

Academic Year | 2023 – 2024

# Master's Program Handbook

*Department of Neurobiology*



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## **PROGRAM OVERVIEW**

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The Master's Program in Neurobiology features independent, hands-on research training combined with focused classroom instruction, preparing students for careers in medicine, industry, academic research, and teaching. The program is designed so students can earn an MS degree after one year of intensive study and research.

The program provides an unparalleled opportunity to learn and collaborate with highly- renowned scholars in the field of Neurobiology. Graduates of the program go on to MD or PhD programs at top institutions around the country, or choose to directly enter careers in academic or industrial research.

### **Neurobiology MS Program Leadership**

**Prof. Marco Gallio**

*Director*

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## The Graduate School's Policies and Procedures

All students within TGS are subject to and should be aware of [The Graduate School's academic policies](#), their program's policies (handbook), and [Northwestern University's policies](#) pertaining to students, including the [Student Handbook](#).

### Campus Life

#### **Diversity and Inclusion**

A diverse student population is a key element of the educational experience for students in TGS. Diversity presents itself in many different forms, including socioeconomic status, race or ethnicity, religion, gender identity and expression, sexual orientation, nationality or place of origin, disability, unique work or life experience, etc. The Graduate School's Office of Diversity & Inclusion (ODI) is committed to providing diverse graduate students with the tools they need to be successful both inside and outside of the classroom. Through their retention and recognition efforts, ODI aims to improve the overall engagement and graduate experience of our students. Learn more about these strategies [here](#).

#### **Community and Campus Life**

TGS offers many ways for students and postdoctoral trainees to engage on campus through quarterly events, Co-Sponsorship Grants, and student organizations. The Graduate Leadership and Advocacy Council (GLAC), Graduate Student Association (GSA), and Chicago Graduate Student Association (CGSA) are three overarching TGS-affiliated student organizations that tend to graduate student advocacy, social, and volunteer needs. There are also a number of affinity groups. [Click here for form information](#).

#### **Professional Development**

TGS supports graduate students to develop the skills, experiences, and knowledge—or core capacities—required to meet their academic and professional goals. TGS partners with units across the University to offer [professional development programs and resources](#) through which graduate students development. [Click here to contact for more information](#).

#### **Career Preparation**

[Northwestern Career Advancement \(NCA\)](#) supports graduate students through all stages of the career development process, from career exploration to applying to opportunities. Career counselors help graduate students reflect on their professional skills and values and help connect that reflection to targeted career fields of interest. Our dedicated TGS career advisers are available to help students develop a job search strategy, assemble application materials, navigate the interview process, and enter into the negotiation process. NCA supports students throughout their time at Northwestern and provides expert consultation for students considering a wide range of careers, including (but not limited to) careers in academia, consulting, research & development, and policy. To learn more about upcoming events and to schedule an appointment with a career adviser or counselor, please visit Handshake, NCA's career portal.

## **English Language Programs (ELP)**

ELP supports international students who wish to improve their English language skills. Services are offered year-round, and include [group language classes](#), one-on-one instruction, supported [online speech and language training](#), and [language tables](#). New PhD and MFA students may also receive intensive language support through the [ELP Foundations](#) and [Integrated Academic Skills](#) programs. Services are offered free of charge, and are limited to students and employees of Northwestern University. For more information, email [elp@northwestern.edu](mailto:elp@northwestern.edu) or visit the [ELP website](#).

## **Student Affairs**

Made up of 30 departments, the [Division of Student Affairs](#) engages students in activities and culture on campus and in the surrounding community. Student Affairs offers support to students in need by providing learning programs, services, and mentoring to sustain a safe and healthy Northwestern community.

## **AccessibleNU**

AccessibleNU supports and empowers students with disabilities by collaborating with the Northwestern community to ensure equal access to fully participate in the academic learning environment. Should you anticipate or experience disability-related barriers in the academic setting, please contact AccessibleNU to move forward with the university's established accommodation process by emailing [accessiblenu@northwestern.edu](mailto:accessiblenu@northwestern.edu) or calling 847.467.5530.

## **Wellness Services**

Northwestern's Health Services provides quality medical care to students on both the [Chicago](#) and [Evanston](#) campuses. All full-time students who register for three or four courses are eligible to use outpatient services. Northwestern's [Counseling and Psychological Services \(CAPS\)](#) serves as the primary mental health service at Northwestern with offices on both campuses. Northwestern students who are enrolled full-time have access to the Henry Crown Sports Pavilion, Northwestern's main gym. [Learn more on their website.](#)

## **Housing**

For information on housing for graduate students, please refer to the [Graduate Housing website](#). The on-campus housing application is available online, but requires a NetID login. If your NetID is not yet activated, please email the [Residential Services Office](#) for further information.

## **TGS Quarterly Activity Fee**

The Graduate School's quarterly [Activity Fee](#) is for full-time enrolled TGS students and provides the U-Pass, free attorney services, graduate student organization funding, and activities.

**Please note:** The Activity Fee, along with any outstanding account balance, must be paid by the term due date to avoid any late payment penalties such as: late fees, registration hold, or transcript hold. Even fully funded students must pay the activity fee themselves.

### **Child and Family Resources**

TGS has a family resource liaison and a range of programs and resources specifically for graduate students with children or who are thinking about having children during their program. These include assistance with parental leave, family-friendly neighborhoods and childcare. More information can be found [here](#).

### **Changing Personal Information**

If there has been or will be any changes to your personal information (address, phone, etc.) since you submitted your online application, you will have the opportunity to update your information in CAESAR once you begin your study at Northwestern. Formal name changes are processed by the Registrar's Office. If you are receiving a stipend from Northwestern, you will also need to update the payroll system via the Self-service portal when there are changes to your address, phone number, etc.

### **Social Media**

TGS frequently posts news, events and opportunities on our [Facebook](#), [Twitter](#), and [Instagram](#) pages.

# ONBOARDING

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TGS provides orientation prior to the academic term. Below is some additional information you may find helpful in getting set up at the University.

## Housing

### On-Campus Graduate Student Housing

Engelhart Hall Apartments are open to all graduate students, their partners, and families. Renovated apartment units feature redesigned floor space and new kitchens with all new appliances. Staff is on-site.

For more information, visit Graduate Housing at:  
<http://www.northwestern.edu/living/housing-options/graduate-housing/index.html>.

### Off-Campus Housing Options

The Division of Student Affairs Off-Campus Housing Guide contains information and resources available to students living off-campus, from apartment hunting to being a good neighbor within the Chicago/Evanston and Northwestern communities.

Most students live in Evanston or the Chicago neighborhoods directly south of Evanston (Rogers Park, Edgewater, Ravenswood, Uptown). Free apartment finding resources include: Apartment Finders, The Apartment People, Craigslist Chicago, Domu Chicago, HotPads, Padmapper, Redfin, and Zillow.

## Tuition

For information about fees and tuition costs, visit the TGS tuition and fees page at:  
<http://www.northwestern.edu/sfs/tuition/graduate/the-graduate-school.html>

### Quarterly Billing and Payment Schedule

<b>Term</b>	<b>eBill available</b>	<b>Online Payment deadline</b>
<b>Fall</b>	August 10	September 1
<b>Winter</b>	December 10	January 1
<b>Spring</b>	March 10	April 1
<b>Summer</b>	June 10	July 1



## Financial Support

The Graduate School Financial Aid Website:

<http://www.tgs.northwestern.edu/funding/index.html>

Student Loans:

<https://www.tgs.northwestern.edu/funding/assistance/loans.html>

The master's program **does not** provide financial aid in the form of academic scholarships, assistantships, TA opportunities, or stipends.

Federal financial aid policies will not allow a student to borrow federal funds for more than 150% of the program length (i.e., the limit for federal financial aid is 18 months for a 12-month program). The NU Financial Aid office will contact students who are registered for more than 18 months in the MS program and have federal financial aid.

