UNIVERSITY OF TORONTO
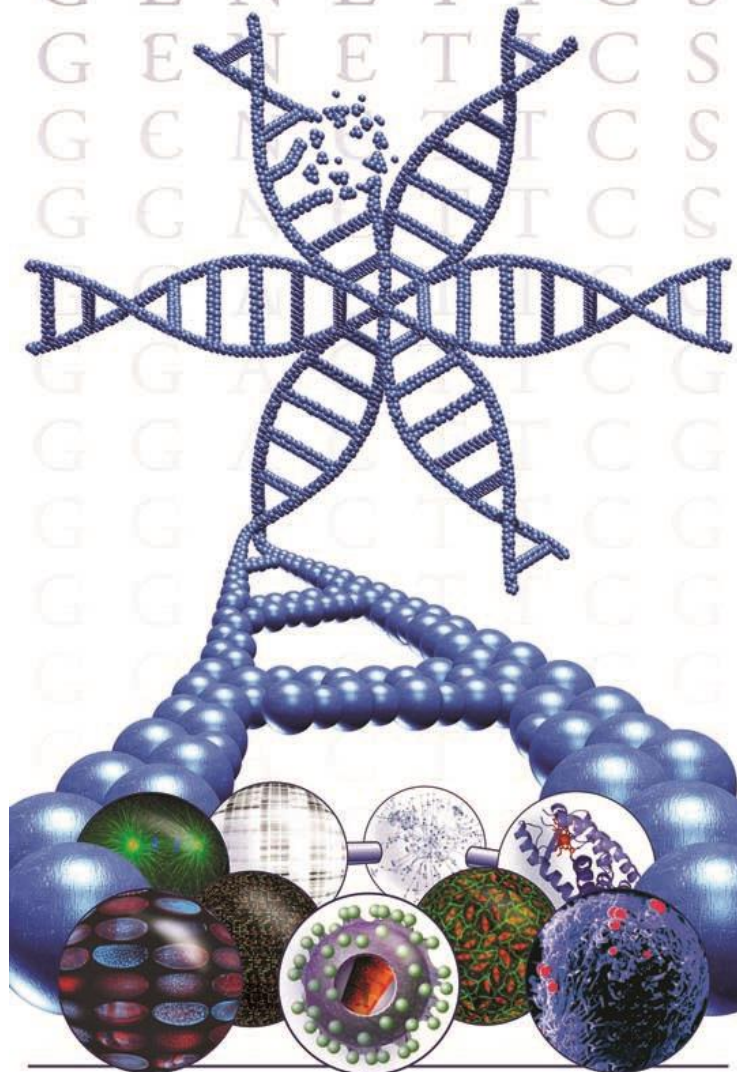
Department of MOLECULAR GENETICS

www.moleculargenetics.utoronto.ca

2019-2020 Graduate Handbook

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Important COVID-19 Note:

Since March 13, 2020, the University has been operating in response to the global COVID-19 pandemic. All courses, committee meetings, and exams will be held online for the foreseeable future. We strongly encourage students to adhere to timelines and maintain progress in the program as much as possible. If you are having difficulty, reach out to the Grad Team or GCs as soon as possible.

Ontario's response to the COVID-19 pandemic continues to evolve. Changes will likely occur as the province and its municipalities adjust to new data about the virus. In these circumstances, please be advised that the manner of delivery of courses, co-curricular opportunities, programs, and services is subject to change, in accordance with university policies. The University thanks its students, faculty, and staff for their flexibility during these challenging times as we work together to maintain the standards of excellence that are the hallmark of the University.

MoGen COVID-19 Links:
1. Online Committee Evaluation Form:
   https://www.surveymonkey.com/r/mogencommeval
2. COVID-19 Section of Website:
   http://www.moleculargenetics.utoronto.ca/covid19-preparedness
   Password: DNARNAProtein2020

YOUR GRADUATE PROGRAM AT A GLANCE: LEGACY CURRICULUM

Legacy Curriculum: Entry in January 2019 or earlier

	M.Sc.	Ph.D.
Year 1	Rotations (Sept. – Dec./ Jan. –Apr.) MMG1010H (Sept. – Dec.)* Attend MMG1015Y/MMG1017H Seminars (Sept. – May) Settle in Permanent Lab (Jan./Apr.) Choose topic courses (Jan. 15) Choose Supervisory Committee (Feb. 1/May 1) 1st Supervisory Committee Meeting (by Mar. 31/July 31) Choose topic courses (Aug. 15)*	
Year 2	Attend MMG1015Y/MMG1017H Seminars (Sept. – May) MMG1015Y – small seminars (October)* 2nd Committee Meeting (by Oct. 31/Feb. 28) MMG1015Y – large seminars (Dec-May)* Choose courses (Jan. 15)* Pre-Reclassification/Qualification. Meeting (by Mar. 31/Jul. 31) OR 3rd (Possibly Terminal) Committee meeting for those not reclassifying Reclassification/Qualification Exam (May/Oct.) Choose topic courses (Aug. 15)*	
Year 3	Terminal Meeting (by Oct. 31/Feb. 28) M.Sc. Oral Exam (by Mar. 31/July 31)	Attend MMG1015Y/MMG1017H Seminars (Sept. – May) Choose Topic Courses (Jan. 15)* Committee Mtg. (by May 31/Oct. 31) Choose Topic Courses (Aug. 15)*
Year 4		Attend MMG1015Y/MMG1017H Seminars (Sept. – May) Choose Topic Courses (Jan. 15)* Committee Mtg. (by May 31/Oct. 31) Choose Topic Courses (Aug. 15)*
Year 5		Attend MMG1015Y/MMG1017H Seminars (Sept. – May) Give MMG1017 Seminar (Sept. – Dec.) Choose Topic Courses (Jan. 15)* TTC Meeting (Mar./Jul.) Choose Topic Courses (Aug. 15)*
Year 6		Terminal Committee Mtg. Ph.D. Oral Exam

■　September Incoming Class
■　January Incoming Class
*　Both September & January Incoming Classes

YOUR GRADUATE PROGRAM AT A GLANCE: CORE CURRICULUM

Core Curriculum: September 2019 or later entry

	M.Sc.	Ph.D.
Year 1	Rotations (Sept. – Dec./ Jan. – Apr.) MMG1001H (Sept. – Dec. of first year in program)* MMG1002H (Jan. – May of first year in program)* Attend MMG1021H/MMG1031Y Seminars (Sept. – May)* Settle in Permanent Lab (Jan./Apr.) Choose Supervisory Committee (Feb. 1/May 1) 1st Supervisory Committee Meeting (by Mar. 31/July 31)	
Year 2	Attend MMG1021H/MMG1031Y Seminars (Sept. – May)* MMG1011H – Present in Student Seminars I (Sept. – Oct.)* 2nd Committee Meeting (by Oct. 31/Feb. 28) MMG1021H – Present in Student Seminars II (Jan. – May)* Pre-Reclassification/Qualification. Meeting (by Mar. 31/Jul. 31) OR 3rd (Possibly Terminal) Committee meeting for those not reclassifying Reclassification/Qualification Exam (May/Oct.) Choose Topic Courses (Aug. 15 for Sept. entry students)	
Year 3	Terminal Meeting (by Oct. 31/Feb. 28) M.Sc. Oral Exam (by Mar. 31/July 31)	Attend MMG1021H/MMG1031Y Seminars (Sept. – May)* Choose Topic Courses (Aug. 15)* Committee Mtg. (by May 31/Oct. 31) Choose Topic Courses (Jan. 15)*
Year 4		Attend MMG1021H/MMG1031Y Seminars (Sept. – May) Choose Topic Courses (Jan. 15)* Committee Mtg. (by May 31/Oct. 31) Choose Topic Courses (Aug. 15)*
Year 5		Attend MMG1021H/MMG1031Y Seminars (Sept. – May) Present MMG1031 Seminar (Sept. – Dec./Jan.)* Choose Topic Courses (Jan. 15)* TTC Meeting (Mar./Jul.) Choose Topic Courses (Aug. 15)*
Year 6		Terminal Committee Mtg. Ph.D. Oral Exam

