 293 (Research), or Project Laboratory

Spring Year Two
- BIOT 201 (Business of Biotechnology)
- Science elective
- Additional elective, BIOT 293 (Research), or Project Laboratory

Evaluation of Graduate Student Performance in the Biotechnology Program

Yearly Readmission:
In June/July of the first year, student progress will be evaluated, and students will receive a Progress Letter from the DGS. Remaining degree requirements will be noted in the letter, along with a suggested timeline for completion.

Probation:
Students may be placed on probation as early as the end of first semester if grades in course work are unsatisfactory, and then asked to leave at the end of Year 1 if sufficient progress (as determined by the DGS) is not made in the second semester. Students may also be placed on probation at the end of the first year for failing to make satisfactorily progress.

Other Resources

Graduate Student Research Seminars (BIOL 350):
All students are welcome to register for and attend Friday Graduate Student Research Seminar Pizza Talks (BIOL 350), which are typically held on Friday afternoons. All Neuro and MCB PhD students present their thesis work annually starting in their third year.

Journal Clubs:
Students are welcome to register for and attend the journal clubs listed below to become more involved in the Brandeis Life Sciences community.

Journal Clubs: (See course listings for times)

Topics in Neurobiology:	NBIO 306
Systems/Computational Neuroscience:	NBIO 340
Topics in Molecular Genetics and Development:	BIOL 305

Mentoring and Career Guidance:
The program director, administrator, and course instructors individually advise and mentor students. The Center for Career and Professional Development at the Graduate School of Arts and Sciences and the Hiatt Career Center provide career guidance one-on-one and with workshops. They also help with alumni networking and organize employer visits.

Questions:

If you have questions you can contact your DGS:
Neil Simister (simister@brandeis.edu)

You may also contact your program administrator in the Division of Science Graduate Affairs Office:
Jane Theriault (jtheriault@brandeis.edu)
To reach the entire Graduate Affairs Office team, email scigradoffice@brandeis.edu

Resources for graduate students and ways to get help

At many points during your graduate career you will probably have questions you'd like to ask someone, great ideas you'd like to share, or concerns you'd like someone to address. Please know that there are many people here on campus to answer those questions, help, and support you. Before we go into specifics of who to ask for help, please know that the majority of people on campus are "responsible reporters." This means that they are obligated to share any information that has been disclosed to them regarding discrimination, harassment, or sexual misconduct with the Office of Equal Opportunity. If you are hoping to have a confidential conversation about one of these topics, you will find a list of confidential resources later in this section.

Most issues can be best addressed by those closely associated with your graduate program or with Division of Science staff and faculty so we encourage you to seek assistance from this group first. We recognize that sometimes there may be a particular person that you are more comfortable speaking with or that one faculty member may be holding multiple roles/positions, but we suggest that you reach out to for assistance in the following general order (see schematic at the bottom as well):