## Graduate Student Tracking System (GSTS)

The [Graduate Student Tracking System](#) enables students to track their progress and academic activity in one place. Log in with your NetID and use the tool to communicate your plan of study, coursework, milestones, and annual progress with your program.

How to use GSTS: <https://www.tgs.northwestern.edu/academic-policies-procedures/student-user-guide.pdf>

## CAESAR

The student information portal enables you to register for classes, review your funding, and review and pay your student account.

## NetID and Email

Your NetID is your electronic identity at Northwestern. The most common format of a NetID is a combination of three letters (often related to your name) and four numbers. Your NetID is different from your seven-digit student ID number. You will use your NetID to access essential University services and resources, including, but not limited to, CAESAR, Canvas, Northwestern Library online resources, research resources, campus wireless networks, and Microsoft Office 365.

Powered by Google's G Suite for Education, your @u.northwestern.edu student account includes tools for email, calendars, document management, cloud storage, and more. All official communication from Northwestern is sent to this account. You are responsible for receiving, reading, and responding to messages in a timely way, so please make it a habit to check for new mail every day.

**Please note:** Your @u account password is distinct from your NetID password. More information is available on the [Northwestern IT website](#).

## Employee ID

Included in your admission letter (at the bottom of the page) and on your [application portal](#) checklist is your seven-digit Employee ID. Your Employee ID is often referred to as your “Student ID Number.” You may be asked to include your Employee ID on housing, health record, or other University forms. Your Employee ID will remain with you throughout your tenure at Northwestern University.

## Wildcard

Northwestern Student ID cards are called “Wildcards.” Your [Wildcard](#) will allow you to enter University facilities and use various services around campus.

### **Please note:**

- **You must upload and submit your photo for your WildCard**
- **Appointments are required to pick up your WildCard.**
- **Prefer to have your Wildcard mailed to you? Click [here](#) for more information.**

Additionally, many local businesses in Evanston offer [discounts](#) with your WildCard.

Most Neurobiology labs require WildCard authorization for access. Some labs may require you to be issued physical keys. For Neurobiology WildCard access and keys, please complete these [access forms](#). If you have any questions, please contact the main office.

## Health Services

All full-time Northwestern students are required to have health insurance coverage either through the Northwestern University Insurance Plan or the student’s own health insurance carrier. Those who elect to waive the NU Plan must ensure their health insurance meets the Northwestern University standards.

Please refer to the site below to learn more about obtaining student health insurance as well as the policies under the NU Insurance Plan.

Policies and Enrollment: <a href="http://www.northwestern.edu/healthservice-evanston/insurance-patient-accounts/health-insurance/insurance-enrollment/index.html">http://www.northwestern.edu/healthservice-evanston/insurance-patient-accounts/health-insurance/insurance-enrollment/index.html</a>
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## Transportation and Parking

- Northwestern University operates several shuttles for students, faculty and staff on the Evanston and Chicago campuses. A valid WildCard is required to ride the shuttles.

### **Shuttles**

- For more information, visit:
  - <http://www.northwestern.edu/userservices/transportation/shuttles/>

### **Parking**

- For information on Evanston campus parking visit:
  - <http://www.northwestern.edu/up/parking/>

### **U-Pass**

- TGS and the Chicago Transit Authority provide the CTA University Pass (U-Pass) to full-time TGS graduate students through a quarterly Activity Fee. The CTA U- Pass program uses fare cards called Ventra, a contactless payment system that serves as a U-Pass. Benefits of this system include:
  - Can be used 365 days a year
  - Can be used on [CTA buses](#) and trains for unlimited rides
  - Can be used on [Pace buses](#) as a fare card (charges apply)
  - Can be loaded with funds and changed to a full-fare card once you are no longer enrolled full-time
  - Personalized with your Wildcard photo and name

**Please note:** Please check the [U-Pass webpage](#) in mid-August for details on picking up your U-Pass.

## Northwestern Information Technology (NUIT)

Northwestern Information Technology is the central information technology organization providing services and resources to support the academic, research, and administrative missions of the University. Visit the [NUIT website](#) for tech tools, services, and support options.

The IT Support Center provides technical support and guidance on University services and resources. Contact the IT Support Center:

- Call 847.491.4357 (1-HELP).
- Email [consultant@northwestern.edu](mailto:consultant@northwestern.edu).
- Visit the Technology Support Center in the University Library.
- Search the [Northwestern Knowledge Base](#) for answers to common questions.
- Find tips on the [NU1HELP Facebook page](#) and [@Northwestern\\_IT](#) on Twitter.

## Research Safety

Safety is an important component of conducting proper scientific research. After you choose a research advisor, it is important that you register as a lab worker in their lab and take the required research safety training.

Your lab's safety designate should be able to assist you in getting an account for [LUMEN](#) in their lab.

## Institutional Animal Care and Use Committee (IACUC)

Office for Research Safety: <a href="https://researchsafety.northwestern.edu/">https://researchsafety.northwestern.edu/</a> IACUC: <a href="https://iacuc.northwestern.edu/">https://iacuc.northwestern.edu/</a>
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If your research work will involve the use of vertebrate animal subjects or humans, it is important to get animal use approval as soon as possible. This can delay the start of your research if it is not done expediently. Your research mentor will help you get approval and training once you join a lab.

## Campus Events and Norris Center

Northwestern's Plan It Purple calendar <http://planitpurple.northwestern.edu/>  
University Center Blog: <https://sites.northwestern.edu/studentaffairs/category/norris-university-center/>

The university holds many campus events that you as a student are entitled to attend. Most officially-hosted events can be found on the **PlanIt Purple** website.

**Norris University Center** is another great resource for events and activities. They offer events such as "Cinema in the Park" or "Norris at Night", rentals of bikes, hammocks and other outdoor equipment, mini courses, etc.

## ADMISSIONS

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Students must be admitted to TGS before they can be enrolled in the MS Program in Neurobiology. All applicants must apply online via the *CollegeNET* website.

For information on admissions, see the TGS admissions webpage. Their webpage also provides information on financial aid, tuition, and academic services.

You can review all of TGS' admissions policies at:  
<https://www.tgs.northwestern.edu/admission/index.html>

The Departmental application deadline is **March 1**. The Department's admissions committee relies on the research experience, letters of recommendation, transcripts, and personal statement of purpose in making choices for admission.

**GRE and/or MCAT scores are not required but may be included.**

The required statement of purpose that accompanies your application for graduate study at Northwestern is very important and is often a crucial factor in the decision to admit. A clear, well-focused statement reveals your potential for graduate work and may compensate for less than stellar grades and test scores.

In order to be considered for the graduate program, students whose first language is not English must take the TOEFL or IELTS examination.

- For the TOEFL exam, students must score:
  - **600** or higher on the paper-based test
  - **250** or higher on the computer-based test
  - **100** or higher on the internet-based test.
- For the IELTS exam, students must score a **7.0** or higher.

Tests must be taken no more than two years before the intended quarter of entry.

Note that Departmental requirements supplement, but do not supersede, those from TGS.

## GENERAL REQUIREMENTS FOR THE MS DEGREE

Students commence their studies in the Fall Quarter. Students must complete a total of nine (9) credit hours to receive their degree. Students must also meet deadlines set forth by both TGS and the MS Program.

### TGS Master's Degree Requirements

For all TGS Master Degree requirements and policies see:  
<http://www.tgs.northwestern.edu/about/policies/masters-degree-requirements.html>

Briefly, TGS requires that all students in graduate level programs meet or exceed the following:

- Students must maintain a minimum GPA of at least 3.0
- Students cannot have more than two (2) Incomplete grades
- Students must meet all required deadlines

All Northwestern University graduate students must also fulfill a set of requirements regarding:

- Residency
- Approved coursework
- Grades
- Filing for graduation

#### Residency and Courses

To be eligible for a master's degree, a student must successfully complete at least nine (9) graded courses (non-P/N; in other words, non-Pass/No Grade) authorized for graduate credit and meet the minimum residency requirement. Residency is calculated in terms of quarters of full-time study:

- Students must meet a residency requirement of the equivalent of three (3) quarters of full-time registration in courses authorized by the Graduate Faculty for graduate credit.