■ September Incoming Class
■ January Incoming Class
* Both September & January Incoming Classes;
Note that those entering in Sept. will start with MMG1001 (Fall Term), followed by MMG1002 (Winter Term), whereas those entering in Jan. will start with MMG1002 (Winter Term), followed by MMG1001 (Fall Term)

ORGANIZATIONAL STRUCTURE

Department Leadership

Leah Cowen, Chair
leah.cowen@utoronto.ca

Peter Roy, Vice Chair
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Richard Collins, Associate Chair & Undergraduate Coordinator
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Barbara Funnell, Associate Chair, Infrastructure, Communication & Alumni Relations
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William Navarre, Associate Chair & Associate Undergraduate Coordinator
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Timothy Hughes, Associate Chair & Associate Graduate Coordinator
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Abishek Atre, Student Services Assistant
studentservices.mogen@utoronto.ca

Graduate Team

The Grad Team is a group of engaged mentors present in each research node. They serve as the front line of student contact and can help students and faculty to navigate the rules and policies of the Department and School of Graduate Studies (SGS), as well as to help students strategize about challenging situations in their graduate career. Students may contact members of the Grad Team directly to set up appointments to talk about specific issues they are having. The Grad Team also helps to execute the other functions of the graduate program (e.g. recruitment, career development, curriculum planning), and steers the graduate program in an advisory capacity.

Grad Team Members
Sick Kids: Julie Brill, Eric Campos, Julie Lefebvre, Ian Scott, Michael Wilson
MaRS/OICR: Lori Frappier, Thomas Hurd, Aaron Reinke
MSB/Donnelly Centre: Brenda Andrews, Gary Bader, Scott Gray-Owen, Timothy Hughes, Zhaolei Zhang
LTRI: Frank Sicheri, Mei Zhen

Executive Committee

Chair Reclassification and Qualification Exams.
Committee Members
Leah Cowen, Peter Roy, Richard Collins, Lori Frappier, Barbara Funnell, Timothy Hughes, William Navarre

Examinations Committee

The examination committee serves as an important mechanism to achieve parity in student examinations. For each of our six fields of interest, the department has assigned 2-4 examination committee members:

>**Cellular & Molecular Structure & Function***: Frank Sicheri*, Michael Moran, Rick Collins, Brigitte Lavoie
>
>**Computational & Systems Biology**: Fritz Roth, Zhaolei Zhang, James Dennis, Gary Bader, Tim Hughes*
>
>**Functional Genomics & Proteomics**: Anne-Claude Gingras*, Michael Wilson, Jeff Wrana, Laurence Pelletier
>
>**Genetic Models of Development & Disease**: Gabrielle Boulianne, Brent Derry, Sean Egan, Andrew Spence, Brian Ciruna*
>
>**Molecular Medicine & Human Genetics:** Lucy Osborne, Bret Pearson
>
>**Molecular Microbiology & Infectious Disease:** Jun Liu, Scott Gray-Owen, Alan Davidson

*Denotes examination committee members who may serve as chairs on reclassification and qualification exams, as needed. This is determined by the department.
The department assigns executive committee and examination committee members to exams
The department makes every attempt to match research interests and expertise with that of the examinee's declared primary field.

Examination committee members serve the following roles:
- Chair of pre-reclassification/pre-qualification meetings
- Member of the Reclassification/Qualification examining committee
- Members with an "*" may also serve as chairs of reclassification/qualification exams
- Chair of the M.Sc. defence examining committee
- Member of the Ph.D. defence examining committee
- Post-time-to-completion (TTC) meetings

Course Coordinators

MMG1001 Foundational Genetic Approaches I: Dr. Howard Lipshitz

MMG1002 Foundational Genetic Approaches II: Dr. Philip Kim

MMG1011 Student Seminars I (a.k.a. MMG1015 Small Group Seminars): Dr. Richard Collins

MMG1021 Student Seminars II (a.k.a. MMG1015 Seminars):
Drs. Richard Collins, Xi Huang, Ran Kafri, Kenichi Okamato

MMG1031 Student Seminars III (a.k.a. MMG1017 Seminars)
Drs. Richard Collins, Xi Huang, Ran Kafri, Kenichi Okamato

MMG1041 Topics in Molecular Genetics (a.k.a. MMG1016, MMG1012 Topic Courses)
Dr. Lori Frappier

GRADUATE PROGRAMS

The Department offers both M.Sc. and Ph.D. degrees in Molecular Genetics. Students who enter with a B.Sc. degree may either enter into the M.Sc. Program or be admitted directly into the Ph.D. program (PhD direct entry), depending on their preference and qualifications. Those who enter into the M.Sc. program have several options: a) complete their M.Sc. degree; b) successfully complete a reclassification exam and transfer to the Ph.D. program in their second year; or c) complete their M.Sc. degree then apply for re-admission to the Ph.D. program. Students with a B.Sc. degree who are admitted directly into the Ph.D. program must pass a qualification exam during their second year.

Students who enter with a research-based M.Sc. degree from a recognized university are accepted directly into the Ph.D. program (PhD regular). These students must pass a qualification exam during their second year.

The Department of Molecular Genetics also offers two professional Master's Programs, each with a duration of two years. The Master's of Science Program in Genetic Counselling is offered in collaboration with the Division of Clinical and Metabolic Genetics in the Department of Pediatrics of the Hospital for Sick Children and the Department of Obstetrics and Gynecology at Mount Sinai Hospital, University of Toronto. This M.Sc. in Genetic Counselling Program is accredited as a graduate level training program by the American Board of Genetic Counseling. The Master's of Health Sciences in Medical Genomics Program is a two-year, course-based professional Master's in Health Sciences that is the first of its kind in Canada. It has been developed for a new era of research and clinical science, providing professional and practical skills for a world where genetic and genomic data are routinely collected and analyzed across a wide range of patient populations and medical indications. No thesis is required for this degree, and instead training culminates in a Capstone Practicum. Additional details on each of these programs can be found on our website.

