Tufts UNIVERSITY | Sackler School of Graduate Biomedical Sciences

Graduate Program in Neuroscience

Program Guide
2016 - 2017

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The requirements described in these guidelines may be amended or altered by the Graduate Program. Note that Sackler-wide policies supersede program specific policies.

Welcome and Key Program Contacts

Welcome to the Graduate Program in Neuroscience.
This Program Guide provides key information and guidelines on the requirements of the program. It supplements information contained in the Sackler School Catalog (http://sackler.tufts.edu/Student-Life/Sackler-Catalogs), which has the official degree requirements and course listings, and the Sackler School Handbook (http://sackler.tufts.edu/Student-Life/ Sackler-Student-Handbook), which contains important information about topics such as the Sackler academic and registration policies, professional conduct guidelines, financial matters, and information about student benefits, services, and resources.

This Guide includes a listing of other graduate students in the program and contact information for faculty, staff, and students. You can find information about the research interests and publications of the faculty, as well as up-to-date schedules of seminars, journal clubs and research reports on our website (http://sackler.tufts.edu/Academics/Neuroscience-Welcome). We would greatly appreciate any feedback from you to help us make this Guide more useful.

There are several people who can serve as valuable resources during your PhD training and are always willing to discuss any issues or concerns about the program, or direct you to the appropriate office. They are listed below, along with information on how to contact them.

Name & Position	Location	Phone	Email
F Rob Jackson, Program Director	Stearns 329	6752	rob.jackson@tufts.edu
Maribel Rios, Curriculum Director	Stearns 326	2748	maribel.rios@tufts.edu
Chris Dulla, Student Advisor & Qualifying Exam Advisor	South Cove 203	3844	chris.dulla@tufts.edu
Leon Reijmers, Admissions Director	Stearns 328B	0301	leon.reijmers@tufts.edu
Shelley Antonio, Program Coordinator	Arnold 202	3796	shelley.antonio@tufts.edu
Molly Hodul, Graduate Student Council Representative	Jaharis 701D	6627	molly.hodul@tufts.edu
Anna Nathanson, Graduate Student Council Representative	South Cove 603	3866	anna.nathanson@tufts.edu

The Program Director is elected by the graduate program faculty to administer the educational mission of the graduate program. The Program Director represents the interests of the program on the Sackler School's Executive Council where policy matters concerning the School's programs are discussed and enacted.

The Student Advisor serves as a mentor to the first year students, including providing specific advice on selecting appropriate sites for laboratory rotations, choosing elective courses, and identifying laboratories for thesis work.

The Qualifying Exam Advisor guides the student through the Qualifying Exam process providing advice on topic selection and approaches to constructing the written proposal and oral presentation.

The Admissions Director is responsible for recruiting high quality program candidates, identifying candidates for interview from the applicant pool, arranging for interviews of these candidates with program faculty, and selecting the best candidates (with input from the faculty) to be given placement offers.

The Program Coordinator assists the Program Director in the functioning of the program as needed, as well as helps students schedule rooms, complete forms, plan events, and manage program requirements.

Graduate Student Council Representatives. Two representatives are elected by the students to serve as the program's representatives to the Sackler Graduate Student Council (GSC). The GSC organizes activities, including the Annual Sackler Relays, and the GSC Officers are ad hoc members of the Sackler School Executive Council.

Curriculum Overview

Required Courses

Students complete a series of required didactic courses designed to provide a strong knowledge base for their research. The Sackler School Catalog for the year in which students were admitted lists these required courses (http://sackler.tufts.edu/Student-Life/Sackler-Catalogs). In addition, the Catalog contains course descriptions and progression plans for the first and second years.

Elective Courses

Students are required to complete elective courses in addition to the required courses. Elective courses must be approved by the thesis advisor and the Program Director and should be used to explore students' interests and further their understanding of their thesis research fields. Students choose these courses from the list of electives in the Sackler School Catalog. Courses may be chosen from any Sackler program or from other schools that allow cross-registration.