#### Timeline

Students must complete all requirements for the master's degree within five years of the date of their initial registration in The Graduate School, which falls on the last day of the 20th quarter.

Students who do not complete their degree within five years will not be considered in good academic standing and will be placed on academic probation.

Students in the MS Program in Neurobiology are expected to graduate by the summer of their first academic year. Extending degree completion to later quarters will require the approval of the Program Directors and the student's advisor.

### Degree Completion

Each master's program administers a final comprehensive examination which may be oral, written, or both. A minimum of **two (2) individuals** must serve on the master's exam committee.

**At least two (2) members of the committee, including the chair, must be members of the Northwestern University Graduate Faculty.**

In order to receive the master's degree, the student must:

- Complete all required coursework and program requirements for the degree
- File for degree by completing an **Application for a Degree Form** via TGS Forms in the Graduate Student Tracking System (GSTS) by the date specified in the Academic Calendar
- Complete the **Master's Degree Completion Form** via TGS Forms in the Graduate Student Tracking System (GSTS) and receive program approval of the form by the date specified in the Academic Calendar
- Have at least a 3.0 cumulative GPA and no X, Y, or NR grades. All grades must be entered and **Change of Grade forms** submitted by the grade deadline specified in the Academic Calendar

### Grades

A minimum GPA of 3.0 is required for all work presented for a graduate degree. Grades given for completed, credit-bearing graduate courses not taken on a pass/no credit (P/N) basis are:

Grade	Grade Points
A	4.0
A-	3.7
B+	3.3
B	3.0
B-	2.7
C+	2.3
C	2.0
C-	1.7
D	1.0
F	0
X	Failed to earn credit: missed final examination (0)
Y	Failed to earn credit: work incomplete (0)

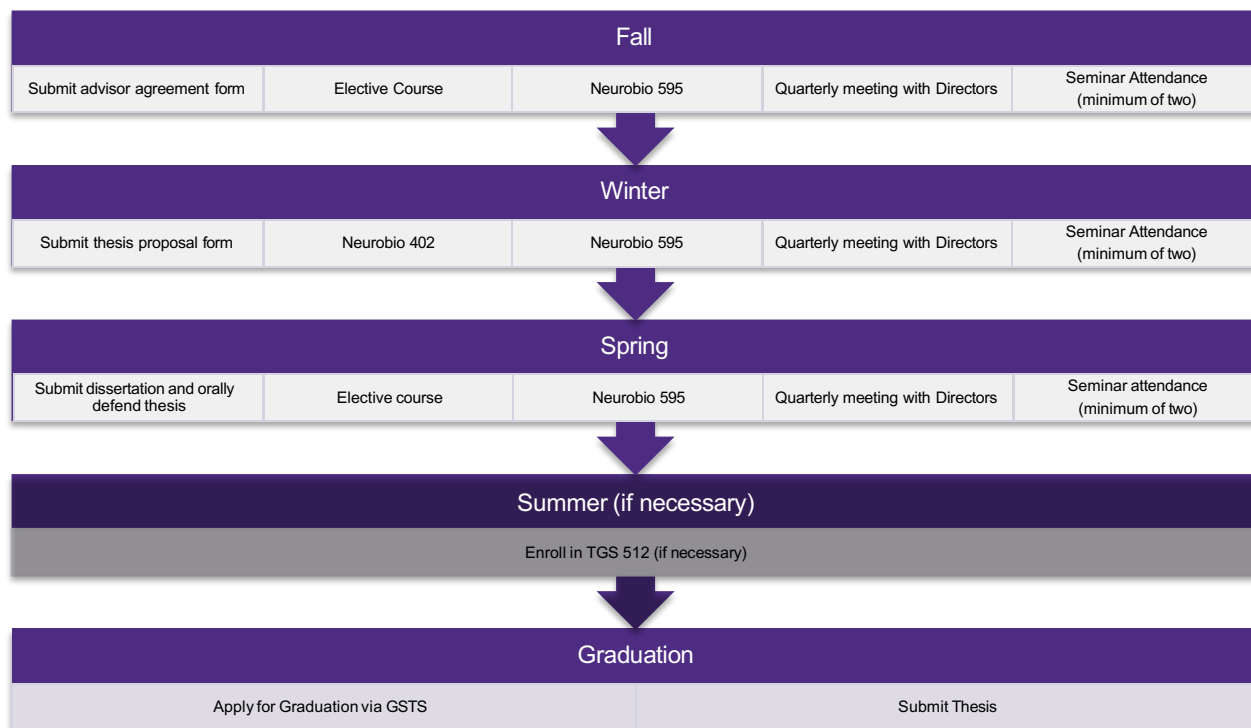


The following notations are ignored in computing the grade point average:

- P:** Pass with credit
- N:** No grade, no credit
- K:** In progress
- S:** Satisfactory – noncredit course
- U:** Unsatisfactory – noncredit course
- W:** Withdrawn by permission
- NR:** No grade reported by instructor
- X, Y, NR, and F:** Do not count toward the accumulation of quarters of residency required for a degree.

### MS Program Requirements

Separate from TGS, the Department requires the following for successful program completion:



### Quarterly Progress Meetings

Students meet individually each quarter with the Program Directors to evaluate their progress. This meeting should occur near the end of each quarter. The meeting can be arranged through the department Program Assistant via email.

Students will be notified via an official email, or receive a Graduate Student Tracking System (GSTS) notification whether or not they are making satisfactory or

unsatisfactory progress after the meeting. The Directors may block registration for a subsequent quarter for any student who has not met requirements.

Students will receive a minimum of one (1) progress notification during the one-year program. If a student is making unsatisfactory progress, they will be monitored closely and may receive progress letters more frequently.

### Satisfactory Progress

When evaluations, such as quarterly progress meetings, reveal a student's progress is not meeting program standards, the student will be given one (1) quarter to improve laboratory skills and productivity before being re-evaluated. Students will first be notified in writing that they have been placed on academic probation. This written communication will include a detailed description of the reason(s) for placing the student on probation, and the goals that the student must accomplish in order to be taken off probation. This letter will be sent to TGS and to the student. Students will typically have one (1) quarter to regain good standing in the program or they may be terminated.

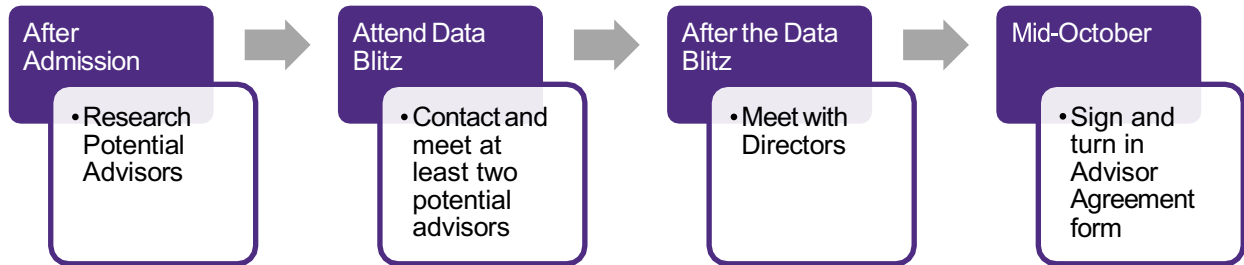
When a student who is not on probation fails one of the major examinations (thesis proposal, master's defense), the student will be placed on probation and given a second opportunity to pass that examination. This second examination must be taken within one (1) month of the first examination. Failure on the second examination may result in termination from the program. When a student who is already on probation fails one of the major examinations, they may or may not be given a second opportunity to pass that examination, at the discretion of the Directors.

In all cases, academic termination of a student requires a decision by the Directors and cannot be made by an individual faculty member or examination committee. Terminations are final.