Collaborative Specializations
Members of the department participate in two interdepartmental collaborative specializations that provide students with the opportunity to benefit from the wealth of expertise in the University of Toronto community in areas of research that span the boundaries between traditional departments:
Developmental Biology (http://devbio.utoronto.ca/)
Genome Biology & Bioinformatics (http://gbb.utoronto.ca/)

Computational Biology Molecular Genetics (CBMG) Ph.D. Track
Molecular genetics is increasingly driven by data and technology. Computational biology plays a critical role in these advances. Computational biologists use methods from physics, math or computer science to model biological processes or analyze genomic data, for example. The availability and continuing generation of large-scale datasets and data analysis has created a high demand for researchers with advanced computational skills who also have a strong grasp on molecular biology.

The CBMG track aims to provide students with an immersive computational biology education. Students are admitted to the Molecular Genetics PhD program directly and are provided opportunities and courses specific to their discipline to maximize their training potential, including Advanced Computational Biology I and II.

This track is for both life science graduates with some computational expertise as well as quantitative graduates (math, physics, computer science) and is a PhD direct entry track only. It incorporates coursework to provide a strong foundation for all students in both computational methods or molecular genetics knowledge.

Duration of Programs

The Department of Molecular Genetics has put in place policies and procedures designed to ensure the timely completion of our M.Sc. and Ph.D. degrees. The total length of the M.Sc. program is expected to be 2.5 years. The total length of the Ph.D. program is expected to be 5.5 to 6.0 years after commencing graduate studies in the Department (see "Time to Completion Meeting" on pg. 21). Students who do not complete their Ph.D. degrees within 6 years must request an extension from the School of Graduate Studies (please see https://www.sgs.utoronto.ca/academic-progress/student-forms-letters/#section_2).

Equity, Diversity, Inclusivity, and Excellence

The Department of Molecular Genetics is committed to fostering a research community in which each member can contribute, learn, excel, and benefit from a diversity of perspectives. We attract students, staff, and faculty from a range of backgrounds, and we aim to utilize this diversity to build an ever-stronger training environment as we strive for excellence.

ROTATIONS

Our Department does not require students to pre-arrange a permanent supervisor prior to joining the program. Instead, rotations are an important feature of our program. New students must rotate through at least three laboratories before choosing a permanent laboratory and supervisor. Rotations allow students to sample different research areas and thus to make a well-informed choice of research topics, laboratory environments and supervisors. Each rotation spans approximately five weeks. Rotations begin on the first Tuesday after Labour Day in September, and end on the final day of the Fall Term. The exact dates of each rotation will be communicated to students at Orientation each year.

Arranging Rotations

The Department arranges the first rotation for each student before they start the program. Each summer (and in December for January entry students), the Department surveys faculty to identify the labs and the number of rotation positions in each lab. These results will be updated on our departmental website under each faculty member's profile. Then, in July, each incoming student will fill out an online survey in which they rank their top five choices of available faculty member laboratories in which they would like to rotate. The first rotation is then assigned based on the stated preferences of the student, but choices may be limited by the availability of space within faculty members' laboratories. The majority of students are placed within their top two selected labs for this rotation. Students are informed of their rotation assignments by early August (mid-December for January starters).

Students are required to rotate in at least two different geographic nodes of the Department. Students should keep this in mind when planning and selecting rotation labs. The major departmental nodes are: Medical Sciences Building (MSB), Lunenfeld-Tanenbaum Research Institute (LTRI), Donnelly Centre (DC), Ontario Institute for Cancer Research (OICR), Peter Gilgan Centre for Research & Learning (PGCRL), and MaRS West Tower (MaRS).

We have found that students can make better-informed rotation choices once they gain firsthand experience in the department. To help students gain additional insight, the Department holds a yearly Retreat in September and the Grad Team organizes Thursday Faculty Talks for First Years. At the Retreat, about half the faculty participate in the Power Hour, an event held before the official start of the full retreat, where faculty attempt to summarize their lab's research into a two minute talk (which often turns into more of a comedy hour). At the full Retreat, about 15 faculty present talks on their research, over 100 trainees present posters on their work, and there is additional time for informal interaction to learn about rotation labs. For those faculty who do not speak at the Retreat, the Grad Team arranges a set of short talks every Thursday in September (3-5pm, usually held in the CCBR Red Room), so that students may get a sense for the research and potential projects available for rotations.

Second and Third rotation choices are up to the student to arrange and should be made only after starting in the program in September/January. These rotations are arranged through direct communication between students and potential supervisors and must be finalized at least one week before the commencement of said rotation. This choice must then be communicated to the Grad Team via email. More detailed instructions will be provided each year to rotation students.

Students and supervisors may not make any final decisions about laboratory choices until near the end of the mandatory rotation period. The date will vary each year and will be

communicated to students in the fall. New students are encouraged to seek the advice of senior students and students currently in the labs they are considering when choosing their rotations and permanent placement. The Grad Team and Grad Coordinator are also available to counsel students regarding rotation selection.

In exceptional cases, and only upon permission of the Graduate Coordinator, students may perform a fourth rotation if they have not found a permanent placement after completion of the third rotation. Fifth rotations are never permitted (see below).

The Department will send information on Rotation Expectations and Tips when you are notified of your first rotation assignment (in August). Students should also see the "Rocking Your Rotations- A Survival Guide" on our website for great tips on how to make the most of the rotation experience: http://www.moleculargenetics.utoronto.ca/s/Trainee-Survival-Guide-Article_Final_NM.pdf.

Opting Out of Rotations for Students Who Have Completed an M.Sc.

Ph.D. applicants who will receive their M.Sc. prior to starting their graduate program in Molecular Genetics have the option of forgoing rotations and directly joining a lab. To be eligible for opting out of rotations, the applicant must arrange a prospective supervisor as part of their application package. Both the student and prospective supervisor must email the Grad Coordinator to receive approval for such a situation prior to the <u>application</u> deadline.

Failure to Find a Permanent Lab

In rare occasions where a student does not find a permanent lab after the first three rotations, a fourth rotation may be permitted. If a student is unable to find a permanent thesis supervisor after four rotations, their enrollment in the program will be terminated. Admission to our program does not guarantee that a student will be accepted into a laboratory for their thesis work. It is extremely rare, however, for an accepted student to not find a suitable laboratory to join. Transfers to other Graduate Programs may be possible.

International/Visa Student Rotations

Although international (visa) students are required to find a supervisor prior to admission, these arrangements are generally not final. Visa students are required to do the same number of rotations as non-visa students, and they are free to join a laboratory other than that of their sponsor. In sponsoring visa students, however, faculty members make a commitment to accept those students into their laboratories if the student wishes to join after completing the mandatory rotations. Once a permanent laboratory is chosen, the procedures for visa students are identical to those for non-visa students.

Financial Support During Rotations

Students will be paid the standard stipend during the rotation period. See the Student Funding section on pg. 62 for information on rotation stipends.

STUDENT SUPERVISION

Thesis Supervisory Committee

- Monitors a student's progress regularly during their graduate career.
- Counsels, advises and assists the student (both during and outside of committee meetings).
- Acts to maintain equal standards of student supervision across the Department.
- The supervisor and the supervisory committee identify when a student is not making adequate progress and document it on the Supervisory Committee Evaluation Report and, in consultation with the student, devise approaches to remedy the problem.