The advanced topics electives are offered on an alternating schedule and students may elect to take them at any time. Thesis advisors may also require students to take any courses they feel are necessary for an adequate academic base in the student's chosen research area.

Journal Club

The overall goals of the Journal Club are to advance the student's skills in critically evaluating scientific literature and improve the student's presentation skills. Students may choose to present JC topics that they are familiar with, or they may wish to gain important experience by choosing topics that are new to them. Students should consult with their mentors when choosing a topic for presentation.

Attendance in JC is required and students who do not attend regularly will receive a warning; continued absence will result in a failing grade. PhD students must register each semester for 4 years and MD/PhD students for 3 years.

Graduate Seminar

The goal of attending the Graduate Seminars is to improve the student's appreciation for how research progress is obtained and to raise awareness of recent advances in the field. All students must register each semester for graduate seminar except for those students who have registered for PhD Degree Only.

Research Presentations

Students must present an annual report of their research, except those students who have received permission to defend their theses. The Student Research Presentation schedule is provided to students at the beginning of each academic year and will also be posted on the Sackler calendar. Research Presentations are attended by students, faculty, and other interested members of the Program. All students are required to attend these meetings.

Requirements for the Master of Science Degree

A student in good standing in the doctoral program who is unable to complete the requirements for the PhD degree may be allowed to write and defend a Master's thesis. Permission to submit a Master's thesis must be obtained in advance from the Program faculty and will only be granted if compelling reasons for leaving the PhD program are provided and if specific guidelines are followed and specific criteria are met. Master's Degree Requirements can be found in the Sackler School Handbook (http://sackler.tufts.edu/Student-Life/Sackler-Student-Handbook).

A Master's candidate may only begin writing the thesis after obtaining explicit permission to do so from the thesis advisory committee. The student's thesis must describe original laboratory research carried out by the candidate under the supervision of a faculty member, and must form a coherent body of work of publishable quality, even though the scope of the work may not permit publication. The Master's thesis should be presented in the same format as a PhD thesis, as required by the Sackler School. The suitability of the Master's thesis will be determined by the thesis advisory committee after an oral defense of the thesis by the candidate and is subject to ratification by the program.

Laboratory Rotations

Purpose

Laboratory rotations are designed to acquaint students with some of the research projects of current interest in the program, to allow students to assess the suitability of a particular lab for their thesis research, and to allow faculty members to assess the suitability of individual students for work in their labs. Neuroscience students complete the Neuroscience Research Techniques course (NRSC 0233) during the first 9 weeks of fall semester. After that, they complete three laboratory rotations.

Rotation Matching Process

Students choose rotations based on their interests and the willingness of the rotation mentor to accept a student. Students are strongly encouraged to choose rotations that expose them to areas of research with which they are not already familiar.

The Sackler School Laboratory Rotation Policy is published in the Handbook (http://sackler.tufts.edu/Student-Life/Sackler-Student-Handbook) and the dates for laboratory rotations are posted on the Sackler website in the Academic Calendar (http://sackler.tufts.edu/Student-Life).

Several weeks before rotations begin the Sackler School Dean's Office emails students a list of available faculty laboratories. This email contains a link to a survey in which students are to enter their first, second, and third choices for rotations. The Program Student Advisors meet with students to discuss their possible matches. Information regarding the research areas of program faculty members can be found at the Sackler School website (http://sackler.tufts.edu/Faculty-and-Research/Sackler-Program-Faculty). In addition, students should meet with potential mentors during the last three weeks of the immediately prior rotation, but no commitment can be made about whether or not the student may rotate in a lab before all rotation matches are announced. Students should share their interests and mentors discuss the possible projects available in the lab. All students will be notified of their matches simultaneously by their Student Advisors.

Each rotation is evaluated by the rotation mentor. Grades are given for each rotation. When multiple rotations are completed in one semester, the grades are averaged to obtain the grade for the Laboratory Rotations course. If only one rotation is completed in a term, the grade for that rotation is reported as the grade for the course.