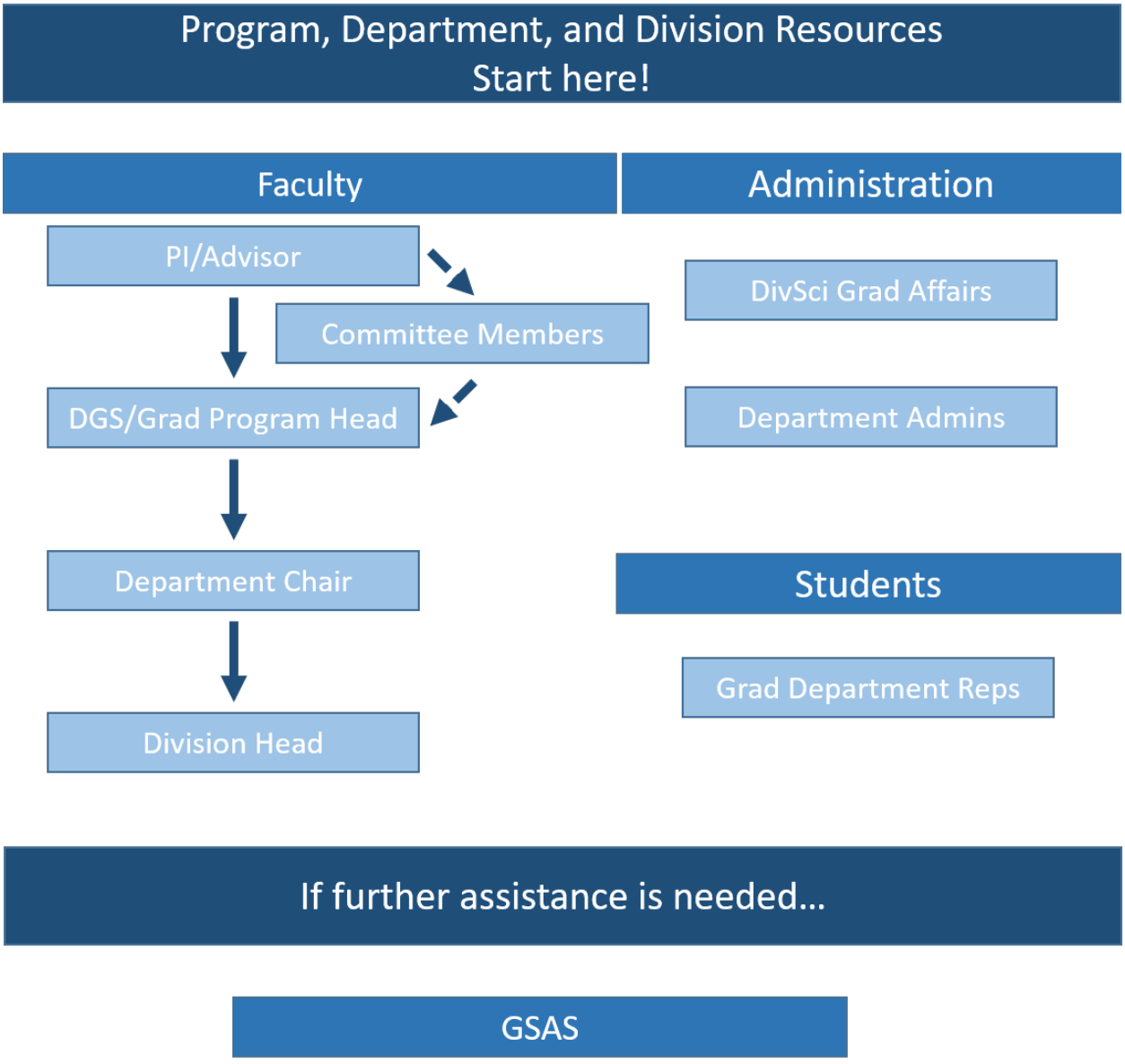
- **Your PI/Advisor:** If you choose to join a Brandeis lab during your time here, your first stop should be your PI/advisor. Your PI will have the most intimate knowledge of your research and career goals, and is here to help train and guide you. PIs usually have regular meetings with their students and you are encouraged to use this time to talk about anything that's on your mind—not just your latest research results. If you don't join a lab, the program DGS is also your advisor.
- **DGS (Director of Graduate Study, or chair of your grad program):** This faculty member oversees your grad program as a whole, and is here to support all students in the program. They will be extremely knowledgeable in the program's requirements and are also tuned in to the current GSAS and University policies. The specific faculty member who fills this role may change from year-to-year, so check with your program administrator or check your program website for the current DGS first. In academic year 2022-2023, your DGS is Neil Simister.
- **Your program's Department Chair:** This faculty member oversees the department that your grad program falls under and is a step above your DGS. If you have concerns that aren't necessarily specific to your grad program but are relevant to the department as a whole, the chair may have good insight. Chairs are good to talk to if concerns are shared with other populations in the department such as staff, postdocs, or undergraduates. The specific faculty member who fills this role may change from year-to-year, so check with your program administrator or check your program website for the current Chair. In academic year 2022-2023, your department chair is Liz Hedstrom.
- **The Head of the Division of Science:** This faculty member oversees the entire Division of Science, and works to support all of the departments and graduate programs within the sciences. The head of the Division of Science has frequent meetings with individual program and department chairs, as well as with leaders

across the University, so they will be knowledgeable about current Division and University practices. They are here to support and advocate for the entire science community. Talk to them if people from different graduate programs or departments have a shared concern or to raise. In particular, concerns about research integrity should be brought to the attention of the Head of the Division of Science. As with the DGS, the faculty member in this role can change from time-to-time. In academic year 2022-2023, the chair of the Division of Science is Bulbul Chakraborty.

In parallel to these program-level and Division-level faculty resources, there are non-faculty resources within the Division who you can go to for help. The following are good places to go to for help:

- **The Division of Science Grad Affairs Office:** This office is the administrative home for most of the graduate programs within the Division of Science, including yours. The staff here work closely with grad students and faculty administratively oversee those graduate programs and student progress. The staff in this office know your program's faculty, are well-versed in your program's requirements and policies, and are up-to-date with the other sources of support on-campus. If you are unsure about who to talk to first, the DivSci is often a good place to start as they can help you decide who to approach and how to have that conversation. Within this office, Jane Theriault is the primary contact for your graduate program. You should also feel free to contact Maryanna Aldrich, who oversees this group.
- **Your Department Administration:** These staff work in your department's office and are here to help their entire department community. These staff may be a bit less familiar with your graduate program requirements, but they know your department's faculty and any non-grad-program details about your department well.
- **Your program's Grad Department Representative (GDR):** These graduate students were elected to represent the student body. One of the roles of the GDR is to bring concerns from students as a whole to the program faculty or to GSAS, so if you have a concern that you are comfortable discussing with your GDR it's a good idea to let them know. They cannot bring these concerns to the faculty to advocate for all students if they don't know about them, and there may be other students with similar concerns. Your GDRs may hold a student "town hall" once a semester or year to bring up issues, and this is a good forum to discuss some topics that may be weighing on your mind.