Co-Supervision

If it is in the best interest of a student and his or her project, the Department will consider allowing the student to be co-supervised by two professors within our Department after consultation with the Graduate Coordinator. The details of the relationship between the student and the two co-supervisors (where the student will work, whose lab meetings they will attend, what fraction of the stipend each supervisor is responsible for etc.) will vary on a case-by-case basis. The details of the relationship, however, should be agreed upon at the onset of the co-supervision. Co-supervisory arrangements must be discussed by both co-supervisors and the student, and then detailed using the Co-Supervision Form. This form should be completed with sufficient detail and emailed to the Graduate Coordinator and Graduate Administrator for approval. In some instances, additional details may be requested. Note that once a co-supervisor is appointed, there is no primary/secondary supervisor; each are considered equal mentors and are equally responsible for the student. If an existing supervisory committee member becomes a co-supervisor, a replacement for that supervisory committee member should be found as soon as possible and approved by the Graduate Coordinator, abiding by the rules of committee member assignments (below). Co-supervision may involve no more than two co-supervisors within the Department. Co-supervisory arrangements with faculty outside of the Department are not permitted.

If the co-supervised student and/or the co-supervisors consider changing the co-supervision status, the Graduate Coordinator should be consulted before any changes are made. Any agreed upon changes to the co-supervisory relationship should then be reported to the Graduate Program Administrator immediately via an email in which all relevant parties are carbon copied (cc'd). Otherwise, all parties will be held to their initial agreement should any disagreements arise in the future.

Supervisory Committee Composition

The committee is composed of the student's supervisor(s) and a minimum of two other faculty members. Students and supervisor are encouraged to choose a supervisory committee that is limited to a total of three faculty members (including the supervisor) to avoid potential scheduling difficulties that can arise with additional committee members. However, if the student and supervisor feel that the benefits of increased expertise on the committee outweigh any potential scheduling difficulties, additional members may be invited to join the committee.

Of these two committee members:
- At least one of these must be a Molecular Genetics Faculty member.
- At least one of these must be a Molecular Genetics Faculty member from a different node than the student's lab.

- At least one of these must be a Molecular Genetics Faculty member who has an arm's length relationship with the supervisor and the student (i.e. is not a collaborator on the project, a spouse, etc.).
- At least one of these must have expertise different from that of the Supervisor.

Please note that one committee member may fulfill multiple (or even all) of these criteria. The choice of additional committee members is not restricted with respect to their node, departmental affiliation, or arm's length relationship with the student/supervisor.

The student and supervisor jointly choose the supervisory committee, which MUST be approved by the Graduate Coordinator **BEFORE** the first committee meeting is arranged. The Supervisory Committee composition must be chosen by February 1st (for September entrants) or May 1st (for January entrants). More detailed instructions will be provided to students each year.

A faculty member from the Department, other than the supervisor, will act as the permanent chair of the committee. The composition or the chair of the committee may be changed provided all parties involved agree. The Graduate Coordinator must approve all changes in supervisory committee membership (but not changes in the chair).

There may be instances when a supervisory committee member is on leave or sabbatical for an extended time. During this time, the student and supervisor should invite an additional member to sit on the committee if the committee is composed of the standard three members (including one supervisor). If there are more than two additional members on the committee (excluding supervisor(s)), this is not necessary. The student and supervisor may decide to maintain this additional member after the original committee member returns from leave/sabbatical or they may return to the committee to its original composition. All changes in committee composition must be approved by the Graduate Coordinator, including those intended to compensate for a committee member on leave.

If a student is having difficulties, a member of the Examining or Executive Committee may be assigned to attend one or more committee meetings.

Timeline of Committee Meetings

Scheduling Within the First Two Years
The supervisory committee must be selected and approved by the Graduate Coordinator as soon as possible after joining the permanent lab (deadline: Feb 1/May 1). The student must then contact committee members to set up the first committee meeting, which must take place before March 31 (July 31 for students admitted in January) of the first year in the program. As soon as this meeting is scheduled, the Student Services Assistant must be informed of the date, time, and location of the meeting. Delays are generally not permitted, but any potential deviation from the required timing of meetings must be approved by the Graduate Coordinator.

Students must send their committee reports to their supervisory committee members at least seven days before the meeting. At the end of the first committee meeting, or within one business day thereafter, the student must schedule a second committee meeting. Supervisory committee members are expected to hold this time slot in their calendar. This next meeting MUST take place before the end of October (February for students admitted in January) of the

second year in the program. The exact date and time of the second committee meeting must be included on the report from the first committee meeting or must be arranged and communicated to the Student Services Assistant within one business day of the first meeting. To aid in scheduling committee meetings, committee members should be reminded to bring their calendars to the meeting. If this is not possible, they must be contacted immediately after the meeting to arrange the second meeting.

TIPS: Using [Doodle Polls](#) is a helpful approach to scheduling committee meetings (but try to narrow the number of slots to less than ten, so as not to overwhelm your committee members). Remind your committee of the upcoming committee meeting six weeks in advance of the meeting date via email. In the event that this date is no longer viable, knowing this six weeks in advance can facilitate the rescheduling process and keep the meeting on an appropriate timeline.

For M.Sc. students who plan to reclassify and Ph.D. students, at the end of the second committee meeting the pre-reclassification/pre-qualification committee meeting must be scheduled in the same manner as above. This must take place before the end of March (July for students admitted in January) of the second year in the program, keeping in mind that holding meetings earlier can allow the student more time to prepare for the exam. The Department will arrange for an Examination Committee member to chair this meeting once it has been scheduled.

The reclassification/qualification exam will be scheduled by the student (identifying the date, time, and room) and will occur in May (October for students admitted in January) of the second year in the program. The exact dates in May/Oct. during which exams may take place will be communicated to students each year. The Department will arrange for an Examination Committee member and Executive Committee member to attend this meeting once it has been scheduled. The Examination Committee member may or may not be the same person who attended the pre-reclassification/qualification.

Scheduling after the First Two Years

After a student has reclassified or qualified, The School of Graduate Studies requires that all students have at least one supervisory committee meeting per year (by May 31/Sept. entry, Oct. 31/Jan. entry) . More frequent meetings will occur if the student or the supervisory committee determines it necessary, or if the student is experiencing difficulty. Although the Department monitors the timing of committee meetings, it is the student's responsibility to schedule these meetings. The procedure to follow for scheduling these subsequent committee meetings is:

1. Whenever possible, students will receive a reminder email from the Department that a meeting is necessary within the next two months.
2. Upon receipt of the reminder email, students should immediately email the committee members to ask when they are available to have a meeting, cc'ing the Student Services Assistant, if they have not already scheduled their next committee meeting. Upon obtaining the committee member responses, the student determines a time and place that is mutually agreeable. Once these arrangements have been finalized, the student informs the Student Services Assistant. A copy of the formal notice of the meeting is kept in the student's file. Students are responsible for sending a reminder and their report to all committee members **at least seven days** before the meeting.