Qualifying Examination

Purpose

A Qualifying Examination is given to all doctoral candidates. The purpose of the examination is to determine whether a student: 1) has adequate general knowledge in research, 2) is able to formulate experiments and test biological hypotheses, 3) can critically analyze experimental results, 4) has the ability to communicate both orally and in writing; and 5) has creativity.

Timing of the Qualifying Exam

The Qualifying Examination must be completed by the end of Spring Semester of the 2nd year for PhD students. MD/PhD students must complete the exam by the end of Spring of the 1st year. Any additional required re-examination must be successfully completed by August 31. Students should schedule examination dates at least two months in advance. The complete written proposal should be submitted to the examination committee at least 10 days prior to the examination date.

The exam is administered after the student has had at least one thesis committee meeting, which is usually held midway through the preceding fall term. Prior to the exam, the student will receive feedback from the committee and the student Qualifying Exam advisor about the feasibility of the proposed research. A one-page specific aims section, outlining the proposal, must be written by the student and approved by the thesis committee, the Qualifying Exam Advisor, and the Program Director before the student is permitted to write the proposal.

Selection of the Qualifying Exam Committee

Members of the examination committee will be selected by the student and approved by the Student Advisor (currently Chris Dulla). The committee will consist of 3 or 4 faculty members and will not include the student's thesis advisor (although the latter may attend the exam but not participate). One examination committee member may be from outside the program. Given that the Qualifying Exam proposal is based on the student's thesis research, the Qualifying Exam committee will usually be the same as the thesis advisory committee (the TAC minus the mentor). This provides for continuity and allows

the TAC to offer guidance about the proposal at the first committee meeting and leading up to the Qualifying Exam.

Overview of the Qualifying Exam Process

For the Qualifying Examination, students are required to write and defend orally an original research proposal. The subject of the research proposal should be an area of the student's choice that is related to future thesis work.

A research proposal will be written by the student in a modified NIH fellowship format (see below) and will be used by the faculty to assess the student's capabilities in these areas. In addition to the proposal, the committee will test the candidate's general neuroscience knowledge base, particularly as related to the proposed project. This may include questions about the background literature and foundational knowledge relevant for the proposal. The examination process should be a learning experience for the student and identify any areas of weakness that may need additional work.

Format of the Written Qualifying Exam

The written proposal should represent the best effort of the student to present her/his own ideas in a clearly written, error-free document. Discussions with faculty or other students about specific ideas are permitted. Faculty should *not* review the written work. Review of the written material by other students and postdoctoral fellows is permitted in the interest of producing a clear and concise document, but the student is responsible for all writing in the document.

The student should be prepared to give a 15-20 minute oral presentation of the research proposal that he or she may practice with other students and postdoctoral fellows. The student should feel free to prepare additional explanatory materials about the proposal that can be used during the exam. Questions and discussion will follow. The exam should be limited to 2½ hours and will be based on a formal research proposal submitted by the student (the format of which is detailed below) that describes his/her chosen thesis research area. The oral portion of the examination will (a) assess the student's broad fund of knowledge (based on didactic coursework, journal club, and seminars) and (b) evaluate the student's insight into his/her specific thesis area. For the latter, the student should demonstrate an in-depth understanding of the historical literature in the thesis area, an ability to define an important, unanswered question, and the capacity to design appropriate, feasible experiments with which to answer the question. Although specific methodological details will not be emphasized, the student should understand the theoretical bases, practical utility, and limitations of methods to be employed in the experiments.

<u>The Research Proposal</u>

The research proposal is, in part, an assessment of the student's ability to frame hypotheses and identify questions of scientific importance. Written communication is also an important component of a successful academic career. The proposal's NIH fellowship application format is meant not only to give students some practice at NIH grant writing, but when deemed appropriate, to facilitate the student's conversion of the Qualifying Examination document into an NIH Individual NRSA fellowship application.