# RESEARCH ADVISORS

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## Choosing an Advisor



Choosing an advisor and lab are the first steps in the program. We ask that students begin thinking about which lab they are interested in during their application process. Available advisors and labs can be found in the **List of Research Advisors** section in the **Appendix**. Students will be notified after their acceptance into the program as to when to initiate contact with faculty members.

Selection of an advisor and the research lab where you will complete your thesis project is one of the most important activities that you will undertake when you begin your graduate career at Northwestern.

It is the student's responsibility to identify an advisor with help from one of the Neurobiology Master's Program Directors. Students are required to contact at least **two** potential advisors to discuss potential projects early in the fall quarter, if not before. To assist, the program will host a **Data Blitz** where students will meet multiple labs that are interested in taking students. This often provides students exposure to areas of interest they may not have otherwise pursued. Following the Data Blitz, students will meet individually with the Directors to discuss their lab preferences.

After, **and only after**, the advisory meeting with the Directors may the student make an agreement with his or her chosen advisor. At this point, the student, advisor, and one of the Directors will sign the Advisor Agreement form. *Under no circumstances should any agreements, formal or informal, be made prior to the advisory meeting.* Students are welcome and encouraged to contact either the Director or Associate Director for any advice on potential advisors prior to Orientation.

Upon choosing an advisor, students must notify the Program Assistant via email. You must also formally notify the program with the Student-Advisor Agreement form, provided in the Appendix section. However, we recommend that students formalize their choices as soon as possible after meeting with the Program Directors to allow the student to initiate his or her thesis research as soon as possible.

## Thesis Committee

Thesis committees should be formed before the thesis proposal deadline. Submit the **Independent Research Advisor/Student Agreement Form** to the Neurobiology office.

To meet TGS requirements:

- 1) a minimum of two (2) individuals must serve on the thesis committee, and
- 2) at least two (2) members of the committee, including the Chair, must be members of the Northwestern University Graduate Faculty

For the Neurobiology MS program, most committees have at least three (3) members.

Students should seek the advice of their advisor in choosing committee members. They are also encouraged to confer with the Directors for suggestions. Typically, the committees will include the advisor, the Director or Associate Director of the program, and a third individual selected by the student in consultation with his/her advisor and the program directors. Ideally, this third committee member is someone who is well-suited to both guide the student in the development and execution of their thesis project, and to evaluate the completed thesis project and its defense. Final approval of committee members must be obtained from the Director or Associate Director.

## Changing Advisors

Changing advisors is a rare occurrence. Changing advisors can result in a significant setback in both time and effort, and may require that a student extend their time in the MS program beyond the traditional one-year window. These cases are handled on an individual basis. If a student needs to change labs, they should start by contacting the Director or Associate Director.

## PROGRAM COURSES AND REGISTRATION

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### Neurobio 402

*2 credits (Winter)*

This Winter Quarter course is designed to expose students to cutting-edge research in neurobiology and emphasize reading and critical discussion of primary literature.

### Neurobio 595 (Independent Lab Research)

*1 credit (Winter), 2 credits (Fall and Spring)*

The specific objectives for the student are:

- (1) To understand the research topics the laboratory investigates
- (2) To understand the research methods the laboratory uses
- (3) To develop critical thinking skills, the ability to meaningfully design scientific experiments, a work ethic consistent with those of a professional scientist, and appropriate time management skills

### Electives

*2 credits (Fall and Spring)*

Each full-time student is required to take one elective during the Fall and Spring Quarters (please see the Electives attachment in the Appendix for available courses). Note that some students will be restricted in their elective choice by their advisor.

### TGS 512

*0 credit (Summer and beyond, if needed)*

Available to students who completed the program coursework and are continuing in their degree program (writing a thesis or dissertation and/or performing research required for the degree), but not receiving University or external funding. TGS 512 is a full-time registration intended for students who are continuing to work in a full-time capacity toward degree completion. TGS 512 is \$100 per additional quarter.

### Course Registration

The Program Assistant registers all master's students in program courses (Neurobio and TGS). **It is the responsibility of the student to register for elective courses** – one in the Fall and one in the Spring. The Program Assistant will send a confirmation email indicating students are registered for the required program classes for the quarter. Students can login to CAESAR to verify.

## **CAESAR Registration for Electives**

As a Northwestern University student you will use CAESAR to register for classes, change your address, view student account and financial information, retrieve your unofficial transcript, and perform other self-service functions. Please review the registration link for further information.

<https://www.northwestern.edu/ses/students/registration/index.html>

## **Find Classes and Plan Your Schedule**

Before you register, you might plan an ideal schedule and list of alternative classes. It's helpful to have the 5-digit class numbers ready when your registration appointment time begins. Class offerings and numbers are in both the PDF version of the schedule and in CAESAR.

See the following guides for assistance using the class registration system:

- [Registration Tip Sheet](#)
- [Searching for Classes](#)
- [Adding Classes](#)
- [Dropping a Class](#)
- [Editing Classes](#)
- [Swapping Classes](#)
- [Adding Yourself to a Waitlist](#)
- [Resolving an Emergency Information Registration Hold](#)

## **CAESAR Access or Login Issues**

If you have a problem logging into or accessing CAESAR, you should contact the NUIT Support Center. Support Center hours of operation can be found

<http://www.it.northwestern.edu/supportcenter>

Support can be requested by these methods:

1. Phone: 847-491-4357 (1-HELP)
2. E-mail: [consultant@northwestern.edu](mailto:consultant@northwestern.edu)
3. Chat online: <https://evcicweb.ci.northwestern.edu/i3root/northwestern/>

## Department of Neurobiology Seminar Series Attendance

It is important and valuable to regularly attend seminars and colloquia, even when the topic is not directly related to their own work. It is an easy way to stay in touch with fields that may not be familiar and, importantly, provides an opportunity to interact informally with colleagues.

To promote these habits and expose students to research beyond Northwestern University, students are required to attend a minimum of two (2) department-hosted seminars each quarter, excluding the summer quarter. To document attendance, students are required to complete a brief statement indicating which seminars they attended (speaker name, institution, title, date) and a summary or critique of each seminar (no more than one to two [1-2] paragraphs).

The Seminar Attendance Summary is due on the last Friday of the exam week for each quarter.

## Time in the Lab

The research course will be one (1) credit for the Winter Quarter and two (2) credits for the Fall and Spring Quarters. The student will spend on average at least **35** hours per week in the mentor's laboratory (past evaluations suggest that it is typically more). The student is expected to design and perform experiments, attend any laboratory research meetings, attend any laboratory journal clubs, discuss ongoing projects with laboratory members, etc.

## Leave of Absence

A student who needs to take a leave from the university (general leave, medical leave, family leave, or childbirth accommodation), must request an official leave of absence. Students should use the **Petition for Absence Form** via TGS Forms in GSTS to apply for a leave of absence. The form is reviewed by both the MS program and TGS.

## DEGREE COMPLETION AND GRADUATION

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### Thesis Proposal

Students must successfully present and defend their thesis proposal. The thesis proposal is an oral presentation of relevant background, the scientific questions the student plans to address, and the experimental methods they plan to use. During the thesis proposal, the students:

1. Provide their committee with a scientific “roadmap,” explaining why the question they wish to address is important and what experiments they intend to perform to address the issue;
2. Demonstrate to their committee how they will conduct their experiments, how the data will be analyzed, and how their results will fit into the existing knowledge of the field;
3. Provide their committee the opportunity to give suggestions and guidance to hopefully avoid any delays in their research;
4. Complete the **Master’s Thesis Proposal** form. This form will be signed by members of the Thesis Committee at the end of a successful thesis proposal presentation and should be submitted to the Dept. of Neurobiology Office in Hogan 2-160.