3. Professors have been informed that they are expected to respond to the student's emails as soon as possible. If a professor does not respond to a student's email within four days, the student should send an email reminder, cc'ing the Graduate Administrator and Coordinator. If no response to the reminder is received within three days, the student must inform the Graduate Program Administrator and the Graduate Coordinator. The Graduate Coordinator will then contact the professor(s).

Scheduling and Procedure for Students Completing a M.Sc. Degree

M.Sc. students who are not reclassifying must have a third committee meeting before the end of March (July for January starters) of their second year. (Note that for some students, this meeting may have been a pre-reclassification meeting, after which the student subsequently decided not to reclassify. If this is the case, the student should discuss a plan for completing experiments within the next six months shortly after the meeting.) At this meeting, a clear plan should be agreed upon for the completion of the degree program. In particular, remaining experiments that must be completed should be explicitly described on the Supervisory Committee Evaluation Report. The remaining experiments should not take more than six months to complete, and a terminal committee meeting must be held no more than six months later (Oct. 31/Feb. 28). All experiments should have been completed by this time. The student will present the outline of their thesis and receive permission to write at this point. Note that committee members can also sign this form up to six weeks after the date of the Terminal Committee meeting should experiments be completed within that timeframe. The M.Sc. Terminal Committee Meeting Report Form (available on the Departmental website, under http://www.moleculargenetics.utoronto.ca/departmental-forms) is filled out at this time in addition to the regular Supervisory Committee Meeting Evaluation Report. If experiments have not been completed, the Evaluation Report must include a clear explanation for the delay. A concise timeline for completion must also be included. Further failure to meet the deadlines of the committee will warrant intervention by the Graduate Coordinator.

Committee Meeting Descriptions

Before the start of each committee meeting, both the Supervisor should be asked to leave the room for a few moments, allowing the student time to confidentially discuss any issues, concerns, questions, etc. with their committee. After this, the student leaves the room and the Supervisor takes a few moments to update the committee on the student's progress.

First Meeting (March/July)

At this meeting, students should outline the broad objectives of their project and the specific short-term goals to be achieved in the first year. Students should demonstrate a grasp of the key issues in the project and some knowledge of important background information. Students may or may not have preliminary data to support the proposed aims of the project. The initial project should be sufficiently technically feasible such that within one year it is possible to judge the student's technical and intellectual abilities as they bear on continuing in the graduate program. It is the responsibility of the student, the supervisor and the supervisory committee to guide the choice of the research project. When considering projects, M.Sc. projects must have the potential to develop further should the student consider reclassifying into the Ph.D. program. Both M.Sc. and Ph.D. projects should seek to test an interesting hypothesis or further investigate an important biological question. Other factors to consider when choosing a project

include the potential novelty of the project, the degree of risk, and the ability to devote some attention to a "fall back" project where a high-risk project is pursued.

Second Meeting (October/February)

By this meeting, the student should have demonstrated intellectual and technical ability along with a good grasp of the general project area. A greater command of background knowledge will be expected at this meeting. The committee should be satisfied at the second meeting that the problem chosen has a reasonable likelihood of leading to an acceptable reclassification proposal or M.Sc. thesis.

Third Meeting: Pre-Reclassification/Qualification Meeting (Ph.D. Track, March/July)
Purpose:
- Like all committee meetings, the student's progress is evaluated and constructive advice is provided about the project.
- The student's capability of successfully completing the Ph.D. program is evaluated and they are advised accordingly
- The student is provided with useful feedback on what to put into the reclass/qual proposal, and what areas should be studied.

Compared to previous meetings, the student's background knowledge and their ability to think scientifically will be probed more deeply to ascertain the likelihood of success at the reclass/qual exam. At the end of the meeting, the committee will recommend a course of action to the student. In some cases, the committee will recommend that the student not proceed with the exam. However, provided that at the pre-reclass/qual meeting, the student does not receive an overall score below 70% for the second time in a row on their meeting evaluation, the final decision as to whether to proceed with the exam is the student's. The decision not to follow the committee's advice should only be made after reflection and consultation with the student's supervisor (and if need be, the Graduate Coordinator). A decision by the student to proceed with the exam, despite advice to the contrary, would be made after the conclusion of the meeting, but within at least two weeks before the deadline to hand in the reclass/qual proposal.

Preparation and Procedure

The pre-reclassification/pre-qualification committee will be composed of the regular supervisory committee and will be Chaired by an Examination Committee member, assigned by the Student Services Assistant or Graduate Administrator, based on the student's primary or secondary research field. The pre-reclassification/qualification meeting is conducted in the same manner as other committee meetings. The student prepares a committee meeting report in the same manner as in all other committee meetings. However, one additional page must be added to the report containing an outline of the reclassification/qualification proposal. The outline should also be covered at the end of the student's presentation during the meeting, and the feasibility of the proposal will be discussed. Committee members will then provide advice about the scope and aims of the project that may be helpful in crafting and defending the proposal.

Third Meeting: Time to Completion Meeting (M.Sc. Track, March/July)

At this meeting, the student should have a plan for the experiments that need to be completed to finish the degree. These experiments should take no more than six months to finish. All other aspects are as other committee meetings.

Fourth Meeting: Reclassification or Qualification Exam (Ph.D. Track, May/October)

Reclassification and qualification examinations are scheduled in May of a student's second year (October for students admitted in January, see "Examinations" pg. 40).

Fourth Meeting: Terminal Meeting (M.Sc. Track, October/February)
The M.Sc. Terminal meeting is the point at which a student receives permission to write the M.Sc. Thesis. All experiments should have been completed by this time. The student will present the outline of their thesis and receive permission to write at this point. Note that committee members can also sign this form up to six weeks after the date of the Terminal Committee meeting should experiments be completed within that timeframe. The M.Sc. Terminal Committee Meeting Report Form (available on the Departmental website, under http://www.moleculargenetics.utoronto.ca/departmental-forms) is filled out at this time in addition to the regular Supervisory Committee Meeting Evaluation Report. If experiments have not been completed, the Evaluation Report must include a clear explanation for the delay. A concise timeline for completion must also be included. Further failure to meet the deadlines of the committee will warrant intervention by the Graduate Coordinator.

Meetings After Reclassification/Qualification (Ph.D. Track)
Committee meetings after reclassification/qualification must be held at least once per year or more often as specified by the Supervisory Committee. It is the responsibility of the student to ensure that committee meetings are held on schedule. YEARLY COMMITTEE MEETINGS ARE AN ABSOLUTE, NON-NEGOTIABLE REQUIREMENT OF OUR PROGRAM AND THE SCHOOL OF GRADUATE STUDIES. A student who fails to have committee meetings each year will not be able to register in the fall, and may have their enrollment in the Department terminated.

Meetings for Students Doing Science Outside U of T
A student's thesis research might occasionally require him/her to do work at a site outside of Toronto for an extended period of time (e.g. field work, work at a company, work at another University). For work that requires the student to be away from Toronto for more than a month, the student must schedule a committee meeting **before** committing to that work in order to get the committee's approval. The student must also fill out any relevant exchange work forms (found on the SGS website) and have them signed by the Graduate Coordinator **prior to** committing to the work outside of Toronto.