The complete proposal should be no more than 7 pages in length (single-spaced, not including references). The student must fully document evidence and statements through appropriate literature citations. It is particularly important that a clear

distinction be made between the student's original ideas and those published by others. Citations to the latter should include all authors and the full title of the article in each reference and appear in Literature Cited at the end of the research plan, as described below.

Brevity and clarity in the written and oral presentations are indicators of a student's ability to create a well-reasoned and focused approach to a research objective and, thus, reflect on the likelihood that the specific aims of the project will be achieved. Proposals should include sufficient, but concise, information to facilitate an effective evaluation without the need for other materials. The proposal should be organized according to the guidelines below and should communicate to the reader (a) why the work is important (b) what has and has not already been done (c) what experiments will be proposed to extend current knowledge in the field, and (d) how the work will be carried out. Do not exceed 7 pages for items 1-4, below. All tables and graphs must be included within the 7-page limit.

1. Specific Aims (1/2 – 1 page)

   Begin with a paragraph to introduce the long-term objectives of your work, then communicate concisely your specific research aims and what you intend to accomplish. Frame your aims in terms of an hypothesis to be tested, and *briefly* summarize what approaches will be used to test it.

2. Background and Significance (1 – 2 pages)

   The point of this section is to emphasize the importance of your proposed studies in the context of the larger research area. Critically evaluate existing knowledge and specifically identify the gaps that the project is intended to fill. Throughout this section, relate your specific aims to the broader objectives.

3. Research Approach (3 – 4 pages)

   Describe the research design and the procedures to be used to accomplish the specific aims of the project. Include the means by which the data will be collected, analyzed, and interpreted. Do not emphasize details (e.g., recipes for buffered solutions). Describe any new methodology and its advantage over existing methodologies. Discuss the potential difficulties and limitations of the proposed procedures and propose alternative approaches to achieve the aims should the initial approach prove ineffective. Describe how the results obtained from the proposed experiments might be interpreted, and how they will contribute to the overall knowledge in the area. Both the interpretation of results and alternative approaches should be included in an "Outcomes and alternative approaches" section at the end of each aim.

4. Conclusions and Future Directions (1/2 page)

   Speculate on possible future directions of the research.

5. Literature Cited (outside of the 7-page limit)

Evaluation of the Qualifying Exam

Final assessment of exam performance will be made by the examination committee in private session. The exam will be graded *Pass, Fail* or *Provisional Pass,* and a report that includes this grade plus a summary of the student's performance (emphasizing areas of weakness that should be addressed in the future by the student's mentor) will be submitted to the Program Director.

- In the case of a *Pass,* no further work is required on the Qualifying Exam.
- A *Provisional Pass* is intended to communicate to the student that while important aspects of the Qualifying Examination were satisfactory, one or more important aspects of the examination were unsatisfactory. It is also intended to convey that the examining committee observed sufficient strength in the examination to have confidence that the student can and will successfully fulfill the conditions imposed by the committee. In all cases in which a *Provisional Pass* grade is given, the examination committee should specify in writing to the student the time frame in which the conditions must be satisfied.
- If the requirements for a *Provisional Pass* are not fulfilled within the time frame specified, the *Provisional Pass* grade will convert to a grade of *Fail*.

Failure to pass the Qualifying Exam will result in dismissal from the School.

Research, Career Planning, and Thesis

Selection of a Thesis Advisor

Students are matched with thesis mentors in May of their first year after completing their laboratory rotations. The centralized matching system is designed to maximize the chances that students are matched with one of their top choices. Starting in early May, students should begin to discuss with potential thesis advisors the range of research projects that may be open to a student. No such discussions should occur at any earlier time. At no time should a student expect, or faculty members provide, any guidance or commitment as to the likelihood that the student would be accepted into the lab. At this stage, all students are afforded an equal opportunity to discuss potential projects with all faculty members who have indicated a willingness to accept one or more students.