### Application for Degree

To participate in Commencement, graduate students must submit an **Application for Degree** to TGS. The form can be completed online through GSTS. *Note: if you are unable to complete your thesis defense by the Spring Quarter but intend to participate in Commencement, you will still need to submit the **Master’s Degree Completion** form, and the **Committee Meeting and Master’s Thesis Proposal** form.*

Login to GSTS, click on tab "TGS Forms" select from drop-down menu on the right "Create New Form"
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*Students who do not complete all degree requirements before the TGS deadline for June graduation may still defend over the summer and can receive their degree after summer quarter.*

TGS requires that students be registered as a student in the fall, winter, and spring quarters until they graduate. Students do not have to register over the summer but have the option of doing so, particularly if they are required to be a full-time student for loan or visa compliance. If a student has completed all the required MS program coursework and is only working on research and writing, they must register for TGS 512 during the non-summer quarters. Registration is **\$100 per quarter** and must be paid by the student, per TGS rules.



## Thesis Defense

To satisfactorily complete the program, all MS students must submit a written thesis and present an oral thesis defense to their committee. A style guide is provided for students to use for formatting the written thesis. Students will also be given a **Thesis Defense Checklist** to help them prepare for the defense.

The student must also complete the **Defense Approval Form** in writing and the **Master's Completion form** in GSTS, and after their defense have each member of their committee sign the form. Both the written thesis and the Defense Approval form must be turned in before the Program Assistant can validate the MS Completion Form online. The thesis may be sent in PDF format. *Note: Arranging a thesis defense requires coordinating your thesis committee members' schedules and reserving a conference room. With this in mind, remember to plan well in advance!*

## Master's Completion Form (TGS)

The following TGS forms are available to students in GSTS:

- Application for Degree
- Master's Degree Completion
- Petition for Absence
- Program Withdrawal Request

Once you submit a form in GSTS, the information will be sent to the program for approval. Once approved, TGS will be notified and, barring any problems or holds, will also approve. You will receive emails notifying you of form submission and final approval.

## Exit Survey

To help us monitor and improve the quality of our program, we ask our graduating students to complete the Neurobiology exit survey before leaving the University.

Neurobiology Exit Survey: [https://weinberg.co1.qualtrics.com/jfe/form/SV\\_d456pGuDr9CV71z](https://weinberg.co1.qualtrics.com/jfe/form/SV_d456pGuDr9CV71z)

## CONFLICT RESOLUTION

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TGS realizes that conflicts emerge occasionally, and they have devised the following guidelines for students for the chain of communication when dealing with different types of conflicts.

### Conflicts Not Involving Discrimination, Harassment, or Sexual Harassment

When a conflict arises, whether with a student's advisor, a fellow student, or someone else in the University, TGS recommends that students first talk to one of the Program Directors. One function of the Program Directors is to address student concerns and grievances and to be available when students are experiencing academic difficulty.

If the Director and/or Associate Director has a conflict of interest, the Chair of the student's department is the next resource. In the case that a student cannot or does not want to speak with anyone in the program or department, the next resource is TGS. In TGS, the Associate Dean for Student Affairs handles student conflict issues and works directly with the academic school associate deans and faculty, as needed.

The program directors, department chairs, TGS staff, and TGS deans can treat students' concerns confidentially unless the concerns involve *sexual harassment, discrimination, or a safety issue*, in which case they are obligated to report the issue to the appropriate University office.

## NON-DISCRIMINATION STATEMENT

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Northwestern University does not discriminate or permit discrimination by any member of its community against any individual on the basis of race, color, religion, national origin, sex, pregnancy, sexual orientation, gender identity, gender expression, parental status, marital status, age, disability, citizenship status, veteran status, genetic information, reproductive health decision-making, or any other classification protected by law in matters of admissions, employment, housing, or services or in the educational programs or activities it operates. Harassment, whether verbal, physical, or visual, that is based on any of these characteristics is a form of discrimination. Further prohibited by law is discrimination against any employee and/or job applicant who chooses to inquire about, discuss, or disclose their own compensation or the compensation of another employee or applicant.

Northwestern University complies with federal and state laws that prohibit discrimination based on the protected categories listed above, including Title IX of the Education Amendments of 1972. Title IX requires educational institutions, such as Northwestern, to prohibit discrimination based on sex (including sexual harassment) in the University's

educational programs and activities, including in matters of employment and admissions. In addition, Northwestern provides reasonable accommodations to qualified applicants, students, and employees with disabilities and to individuals who are pregnant.

Any alleged violations of this policy or questions with respect to non-discrimination or reasonable accommodations should be directed to **Northwestern's Office of Equity, 1800 Sherman Avenue, Suite 4-500, Evanston, Illinois 60208, 847-467-6165, [equity@northwestern.edu](mailto:equity@northwestern.edu)**.

Questions specific to sex discrimination (including sexual misconduct and sexual harassment) should be directed to **Northwestern's Title IX Coordinator in the Office of Equity, 1800 Sherman Avenue, Suite 4-500, Evanston, Illinois 60208, 847-467-6165, [TitleIXCoordinator@northwestern.edu](mailto:TitleIXCoordinator@northwestern.edu)**.

A person may also file a complaint with the Department of Education's Office for Civil Rights regarding an alleged violation of Title IX by visiting [OCR: Discrimination Complaint Form](#) or calling 800-421-3481. Inquiries about the application of Title IX to Northwestern may be referred to Northwestern's Title IX Coordinator, the United States Department of Education's Assistant Secretary for Civil Rights, or both.

## APPENDIX

### TGS/MS in NEUROBIOLOGY Academic Calendar 2023 – 2024

<b>September</b>	
Friday, September 1, 2023	Submit Choice of Fall Electives to Program Assistant
Thursday, September 14, 2023	Fall registration for new TGS graduate students (students register for elective)
Monday, September 18, 2023	MS Neurobiology Orientation 12 noon – 2:00 pm – Location: Pancoe 2-401
Tuesday, September 19, 2023	Fall classes begin 8 a.m.
<b>October</b>	
Friday, October 13, 2023	Student-Advisor Agreement Form due
<b>November</b>	
Monday, November 13, 2023	Registration for Winter quarter begins – (Dept. will register students)
<b>December</b>	
Friday, December 8, 2023	Fall Seminar Summaries Due
<b>January</b>	
Wednesday, January 3, 2024	Winter Classes begin 8 a.m.
Friday, January 19, 2024	Thesis Committee Form Due
<b>February</b>	
Friday, February 2, 2024	Application for degree form due in GSTS to receive a degree in Spring
Monday, February 5, 2024	Spring courses viewable in CAESAR
Monday, February 20, 2024	Registration for Spring Quarter begins (students register for elective)
<b>March</b>	
Friday, March 16, 2024	Winter Seminar Summaries due
Tuesday, March 26, 2024	Spring Classes Begin
<b>April</b>	

<b>May</b>	
Friday, May 10, 2024	Thesis Defense completed to graduate in Spring 2024 <ul style="list-style-type: none"> <li>• Thesis Defense Form due to NB Office</li> <li>• Master's completion form due in GSTS</li> </ul>
<b>June</b>	
Friday, June 9, 2024	Spring Seminar Summaries Due
Monday, June 8 – 10, 2024	Commencement
Friday, June 14, 2024	Spring Degrees Conferred
<b>July</b>	
Friday, July (TBD) 2024	Application for a Degree form due in GSTS to receive a degree in Summer
<b>August</b>	
Friday, August (TBD) 2024	Thesis Defense completed to graduate in Summer 2024 <ul style="list-style-type: none"> <li>• Thesis Defense Form due to NB Office</li> <li>• Master's completion form due in GSTS</li> </ul>

# DISSERTATION GUIDELINES

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## ARRANGEMENT OF THE DISSERTATION:

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Each dissertation must be arranged in the order listed below. Specific information about each section is on the following pages. Italicized pages are optional.

- Title Page
- *Copyright Page (optional)*
- Abstract
- *Acknowledgment Page (optional)*
- *Preface (optional)*
- *List of Abbreviations (optional)*
- *Glossary (optional)*
- *Nomenclature (optional)*
- *Dedication (optional)*
- Table of Contents
- Lists of Tables, Illustrations, Figures, or Graphs
- Introduction
- Text Body (divided into chapters following a logical outline)
- Tables, Illustrations, Figures, Graphs: If not incorporated into the main body of the text, these items should immediately follow the text, not at the end of chapters.
- References
- *Appendices (optional)*
- *Vita (optional)*

## **FORMATTING AND LAYOUT REQUIREMENTS:**

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### **PAGE SIZE**

- Page size should be 8.50 x 11.00 inches, standard US Letter size.