Time to Completion (TTC) Meeting for Ph.D. Students
The "time-to-completion" (TTC) committee meeting is designed to assist in ensuring timely completion of the Ph.D. It is expected that, except in unusual circumstances, a Ph.D. should be defended no more than 5.5 to 6.0 years after commencing graduate studies in this department. **After 4.0 to 4.5 years in the graduate program, every Ph.D. student must have a TTC meeting.** This meeting is not to be delayed because the student or Supervisor do not think the student is ready. Just like the Pre-Reclass/Qual, this meeting is held at a particular point in the program and is an important assessment of the progress already made as well as what is realistic for the completion of the Ph.D. Members of the Grad Team will review the TTC post-meeting reports and discuss with students after the meeting as needed. The TTC meeting is conducted in the same manner as other committee meetings (including the four-page progress report as described above) with the following additional measures:
1) In both the written progress report and at the TTC meeting, the student must present:

      (i)   A projected thesis outline and

      (ii)   A plan outlining exactly which experiments need to be completed along with a realistic estimate of how long this is expected to take. This time may not exceed one year (i.e., except for writing and defending the thesis, all other aspects should be completed within 5.0 to 5.5 years).

2) After discussion at the TTC meeting, the student, in collaboration with their supervisor, writes a summary document describing what was agreed to at the TTC meeting. This document must be signed by the student, supervisor and all committee members, and submitted to the Graduate Team for review within one week of the meeting.

3) Another, usually terminal, committee meeting is scheduled for the time projected at the TTC meeting for completion of experiments. At this meeting, the student is given permission to write the thesis.

4) If it is clear before the meeting described in 3) that the student will not have completed the necessary experiments, an Examination Committee member must attend this meeting to lead a discussion regarding how best to ensure timely completion of the thesis.

5) In the event of 4), a terminal committee meeting must be scheduled within four months to ensure that the required progress had been made and that thesis writing can commence.

Extensions to the SGS time limit of seven years for the total duration of a Ph.D. will be given only for rare extenuating circumstances. Students must apply for such an extension at least three months prior to the seven-year deadline.

Report for Regular M.Sc. and Ph.D. Committee Meetings

(Additional items are to be included in pre-reclassification, pre-qualification and time-to-completion meetings.)

The committee meeting progress report should be a maximum of four pages (single-spaced, 12 point uncondensed Times New Roman font, 2 cm margins). The four pages do not include the cover page, title page, 300 word abstract, references, figures, tables, and the summary of achievements. The progress report must be distributed by emailing a single PDF to the committee members and the Student Services Assistant **at least seven calendar days** prior to the committee meeting. It is recommended that students obtain examples of thesis committee reports from their labmates or other senior graduate students.

The report should contain the following:

- A Supervisory Committee Meeting Cover Page.
- A Title Page: Name, Date of Entry into Graduate Program, Project Title, List of Committee Members, Meeting Location, Date and Time.
- A paragraph briefly (300 words or less) summarizing the background and main goals of the research (i.e., an abstract).

The body of the report (4 pages or less) should detail:

- A summary of highlights of progress described at previous committee meetings.
- A summary of the progress made since the last committee meeting. Mention publications that have been submitted, accepted, or are in preparation. A summary of

the recommendations or concerns that were made at the last committee meeting and an explanation of how these were addressed (or why they were not addressed).

- A summary of what experiments are planned in the near future (i.e. six months to a year), and what goals remain to be achieved to complete the thesis.
- A summary of achievements since starting graduate school: a list of awards, meeting abstracts, publications (submitted, in press, or published).
- Figures should be included in the report to make it easier to describe the research. Figures are not included in the page limit.
- List of References as needed. References are not included in the page limit.
- The Previous Supervisory Committee Meeting Evaluation Report should be appended at the end (N/A for first committee meeting).

Failure to adhere to these guidelines will result in a low mark in the "Quality of Report" section of Committee Meeting Report and may be reflected in your overall score for the meeting and/or entitle supervisory committee members to request a revised report that adheres to these guidelines before the meeting can proceed.

Supervisory Committee Meeting Procedure

Students should remind their committee of their upcoming meeting six weeks ahead of time, and then remind them again two weeks ahead of the meeting. Seven calendar days prior to the committee meeting, the student must distribute the committee meeting report to their committee and Student Services Assistant by email (as a single PDF). Any delays in sending the report will result in a lower mark for the Quality of the Report section of the Committee Evaluation Report. The report should be sent as a PDF document containing the following (and see pg. 22):

- a Supervisory Committee Meeting Cover Page and a Title Page that contains: Title of the Project, Supervisor, Supervisory Committee, Name of Student, Date/Time/Place of Meeting
- a four page Supervisory Committee Progress Report (title page, abstract, figures, references do not count into this four page limit). Exceeding the four page limit will result in a lower mark for the Quality of the Report section.
- the Supervisory Committee Evaluation Report from the previous committee meeting (N/A for first committee meeting).

Students must bring a copy of the committee report and at least one blank copy of the Committee Evaluation Report to the meeting.

At all committee meetings:
- The student must give a 20-minute presentation (not including interruptions) on their experimental progress. This presentation starts with a brief synopsis of the project background, main goals, and key previous findings. The students can expect to be interrupted with questions during the presentation.
- There should be at least 15 minutes of questions on general background knowledge relevant to the project. These background questions do not all have to be asked at the same time, but the committee should ensure that this amount of background questioning occurs during the committee meeting.

- The student is asked to leave the room at the beginning and end of the meeting. Before the meeting, the committee is briefed by the PI about the trajectory of the project and on ways they can help advance the science. After the meeting, the committee members candidly discuss their overall impression of the student's progress. The student is invited back into the room for discussion and feedback, provide recommendations, and to review any concerns regarding the project and/or the student.
- A Supervisory Committee Evaluation Report is filled in and marks are assigned for various aspects of the student's performance in the program. The student and all supervisory committee members must sign the form.

The total time for a committee meeting, including the oral presentation that is interrupted by questions, and the period of student evaluation and feedback, should not exceed 2 hours.

Evaluation Report
The Chair of the committee is responsible for filling out the Supervisory Committee Evaluation Report at every meeting (except for exams, defences, and the pre-reclass/qualification meeting). The Chair communicates the committee's assessment of the student's progress to the student. Other committee members may then elaborate. The student is responsible for bringing blank copies of the Evaluation Report to the meeting.

Marking scheme:
The student will be marked in several categories (see below) using a numeric scale between 0 and 100. This scale is aimed at providing a simple, more accurate and easily interpretable evaluation. Committee members are urged to use the full scale and to mark students in relation to other students at the same level. A student with an average performance compared to other students should receive marks in the "Good" range (70-79%). Over time, it generally takes improvement on the part of the student to simply maintain the same grade obtained in previous meetings, as the expectations are higher with continued time in the program.