During a predetermined period in May, each student will submit a list of his/her first, second and third choices of thesis labs. The student advisor will make known to relevant faculty members the names of students who have listed the faculty member as a first choice. Each faculty member will then have the option to accept the student(s) or to decline. When more than one student asks to be accepted into the same lab and only one space is available, the faculty member has the option of choosing which student to accept. If a student is not accepted into his/her first lab choice, every effort will be made to assure that that student's second choice is successful. In summary, faculty members do not recruit students into their labs and students should not make commitments to faculty members or ask for commitments from faculty members except through the process described above.

MD/PhD students usually select a thesis advisor after completing two summer rotations during medical school and upon entering the program.

A student who chooses a faculty thesis mentor in a research lab that is not part of the Neuroscience Program must decide whether to switch graduate programs or stay within the Program. In the latter case, the student would be required to meet all the requirements of the Program, the thesis advisor would have to be approved by the Neuroscience Program Faculty, and the student's thesis project would have to be judged appropriate for a degree in Neuroscience.

Selection of the Thesis Advisory Committee

PhD students will select a Thesis Advisory Committee early in the fall semester of their second graduate year, and MD/PhD students will do so during fall of their first graduate

year. Students are responsible for holding their first TAC meeting before the end of this semester.

The Committee should consist of three members of the program (including the student's research advisor). A committee member from outside Tufts University will take part in the student's final oral defense of thesis; this examiner can be added to the committee at any point but typically takes part in at least one committee meeting prior to the student's defense of thesis.

Thesis Proposal

The student will prepare a written proposal on the thesis topic (with aims, background, and experimental overview), to be distributed to the thesis committee members prior to the first committee meeting. Over the course of training, and for each subsequent committee meeting, this document will be refined based on experimental results. Students will use the thesis topic as the basis for a Qualifying Examination (described above in this Program Guide).

Career Planning

All research trainees must have an Individual Development Plan (IDP) to help them develop their career paths. Tufts has created two forms to assist students in identifying their career goals and the current activities they participate in to achieve them. These forms are available at http://sackler.tufts.edu/Student-Life/Information-for-Current-Students/Student-Forms.

- The IDP form is intended help students consider their career aspirations as well as the types of skills and attributes that may affect these aspirations and students' ability to attain their goals. It is not intended to predict or identify careers that match their skills. The document is for students' personal use only. Students are not required to share this document with anyone or provide anyone at Tufts with a copy of the completed document. Students may, however, choose to share the document with mentors who may suggest ways to improve skills that are appropriate to the career path(s) being considered. This document should be a living document and one that is updated as students advance in their training.

- The Training and Career Goals Progress Report form is designed to help students think about what they are learning and how to develop professionally. Students are asked to complete this form with a reflective assessment of their current progress and the plans for reaching both short- and long-term career goals. Note that some questions on the form may not apply depending on a student's stage of training. This annual progress report is designed to provide ongoing documentation of progress made towards career goals. Once a year, students complete this form and submit it to their thesis committees along with their research reports for discussion at a TAC meeting. It is the responsibility of thesis committees to provide advice on the resources that will help students achieve their goals at Tufts and beyond.

IDPs have proven so valuable that NIH has mandated that every trainee that it supports have one. Students can learn about IDPs at this very valuable site, http://myidp.sciencecareers.org/. They may also talk with their mentors, Student Advisors, the Program Directors, or Kathryn Lange about career planning, in addition to their Thesis Advisory Committees.

Thesis Advisory Committee Meetings and Assessment of Research Progress

Neuroscience students are responsible for holding their first Thesis Advisory Committee (TAC) meeting before the end of the fall semester of their second graduate year. MD/PhD students must hold their first TAC meeting in the fall semester of their first graduate year.

Subsequently, two meetings a year, one in the fall semester and one in the spring semester, will be necessary for satisfactory performance in the graduate research course. Failure to hold meetings in a timely fashion will result in an Incomplete grade for research for the semester which will become a failing grade if not completed by the end of the subsequent term.