### **MARGINS**

- One (1) inch on all sides, including page numbers.
- Page numbers should be at least 1 inch from the top and right-hand edges of the page.

### **SPACING**

- The preliminary pages and text must be double-spaced.
- Under certain conditions, quotations may be single-spaced, if recommended by an approved style manual.
- Table of Contents and lists with lengthy entries may be single spaced with a double-space between entries.
- References may be single-spaced, with a double-space between entries.

### **PAGINATION**

- Every page in a dissertation is numbered, except the title page.
- Page numbering will begin on the second page with Arabic numeral 2 in the upper right-hand corner of the page.
- No empty pages
- On pages of the dissertation that are formatted with landscape orientation, the page number must appear in the upper right-hand corner when the page is rotated to portrait orientation.

## **FORMATTING AND LAYOUT REQUIREMENTS:**

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### **TITLE PAGE**

NORTHWESTERN UNIVERSITY

{TITLE; e.g., Title of Dissertation in Title Case Goes Here}

A DISSERTATION

SUBMITTED TO THE DEPARTMENT IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS

for the degree

MASTER OF SCIENCE

Field of NEUROBIOLOGY

By

{Full Name}

EVANSTON, ILLINOIS

{Month and year of degree conferral – ask MS program if not sure}



## DISSERTATION TITLE GUIDELINES

Dissertations are a valuable resource for other scholars only if they can be easily located. Modern retrieval systems generally use the words in the title to locate a document. It is essential that the title be an accurate and meaningful description of the content and that obscure references be avoided. Please use these guidelines when formulating a dissertation title:

**CASE:** The first and last words and all nouns, pronouns, adjectives, verbs, and adverbs (if, because, as, that, etc.) are capitalized. Articles (a, an, the), coordinating conjunctions (and, but, or, for, nor), and prepositions, regardless of length, are lowercased unless they are the first or last word of the title or subtitle. Only acronyms should be set in full capitals.

Examples:

Power and Consumer Behavior

Outpatient Treatment for Children: Organizational Practices as Predictors of Recovery

A Comparison of the Methodologies for Determining Achievement in High School

**HYPHENATION:** Consult the dictionary as to whether or not a word is hyphenated. In general, do not hyphenate words beginning with the prefixes co, non, pre, post, or re unless there is a possibility of confusion (co-op, post-master's) or the root word begins with a capital letter (post-Renaissance). Hyphenate words beginning with the prefix *self*. Hyphenate compounds used as adjectives (decision-making) but not as nouns (decision maker). Part-time is always hyphenated. When more than one prefix is joined to a base word, hyphenate the prefixes standing alone (micro- and macroeconomics). Do not hyphenate fundraising, freelance, yearlong, health care, African American, Asian American.

Examples:

Great Nonfiction Works of the Nineteenth Century (Instead of: Great Non-fiction Works of the 19th Century)

**SPELLING AND GRAMMAR:** Dissertation titles should be spell-checked and dictionary spelling of words should be used. Use “and” rather than “&”, and spell out names of centuries and other numbers usually spelled out in text.

Example: The Labour Party in Perspective and Twelve Years Later

**SPECIAL CHARACTERS:** No special characters should appear in the dissertation title (SES/CAESAR cannot accommodate special characters). Terms or phrases that include special characters should instead be written out.

Examples:

Evaluation of DNA Hybridization and Cleavage Capabilities of Peptide Nucleic Acid-Titanium Dioxide (instead of: Evaluation of DNA Hybridization and Cleavage Capabilities of PNA-TiO<sub>2</sub>)

The Role of TGF-beta Variants in Cancer (instead of: The Role of TGF-β Variants in Cancer)

**ITALICIZATION:** Italics should only be used in dissertation titles when referring to the title of a published work, foreign language words, gene names, scientific names as appropriate, or other words that are usually italicized.

Examples:

Techniques in *Drosophila* Circadian Biology

Mechanisms of Differentiated Cell Function *In Vitro*

**APOSTROPHES:** Do not use to form plurals (it should be 1940s, not 1940's) unless it would be confusing without (thus A's and B's, not As and Bs; p's, not ps).

Possessives of singular nouns ending in s are formed by adding 's (e.g., Russ's dog).

## **COPYRIGHT PAGE**

If you choose to copyright your manuscript, a copyright notice must appear on a separate page following the title page. It should read as follows:

© Copyright by (your name) 20\_\_  
All Rights Reserved

## **ABSTRACT**

- The abstract should be **no more than 350 words**.
- Inclusion of the abstract within the preliminary pages of the dissertation is required.
- The abstract should provide an accurate summary of the contents of the dissertation, including a statement of the problem, the procedures or methods used, the results, and the conclusions.
- Mathematical formulas, photographs, diagrams, and other illustrative materials are not recommended for inclusion in the abstract.

## **OPTIONAL PREFATORY PAGES**

- Acknowledgment page
- Preface
- List of abbreviations
- Glossary
- Nomenclature
- Dedication

## **TABLE OF CONTENTS**

- The format of the table of contents should conform to the guidelines in an approved style manual.
- It is important that the table of contents accurately reflect the outline and organization of the manuscript.

## **LISTS OF TABLES, ILLUSTRATIONS, FIGURES, OR GRAPHS**

- These lists should reproduce the specific titles and page locations of all illustrative materials.

## **INTRODUCTION**

- This optional section should provide an overview of the dissertation and the research problem that is being addressed. It should also indicate how the research and argument presented will contribute to scholarship in the field.

## **BODY OF THE TEXT**

- Chapters should follow a logical outline, with a clear distinction between chapters, main heads within chapters, and subordinate heads within the main heads.
- The outline and organization of the main body of the text should be accurately reflected in the table of contents.

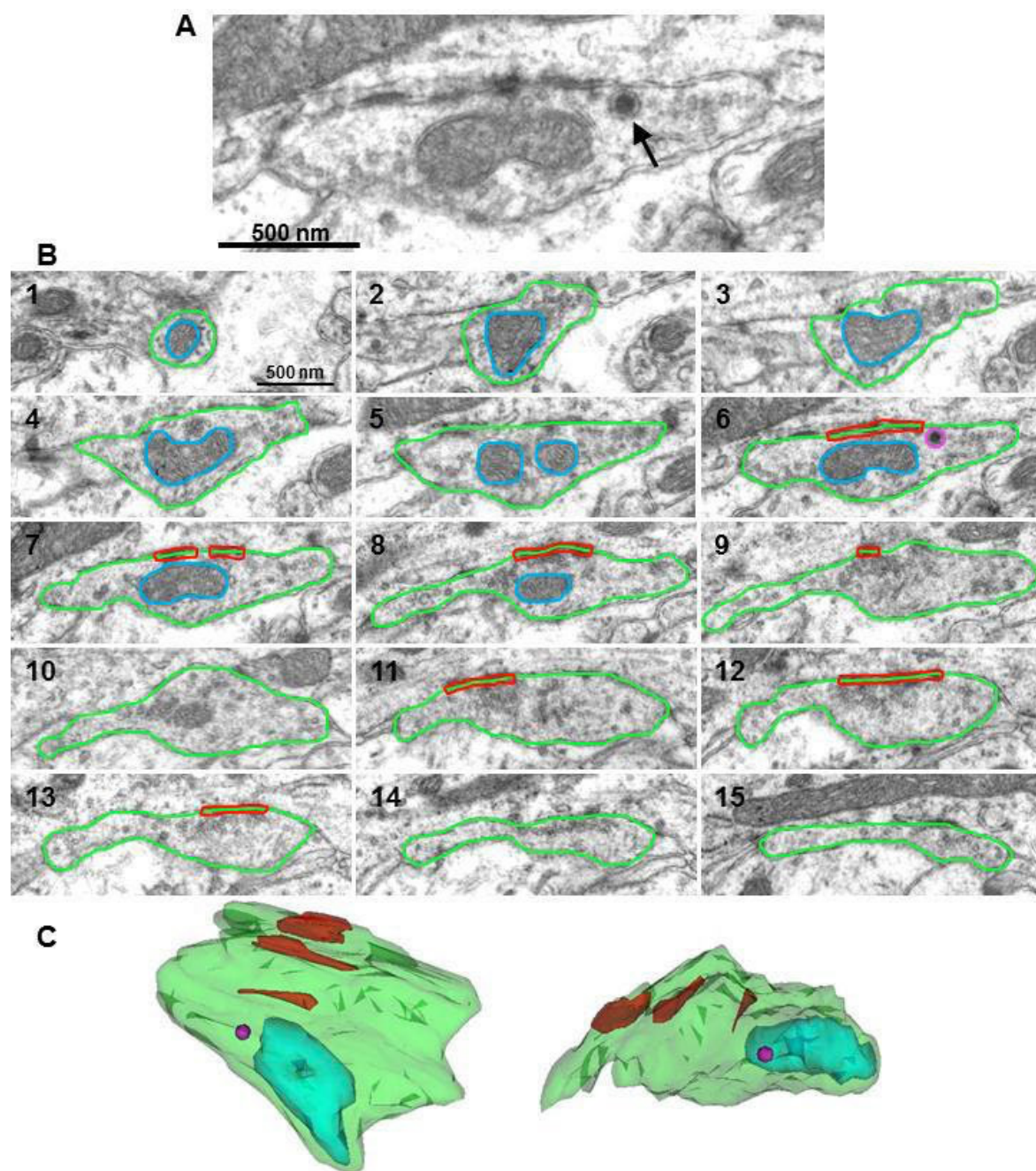
- All non-textual elements (e.g., tables, graphs, and images) must be described in the text.