Categories to be marked:
- **Background Knowledge**: This must be specifically tested at each committee meeting with at least 15 min of questioning in this area. Students are expected to have knowledge in areas that are not directly related to their thesis topic, but are relevant to their general research area. Questions should be the same type of background questions that are asked on reclassification/qualification exams, M.Sc. and Ph.D. defences. Questions should also probe the student's ability to place their work in a wider context (i.e., "The Big Picture").
- **Understanding of the System**: The committee should evaluate the student's familiarity with the directly relevant literature and experimental techniques, experimental design and overall rationale/logic of the project.
- **Initiative/Motivation**: This section is intended to evaluate how engaged in the project the student is. Are they reading the literature and generating their own new ideas for the project? Are they working efficiently and spending their time in the lab productively? Have they taken ownership and initiative over the project and are not simply going through motions?
- **Industriousness/Effort**: This section is related to Initiative/Motivation, but is intended to evaluate how effective the student is on completing the goals of the project. This

section also assesses whether the student devotes sufficient time to their thesis work at the bench/in the lab.

- **Experimental Skills**: The committee will assess the quality of the data throughout the presentation. This section addresses whether a student successfully executes the experiments they have set out to perform, include appropriate controls, and generate high quality data from which conclusions can be drawn. This section also relates to whether students are intrepid in their experiments: Do they attempt and master new techniques?
- **Progress**: Based on the elapsed time, complexity of the experiments, and any other confounding variables, has the student achieved the goals they set out to address since their last meeing? Have they generated new data? Is the student achieving an appropriate timeline for their degree?
- **Creativity**: This refers to the student's ability to come up with novel ideas, approaches and/or insights into their research. This area may not be easily evaluated for junior students, so could be left blank.
- **Critical Thinking**: This includes the ability to independently troubleshoot experiments, design proper experiments including controls, critically evaluate data, and construct sensible hypotheses to explain results.
- **Organizational Skills**: This covers whether the student organizes their experiments, data and thoughts clearly. Are they keeping appropriate notes and records on their experiments? Are the properly maintaining the data they acquire? This also covers how they communicate their data and organize their thoughts. Is the information flow logical, and clear or disorganized and nonlinear?
- **Communication with Supervisor**: Does the student initiate discussions about their project, data, and progress? Do they share new data and ideas routinely with the PI?
- **Quality of Report**: Is the report clear, logical, and well-organized? Are their grammatical and spelling mistakes? Are all of the important components included?
- **Quality of Oral Presentation**: This segment addresses how clear, well-organized, and on point the presentation was. Was there sufficient background? Were the questions framed well and data presented clearly, with appropriate conclusions drawn? Did the student speak loudly and clearly enough? And so on.

Filling out the Evaluation Report:

In order to provide the committee members with an opportunity to freely discuss their options, students must leave the room before the committee completes the evaluation. This is especially important in cases where a student may not be doing well. Once sufficient discussion has occurred, the committee will complete the evaluation form. The student is then invited back into the room so that all matters arising (both positive and negative) can be conveyed to the student and the marks fully discussed.

It should be noted that the student's signature on the report does not signify their acceptance of the recommendations of the committee, but only acknowledges that the report has been read. If the student feels that the report does not accurately reflect their situation, they may submit a written response, which is distributed to all committee members and kept in the student's file. Blank Supervisory Committee Evaluation Report forms can be found on the Departmental website.

After discussion of the committee's recommendations and the courses that the student has completed, the student and committee must set a date for the next committee meeting.

STUDENTS MUST EMAIL OR HAND IN THE COMPLETED COMMITTEE MEETING EVALUATION FORM TO THE GRADUATE PROGRAM ADMINISTRATOR WITHIN <u>ONE</u> BUSINESS DAY OF THE MEETING. All committee reports/evaluations will be kept in the student's file. Failure to turn in the form prohibits the Department from properly updating your file and triggers a discussion with a member of the Grad Team, which may lead to the addition of this member at the next committee meeting. Members of the Grad Team will review committee evaluations throughout the year to ensure adherence to the guidelines and timelines of the program.

Lack of Sufficient Progress

If a student's overall progress in the program is deemed by the supervisory committee as 'unsatisfactory' or 'needing improvement', they will receive an overall grade of less than 70% on their Supervisory Committee Meeting Evaluation Report. This report must include a specific description of the problems and how the student may improve their performance.
A student receiving an overall grade of less than 70% must have another committee meeting in less than 3 months. An additional member of the Graduate Team, Executive Committee, or Exam Committee may be added at this next meeting to assess the situation. This is determined by the Graduate Coordinator on a case by case basis. If the student does not attain an overall grade of over 70% at this next committee meeting, the student may be asked to withdraw from the program. If the student is permitted to stay in the program at this point, strict conditions will be established in consultation with the committee and the Graduate Coordinator to ensure that progress is closely monitored.

Individual Development Plan

The Individual Development Plan is an assessment and planning document intended to open a and guide discussion between student and Supervisor. The IDP covers topics that students have found essential to discuss with their mentors. It encourages both student and supervisor to think actively about training, and fosters open communication between mentor and mentee. If you have additional questions or objectives related to your training, these meetings are a great time to bring them up and set action steps.
The IDP was initiated in Feb. 2019 and is to be completed every year in association with committee meetings. Only the student and Supervisor will view and discuss the IDP, but there is an accountability section included on the Committee Meeting Evaluation Report.

COURSE REQUIREMENTS

Important note:
In 2019, the Department re-structured the required curriculum for both M.Sc. and Ph.D. students. Those students who entered the program in or prior to January 2019 must complete the legacy curriculum, detailed first below. Students who enter the program in or after September 2019 must complete the core curriculum, which follows description of the legacy curriculum below.

Legacy Curriculum (Jan. 2019 or earlier entry into program)
M.Sc. Course Requirements
MMG1010H: Molecular Genetics Colloquium (Now part of MMG1002H)
MMG 1012H°: Topics in Molecular Genetics I
MMG1015Y°: Seminar (Now also known as MMG1011H, MMG1021H)
RST9999Y: Thesis

Ph.D. Course Requirements
MMG1010H: Molecular Genetics Colloquium (Now part of MMG1002H)
MMG 1012H°: Topics in Molecular Genetics I
MMG1015Y°: Seminar (Now also known as MMG1021H)
MMG 1016H°: Topics in Molecular Genetics II
MMG1017H°: Topics in Molecular Genetics III (Now also known as MMG1031Y)
RST9999Y: Thesis

Course requirements for reclassification/qualification (Legacy Curriculum)
To reclassify or qualify, a student MUST have either:
- Completed and received an acceptable mark in two Course Topics before the time of the reclass/qualification exam; or
- Completed and received an acceptable mark in one Course Topic before the time of the reclass/qualification exam AND be in the middle of taking the second Course Topic at the time of the exam.

Course Descriptions
MMG1010H – Molecular Genetics Colloquium (Now part of MMG1002H)
This is a mandatory course for all Molecular Genetics MSc. and PhD. students, to be completed during the fall term of the first year of graduate study. The Colloquium consists of ~12 weekly departmental seminars that will be presented by invited world-class scientists. The seminars are open to the entire department and runs Monday afternoons. Prior to each seminar, students will read a set of 2-3 designated papers/reviews recommended by the invited seminar speaker to familiarize them with the topic at hand. Students will also meet in small groups of about 10-15 members prior to each seminar to discuss the research papers and develop a set of questions to submit to the seminar speaker prior to the seminar. After attending the seminar, students will meet with the seminar speaker to discuss the research. This course provides first year graduate students the opportunity to develop important skills in evaluating scientific research, while learning about a broad range of research areas from experts in each field.