Students should summarize their research progress and plans on the most up to date TAC Evaluation form on the Sackler website (http://sackler.tufts.edu/Student-Life/Information-for-Current-Students/Student-Forms). After the Committee meeting, the TAC Chair enters the Committee's assessment on the Thesis Advisory Committee Evaluation form and assigns a grade for Graduate Research. The form is signed by all members and an electronic copy is sent to the Sackler Registrar who records the grade on the student's transcript.

At the first committee meeting, the student will summarize his/her general research topic and define initial hypotheses. Subsequent meetings will refine (or re-define) hypotheses and/or serve as research updates for the committee. It is the responsibility of the student to provide the committee members with the TAC Evaluation Form and Progress Report at least one week prior to each meeting.

The following format is suggested for progress reports.

- Short introduction to the research topic (1-2 pages); this can be updated prior to each committee meeting.
- Specific Aims section listing and describing the specific aims of your research (1 page or less).
- Research Progress section describing the progress made towards each specific aim. Hypotheses should be stated. Methods and approaches should be mentioned but not described in detail. Figures (with legends) can be embedded in the text or appended at the end of the document. This section will grow in length as you complete experiments relevant for each aim (see example page below). Within this section, text describing research completed since the last committee meeting should be highlighted in some way (e.g., in italics or a different color font).
- Publications resulting from work (include those submitted or in preparation).
- Meetings attended (or which you plan to attend) during the current academic year.
- When you are close to finishing your thesis research, a timeline for completion of studies can be included in the progress report.

An example of information to include in the progress report for each aim is shown below. This example was provided by Dr. Ian Schmitt. It is only an example and you may choose to modify the format slightly depending on your research project. For example, you may wish to include short sections summarizing the results shown in each figure. The same information should be provided in abbreviated form, using bullets if you

choose, for question #2 on the TAC Evaluation Form, “Summary of research progress since the last report”.

1. Specific Aim 1: I will test the hypothesis that wakefulness increases synaptic adenosine in the hippocampus and cortex and that this increase depends on SNARE function in Astrocytes.

   While wakefulness-dependent changes in the level of adenosine have been measured in some brain regions using microdialysis based methods, this method has rather low temporal resolution and does not access synaptic adenosine. To overcome this problem, I will measure tonic A1 receptor-dependent inhibition at the CA3-CA1 synapse in hippocampal slices and use to quantify the level of adenosine at the synapse. I will then ask whether normal or enforced wakefulness increases synaptic adenosine and whether astrocytic dnSNARE expression prevents this increase. To obtain a corresponding measurement *in vivo,* I will measure the effect of pharmacological manipulation of A1 receptors on slow oscillations in local field potential recordings in the intact organism during periods of high sleep pressure following normal or enforced wakefulness. The experiments for this aim are listed below.

   a. Goal: Test whether normal or enforced wakefulness increases inhibition by extracellular adenosine at the Schaffer collateral synapse.

      Method: I will obtain field recordings in acute slices taken at distinct time-points across the circadian period or following enforced wakefulness. To measure synaptic adenosine mediated inhibition, 200 nM 8-cyclopentyl-1, 3-dimethylxanthine (CPT, an adenosine A1 receptor selective antagonist) will be applied for thirty minutes. The increase in field potential slope produced following relief of inhibition by this drug will be taken as a measure of adenosine tone: the steady-state level of synaptic adenosine acting on presynaptic, inhibitory A1 receptors.

      Status: Complete, See Figure 1

   b. Goal: Determine whether astrocytic glia mediate wakefulness-dependent changes in extracellular adenosine through a SNARE dependent mechanism.

      Method: I will the adenosine tone assay described in (1) above in the dnSNARE transgenic mouse model. Measurements will be obtained from slices taken following either normal sleep or following enforced wakefulness.

      Status: Complete, See Figures 2-3

   c. Goal: Measure the effect of wakefulness-dependent increase in adenosine on cortical synaptic and network activity in the intact mouse.