### TABLES, ILLUSTRATIONS, FIGURES, GRAPHS

- If not incorporated into the main body of the text, these items should immediately follow the text, not at the end of chapters.
- Margin requirements must be met on all pages that contain charts, graphs, tables, or illustrations. If the title, legend, or description of an illustration is too long to be placed on the same page with the illustration, it must be placed on a separate numbered page preceding the illustration.
- Must be numbered; they must include legends, and be easily legible. It is highly recommended that each figure and legend be printed on a separate page. Although tables and graphs do not need to be printed on separate pages, they must fit within margins and onto the page cleanly.
- All text and fonts on figures and legends must be the same and consistent throughout the entire thesis. Legends should be blocked and numbered independently. Below is an example of a table and a figure.

Treatment	Volume of Tissue Analyzed ( $\mu\text{m}^3$ )	Number of Inhibitory Varicosities Reconstructed	Density of Inhibitory Varicosities ( $1/\mu\text{m}^3$ )	Average Volume of Inhibitory Varicosities ( $\mu\text{m}^3$ )	Proportion of Inhibitory Varicosities that Contain Mitochondria	Average Number of Synapses per Inhibitory Varicosity
<b>Oil</b> (n = 4)						
Mean $\pm$ SEM	176 $\pm$ 12	27.5 $\pm$ 2.9	0.17 $\pm$ 0.01	0.28 $\pm$ 0.03	0.77 $\pm$ 0.05	1.26 $\pm$ 0.11
Range	141 - 195	21 - 35	0.12 - 0.19	0.01 - 1.41	0.69 - 0.86	0 - 6
<b>Estradiol</b> (n = 4)						
Mean $\pm$ SEM	180 $\pm$ 11	27.3 $\pm$ 4.4	0.15 $\pm$ 0.02	0.34 $\pm$ 0.02	0.80 $\pm$ 0.05	1.20 $\pm$ 0.09
Range	154 - 202	17 - 35	0.10 - 0.19	0.04 - 1.35	0.65 - 0.88	0 - 7

**Table 1.** Tissue analyzed in the pyramidal cell layer from oil and estradiol treated rats did not statistically differ. Between oil and estradiol groups, tissue did not differ on the basis of the volume of tissue analyzed, number of inhibitory varicosities reconstructed, density of inhibitory varicosities, average volume of inhibitory varicosities, proportion of inhibitory varicosities that contain mitochondria, or average number of synaptic contacts per inhibitory varicosity (all p values > 0.10).



**Figure 4.** **A**, Electron micrograph of a DCV in an inhibitory varicosity in the pyramidal cell layer. The image in panel A is the same as that shown in Fig. 1. **B**, Use of Reconstruct software to trace a subset of serial electron micrographs (1-15) from a total of 32 sections for an inhibitory varicosity that originates as an axon, develops into a bouton, and terminates as an axon (green); the mitochondrion (blue), synapses (red), and DCV (magenta) contained within the varicosity are additionally traced. **C**, Two views of three dimensional reconstructions for the traced varicosity and associated mitochondrion, synapses, and DCV.

## REFERENCES

- Each dissertation must include references to document the text.
- These references may be included at the bottom of the page or at the end of the text, but cannot be placed at the end of each chapter.
- The format for references must conform to the guidelines in an approved style manual.
- There are two options for formatting references. You may select a standard formatting style that is used by a prominent journal within your field (consult with your advisor), or follow the examples below.

### *Journal Articles:*

The authors' names, year, complete title, journal name (italicized), volume, and page numbers must be included.

Example:

Smith, A.L., Jones, B.G. and Johnson, V.M. (1999) The effect of shoveling snow on heart rate. *Journal of Cardiology*, 124:456-488.

### *Book Chapters:*

The authors names, year, chapter title, book title (underlined), editors, publisher, city/state in which the work was published, and page numbers must be included.

Example:

Smith, A.L., Jones, B.G. and Johnson, V.M. (1998) The relationships between tachycardia and physical stress. In: Stress and the Heart. Eds., J. Matthews, C.A. Benson and J.J. Carlson. Clinical Press, N.Y. pp. 34-56.

## APPENDICES (optional)

- The format for the appendices must conform to the guidelines in an approved style manual.

## VITA (optional)

- It is recommended that each copy of the dissertation include a brief vita containing the author's name, place of birth, education, relevant professional experience, and publications. The vita page is numbered.

## BINDING AND FINAL THESIS SUBMISSION

- Convert your document to PDF and email to the Neurobiology Program Assistant at [neurobiology@northwestern.edu](mailto:neurobiology@northwestern.edu). The department will print and bind three copies: one for you, one for your advisor, and one for the department. You will need to leave a mailing address with the department Program Assistant to receive your thesis.

## **COMMON DISSERTATION FORMATTING PITFALLS CHECKLIST:**

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There are several common formatting problems that require resubmission and re-review of the dissertation. Please check this list to ensure your dissertation is correctly formatted:

- Are your margins correctly sized (including page numbers) such that there is one (1) inch on all sides?
- Are your pages numbered starting on the second page with the number two (2) (**not** Roman numerals) in the upper right-hand corner of the page?
- Are your page numbers properly placed in the upper right-hand corner of the page, one (1) inch from the top and one (1) inch from the right edge of the page?
- Are all of your pages numbered except for the title page?
- On pages with landscape formatting, does the page number appear in the upper right-hand corner if the page were rotated to portrait orientation?
- Is your page size 8.50 x 11.00 (regular US letter size)?
- Does your title page include the correct location – EVANSTON, ILLINOIS (not CHICAGO, ILLINOIS)?
- Does your title page include the correct date? The date should be the month and year you will receive the degree, for example: June 2021
- Are your pages ordered properly, with the title page first, followed by the copyright page (if you are including one), then the abstract page?

## LIST OF RESEARCH ADVISORS

We highly recommend that MS students prioritize seeking mentors within the Neurobiology department (see Core Advisors list below). Since the Program is housed in the Neurobiology department, these faculty members possess a better understanding of the expectations and goals of MS students. MS students do have the flexibility to conduct their thesis work in any neuroscience lab at Northwestern University – some faculty members who have taken MS students recently are listed below (External Advisors). Note that we ask that students and potential advisors do not enter into any formal or informal agreements without the explicit approval of the Program Directors.