If you have a topic that you are uncomfortable discussing with any of the resources mentioned so far, or have not made sufficient progress in those discussions, you could continue the conversation outside of the Division of Science by speaking with the **Graduate School of Arts and Sciences (GSAS)**. GSAS oversees all graduate programs within the school of Arts & Sciences at Brandeis and is invested in the success of all graduate students in these programs. Depending on the topic that you have raised with faculty or administrative staff, they may have already contacted GSAS for advice/assistance on how to help or to handle the next steps. GSAS and your program/department faculty or the Head of the Division of Science frequently work together to support students, resolve problems, and enact positive changes.



Outside of the general hierarchy of places to go to for help, there are various other entities on campus here to support students. These resources on campus are dedicated to supporting graduate students:

- **The Office of Graduate Affairs:** This office is a home and source of support for all graduate students at Brandeis, including those studying at the Heller School, the Rabb School, or the International Business School. Graduate Student Affairs provides students with information and events about graduate life at Brandeis and community resources. If you'd like to reach out to this group, we recommend that you contact Jessica Basile, Assistant Dean of Graduate Student Affairs or Steve Weglinski, Assistant Director of Graduate Student Affairs.

- **The Graduate Student Association (GSA):** Supported by Graduate Student Affairs, the GSA is an independent student body that represents all graduate students and provides a platform for graduate students to raise issues and concerns and build community. If you have a concern about an issue affecting graduate students that extends past your program, department, and the Division of Science, the GSA is a good group to talk to. To connect with them, visit their website to see the current year's grad student executive committee.

There are some offices on campus that specialize in specific topics and who will almost always be the best resource for those topics:

- **The Office of Research Administration (ORA)**: ORA, which reports to the Vice Provost for Research, can help with issues related to research integrity and compliance. If you want to discuss the possibility of research misconduct, you may wish to report things there directly.
- **The International Students and Scholars Office (ISSO):** ISSO supports all of Brandeis' international students and scholars. This office determines visa eligibility and prepares and issues visa documents. If you ever have any questions about your Visa or any of the associated regulations (e.g. travel, CPT, OPT), you should reach out to your ISSO advisor. They can advise students on rights and responsibilities and provide guidance regarding issues that may impact your legal status. Their website also has a collection of useful information for international students.
- **Student Accessibility Support**: If you are a student with a disability and in need of academic or non-academic accommodations, this office can support you and help you navigate this process. The definition of a person with a disability is broad, and may students who do not think of themselves as students with disabilities may qualify for support under the law. Even if are you not sure if you will qualify, you are encouraged to reach out to SAS.

As mentioned at the start of this section, there are some topics that responsible reporters on campus cannot keep confidential, and those are issues of discrimination, harassment, or sexual misconduct. The office on campus that addresses these issues is the **Office of Equal Opportunity (OEO).** OEO provides information regarding support resources, information about taking action (internal resolution processes and criminal action), inquiries and investigations into concerns, processes to address grievances, and training for the Brandeis community. Please visit their website for contact information and steps (and an online form) to file a report. You are welcome to contact a resource listed above for support or advice about these topics, but they will be obligated to share the issue with OEO.

If you would like to have a *confidential* conversation with someone on campus, the following are our on-campus confidential resources:

- **The Brandeis Counseling Center (BCC)**: The BCC provides counseling for students in times of stress, and encourages them to ask for help with their most immediate concerns. Counseling is available to all students regardless of whether they have the Brandeis student health insurance plan or not. If you are struggling and need someone to talk to, we encourage you to reach out to the BCC.

- **The Prevention, Advocacy, and Resource Center (PARC):** PARC provides education, empowerment and support related to sexual assault, sexual harassment, dating/domestic violence and stalking. This group is a confidential, student-centered resource serving all members of the Brandeis community who have been impacted by violence.
- **The University Ombuds**: This office is a confidential, independent, impartial, and informal resource for all members of the Brandeis community. They provide a safe staff to talk confidentially and off-the-record about difficult situations and offer conflict resolution support.
- **The Chaplains in The Center for Spiritual Life**: The Brandeis chaplains offer counseling, support, and community to students of all faiths. They oversee on-campus worship and student religious life while also offering community support in times of joy and crisis.