      Method: At either ZT 0, at the termination of the waking period, or ZT 4, following 4 hours of the normal sleep period, local field recordings will be obtained from WT mice under urethane anesthesia. Mice will first undergo craniotomy surgery to allow placement of the local field potential electrode. The tungsten recording electrode will then be positioned in the somatosensory cortex, which shows robust signaling and which is responsible for the dominant components of EEG recording based markers of sleep pressure (low frequency Slow Wave Activity). Urethane will be employed to enhance slow wave activity in the cortex. Following acquisition

of baseline frequency profile, CPT will be applied to the cortical surface and the resulting change will be taken as a measure of the adenosine acting on cortical synapses. This method has previously been employed in our laboratory.

Status: Essentially Complete, See Figure 3

Each TAC meeting begins with a short evaluation of student progress by the committee; the student leaves the room during this process. The student then presents a short oral presentation of about 20-30 minutes that emphasizes progress since the last committee meeting. The committee will review the student's work and provide research guidance.

At the end of the meeting, the student's mentor leaves the room, and the student has the option to privately discuss any laboratory problems or issues with the committee. After each meeting, the Committee Chair completes the second part of the TAC Evaluation form and transmits it to the student and other committee members. The student can add her/his own comments (if desired) and return the revised document to the committee chair. The TAC chair will then forward the completed document to the student and Program Coordinator.

Thesis Format and Defense

When a student receives permission to defend, he/she should make an appointment to meet with the Associate Dean. Students will receive instructions on all aspects of the process used to complete the degree and information about Commencement Ceremonies at Tufts University.

To complete their graduate studies, students must write a thesis and defend their research in an oral examination. Students distribute their theses to their Thesis Defense Committee members approximately two weeks before their scheduled defense. The chair of the thesis committee will contact all committee members, including the outside examiner, 48-72 hours prior to the defense to determine if the thesis is generally acceptable to the committee.

The oral defense will consist of a public presentation of approximately 45-60 minutes, followed by a closed discussion period with the committee and outside examiner.

During the deliberations of the thesis examination committee, the committee should determine what revisions need to be made to the thesis document and the amount of time needed to complete those particular revisions. The Sackler School Time-from-Thesis-Defense-to-Completion Policy, governing thesis revisions and continued receipt of a stipend, is in the Student Handbook (http://sackler.tufts.edu/Student-Life/Sackler-Student-Handbook).

List of Neuroscience Program Students

Year in School	Student	Advisor
1st Year	Samantha Howard	TBD
	Maia Kipman (MD/PhD)	David Walt
	Kathryn Lee	TBD
	Katherine Watters	TBD
2nd Year	Dominique Ameroso	Maribel Rios
	David Dickson (MD/PhD)	Larry Feig
	Jenny Koenig (MD/PhD)	Chris Dulla
	Seth Vogel (MD/PhD)	Yongjie Yang
	Minagi Ozawa	Leon Reijmers
3rd Year	Camila Barrios Camacho	Jim Schwob
	Christopher Bartolome	Dong Kong
	Patrick Davis (MD/PhD)	Leon Reijmers
	Molly Hodul	Peter Juo
	Anna Nathanson	Steve Moss
4th Year	Andrew Coleman	Thomas Biederer
	Matt Kelley	Steve Moss
	Manasa Parakala	Steve Moss
	Danish Saleh (MD/PhD)	Alexei Degterev
	Michaela Tolman	Philip Haydon
5th Year	Lauren Lau	Chris Dulla
	Laura Darnieder	Miczek
	Jaclyn Dunphy	Phil Haydon
	Andrew Hooper	Jamie Maguire
	Alex Jones	Leon Reijmers
6th Year	Liz Hanson	Chris Dulla
	Micaella Panessiti	Maribel Rios
	Jennifer Shih	Chris Dulla
	Samantha You	Rob Jackson
7th Year	Jonathan Alexander	Michele Jacob

List of Neuroscience Program Faculty

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