### Core Faculty Advisors

NEUROBIOLOGY DEPARTMENT ADVISORS		
Advisor	Research Interests	Email
<b>Tom Bozza</b>	Neural circuitry underlying olfactory driven behaviors; mouse molecular genetics; development of neural circuits	bozza@northwestern.edu
<b>Daniel Dombeck</b>	Optical dissection of the neuronal circuits underlying mammalian navigation	d-dombeck@northwestern.edu
<b>Marco Gallio</b>	Neural circuits underlying the responses to temperature and pain; Drosophila molecular genetics, neurogenetics	marco@northwestern.edu
<b>William Klein</b>	Molecular basis for the cause, diagnosis, and treatment of Alzheimer's disease	wklein@northwestern.edu
<b>Yevgenia Kozorovitskiy</b>	Synaptic and circuit development in the basal ganglia	yevgenia.kozorovitskiy@northwestern.edu
<b>Hojoon Lee</b>	The neurobiology of taste	hojoon.lee@northwestern.edu



<b>David McLean</b>	Development and plasticity of motor networks	david-mclean@northwestern.edu
<b>Andrew Miri</b>	Motor system function; behavior quantification	andrewmiri@northwestern.edu
<b>Indira Raman</b>	Ion channel biophysics; neuronal excitability; synaptic transmission; cerebellar physiology	i-raman@northwestern.edu
<b>Tiffany Schmidt</b>	Visual neuroscience; neurophysiology; neuroanatomy; mouse genetics, behavior	tiffany.schmidt@northwestern.edu
<b>Fred Turek</b>	Sleep and circadian rhythms; metabolic, neurodegenerative and gastrointestinal disorders	fturek@northwestern.edu
<b>Marta Hotz Vitaterna</b>	Mouse Behavioral Genetics, particularly Circadian Rhythms, Sleep, Arousal, Affect	m-vitaterna@northwestern.edu
<b>Catherine Woolley</b>	Neuroendocrinology; structural and functional plasticity of neural circuits; epilepsy; anxiety and depression	cwoolley@northwestern.edu
<b>Yue Yang</b>	Developmental and activity-dependent remodeling of chromatin architecture; epigenetic regulation of neural circuits; cerebellar circuits in motor learning	yue.yang@northwestern.edu

## External Advisors

EXTERNAL ADVISORS			
Advisor	Department	Research Interests	Email
<b>Atique Ahmed</b>	Neurological Surgery	Glioblastoma; mechanisms of therapeutic resistance in brain tumor; identification of drug targets	atique.ahmed@northwestern.edu
<b>Lisa Beutler</b>	Medicine (Endocrinology)	Gut and brain communication for body weight maintenance; optogenetics and calcium imaging in mice	lisa.beutler@northwestern.edu
<b>Gabriela Caraveo-Piso</b>	Neurology (Movement Disorders) and Pharmacology	Molecular and cellular mechanisms of memory; dementia; Lewy Body pathologies	gabriela.piso@northwestern.edu
<b>Alicia Dione Guemez Gamboa</b>	Neuroscience	Circuit development; Adhesion molecules	alicia.guemez@northwestern.edu
<b>William Kath</b>	Engineering Sciences & Applied Mathematics	Computational neuroscience; action potential propagation and dendritic integration in neurons	kath@northwestern.edu
<b>Malcolm MacIver</b>	Biomedical Engineering and Mechanical Engineering	Neuroscience and robotics	maciver@northwestern.edu

<b>Ken Paller</b>	Psychology	Human memory, perception, and cognition; biological bases of mental phenomena; cognitive neuroscience	kap@northwestern.edu
<b>Jason Tait Sanchez</b>	Communication Sciences & Disorders	Synaptic transmission and ion channel function	jason.sanchez@northwestern.edu
<b>Greg Schwartz</b>	Ophthalmology	Retinal circuits; sensory computation; electrophysiology	greg.schwartz@northwestern.edu
<b>Richard Smith</b>	Pharmacology	Developmental neurobiology; early life ion channel diseases; clinical pharmacology	richard.smith@northwestern.edu

Advisor/Student Agreement

Northwestern

Department of

Neurobiology

WEINBERG COLLEGE OF ARTS & SCIENCES

**INDEPENDENT RESEARCH  
ADVISOR/STUDENT AGREEMENT**

We agree to work together as Research Advisor and Student on an Independent Research project for the academic year.

\_\_\_\_\_  
Faculty Name

\_\_\_\_\_  
Faculty Member Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Student Name

\_\_\_\_\_  
Student Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Program Director Name

\_\_\_\_\_  
Program Director Signature

\_\_\_\_\_  
Date

**Return to: Neurobiology Office, Northwestern University  
2205 Tech Drive, Hogan 2-160, Evanston, Illinois 60208**

Thesis Proposal Form

Northwestern

Department of  
**Neurobiology**

WEINBERG COLLEGE OF ARTS & SCIENCES

**COMMITTEE MEETING AND  
MASTER'S THESIS PROPOSAL**

The Master's Program in Neurobiology certifies that

\_\_\_\_\_  
First Name                      Middle Initial                      Last Name

has presented a satisfactory master's thesis proposal to a Neurobiology MS faculty committee.

Thesis title:  
\_\_\_\_\_  
\_\_\_\_\_

Comments:  
\_\_\_\_\_  
\_\_\_\_\_

Typed Name	Signature	Department
_____ Faculty Advisor	_____	_____
_____ Graduate Faculty Committee Member	_____	_____
_____ Graduate Program Representative	_____	_____

Date: \_\_\_\_\_  
(month/date/year)

**Return to: Neurobiology Office, Northwestern University  
2205 Tech Drive, Hogan 2-160, Evanston, Illinois 60208**

Approval Form

Northwestern

Department of  
Neurobiology

WEINBERG COLLEGE OF ARTS & SCIENCES

**MASTER'S OF SCIENCE DEFENSE APPROVAL**

The Master's Program in Neurobiology certifies that

\_\_\_\_\_  
First Name

\_\_\_\_\_  
Middle Initial

\_\_\_\_\_  
Last Name

has presented a satisfactory master's thesis defense to a Neurobiology MS faculty committee.

Thesis title:

\_\_\_\_\_  
\_\_\_\_\_

Typed Name

Signature

Department

\_\_\_\_\_  
Faculty Advisor

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
Graduate Faculty Committee Member

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
Graduate Program Representative

\_\_\_\_\_

\_\_\_\_\_

Date: \_\_\_\_\_  
(month/date/year)

**Return to: Neurobiology Office, Northwestern University  
2205 Tech Drive, Hogan 2-160, Evanston, Illinois 60208**

## Thesis Defense Checklist

# Thesis Defense Checklist

- Meet with the Program Directors or Program Assistant to receive a copy of the Thesis Formatting Guide and other information on defending and graduating.
- Submit your **Application for Degree** online through GSTS by the required deadline (found online at The Graduate School (TGS) academic calendar). TGS uses this to reserve your slot in graduation (which occurs in June and December).
- Schedule a date with your committee. Make sure you reserve a room using the online Life Sciences Scheduler, which can be done through the Program Assistant. If the room you are using does not have a built-in projector, be sure to reserve a projector, too.
- PROVIDE A COPY OF YOUR THESIS TO YOUR COMMITTEE AT LEAST ONE WEEK BEFORE YOUR DEFENSE.**
- Before your thesis defense date, go to the Neurobiology main office and get the **MS Thesis Signature** form. After your committee has approved your thesis and defense, have them sign the form. Fill out the rest of the information and return the form to the MS Program Assistant.
- Complete revisions/edits (if any) required by your committee, and submit your **completed and properly-formatted thesis via PDF to the MS Program Assistant** (see Thesis Formatting Guide).
- Complete the exit survey via Qualtrics.
- If you plan to attend Commencement in June, confer with The Graduate School for details on location, date, tickets, etc.