MMG 1012H - Topics is Molecular Genetics I

Students must take two topic courses (see definition and descriptions below) in order to complete this course. The mark in this course is the average of the two marks obtained in the topics taken.

MMG 1015H - Seminar (Now also known as MMG1011H and MMG1021H)

Students must give two research seminars and attend the weekly student seminars to obtain a grade for this course. The grade in this course is the average of the grades obtained in the two seminar presentations, minus any marks deducted for attending fewer than 60% of the M.Sc. seminar sessions plus 10 Ph.D. sessions. See the "Student Seminar Courses" section below for a detailed course description.

MMG 1016H - Topics in Molecular Genetics II (Now also known as MMG1041H)

Students must take two course topics (see definition and descriptions below) during their Ph.D. program in order to complete this course. The mark in this course is the average of the two marks obtained in the topics taken.

This course may be replaced by a half course offered by a different department or by a course offered through a participating collaborative graduate program. Course replacements are approved via email by the Graduate Coordinator (graduate.coordinator@utoronto.ca) and a course replacement form (found on the Departmental website) must be submitted to the Graduate Office prior to commencement of the course.

MMG 1017H° - Topics in Molecular Genetics III (Now also known as MMG1031Y)

Students must take one course topic (see definition and descriptions below), give one 18-minute research seminar, attend seminars, and evaluate a number of student seminars (see section on Student Seminar Evaluations below), in order to complete this course. The mark in this course is the average of the student seminar mark (minus any letter grade deduction due to poor attendance of the student seminar sessions) and the topic course mark. See the "Student Seminar Courses" section below for a detailed course description

Topic Courses
MMG1012, MMG1016, MMG1017, MMG1041

The formal graduate courses in this department are taught in modules known as "Topics." Most topics last for 6 weeks with one 2-hour session each week (i.e., 12 total hours in-class), but some adhere to a more compact schedule, with the same number of in-class hours. In-class sessions generally include lectures by professors and presentations by students on current literature. Classes often involve discussion of research papers. Topics are generally evaluated through assignments and class participation. Marks for topics are generally available within 4 weeks after the due date of the last assignment for the topic.

A complete list of topics, their description and schedule can be found on the departmental website. Some topic courses are offered jointly with the Department of Biochemistry, and enrollment is composed of students from both Departments. Most topics are currently being offered every other year with the exception of a few. In 2020, all topic courses will be offered to enable students who need topic courses to graduate complete these requirements. There are also two co-curricular (not for credit) courses on professional development and entrepreneurship that are offered yearly.

Topic Course Marks & Feedback

Within four weeks after the due date of the final assignment or within four weeks after the date on which the last class is held, Topic Course Instructors will provide the Graduate Program Administrator's office with the following documents:

- All assignments with marks clearly indicated along with constructive written feedback.
- If used, a completed 'Topic Course Mark & Feedback' form (available on the departmental website) for each student. This form describes the breakdown of marks that make up the final grade for the Topic Course. Written feedback should be provided on this form, especially for Topic Courses that do not require students to submit assignments.
- A complete class list with accompanying final grades to be submitted via email in excel format.

The Graduate Program Administrator's office will alert students when any forms and/or marked assignments are ready to be picked up.

Grades for individual course topics will not appear on your transcript. The grades received in these topics will be used to calculate the final course grade for MMG1012H/MMG1016H/MMG1017H/MMG1041H depending on what stage of the graduate program a student is in.

Enrolling in Topic Courses

Topic Courses are generally offered during designated periods (Fall or Winter Term), distributed across the academic year. To enroll in individual Topic Courses, students must submit their request online, via surveys sent out by the Department and posted on our website (found under each topic currently being offered). Registration for topics offered between January and May will open in December and will be due by January 15. Registration for topics offered between September and December will open in July-August and will be due by August 15. An email is sent to all students when enrollment is opened, with instructions for signing up and deadlines.

Enrollment is not on a first come, first served basis. Every effort is made to ensure that students are able to enroll in the topics of their choice. However, some topics may be oversubscribed. If a student cannot be enrolled in their top choices, they will be offered a space in one or more of the other topics they selected and placed on the waiting list for the top choice. Top priority is given to students who are close to finishing their graduate program.

Courses Offered by Other Departments

One topic/module offered solely by the Department of Biochemistry (http://biochemistry.utoronto.ca/graduate-program/graduate-courses/) or possibly other graduate departments can be combined with an individual Molecular Genetics topic to complete MMG1016H or MMG1017H, upon approval by the student's supervisor and the Graduate Coordinator. Students must submit a Topic Replacement Form to the Graduate Program Administrator prior to commencement of the topic. Additional topics/modules may be taken upon approval, but will not count towards the degree requirement. Students from the Department of Molecular Genetics must follow the topic enrollment procedures of the host department.

Undergraduate courses may not be used for credit for graduate courses. Students may, from time to time, enroll in such courses, but this requires permission from the Supervisor, Supervisory Committee, and Graduate Coordinator (see below).

In rare instances, students may ask for permission to take courses outside of the Department in preparation for a future degree. These requests are considered on a case-by-case basis, but are generally not approved by the Graduate Coordinator. This is because during a student's time in the program, the student should be focused on their research and Molecular Genetics Coursework, and every effort should be made to eliminate additional time commitments and distractions that would contribute to a longer time spent in the program.

Course Waivers

The Department previously offered a waiver option for MMG1012H for those students who entered into the Ph.D. program after a previous M.Sc. As of 2018, we are no longer allowed to do so under SGS regulations. This is because credits earned for one degree may not be applied to the pursuit of another degree. Therefore, students entering into the Ph.D. program after completion of a recognized M.Sc. degree may request a course replacement for MMG1012H. In this situation, the student completes additional MMG1015/MMG1017 (also known as MMG1021/MMG1031) evaluations to earn the credits that would normally be associated with MMG1012H. The Graduate Coordinator and Graduate Administrator will provide additional information to students for whom this is a consideration. **No other courses may be waived.**

Student Seminar Courses

MMG1015Y & MMG1017H

(Also known as MMG1011/MMG1021/MMG1031 from Fall Term 2019)
Course Coordinators: Xi Huang , Ran Kafri, Kenichi Okamoto, Richard Collins
The primary goal of the Student Seminar Courses is to provide practical experience and guidance so that students can concisely communicate their research results to an audience of educated, but not necessarily specialist, peers. This is an essential skill for anyone intending to seek a career in scientific research. Completion of this course is mandatory for all graduate students in the program. A secondary goal of the series is to give each student a broad knowledge of all aspects of research undertaken in the department. Students should make every effort to attend all seminars. Students who are presenting in a given year are encouraged to participate in a student debriefing following the presentations (M.Sc. students attend the M.Sc. speaker debriefing and Ph.D. speakers attend the Ph.D. speaker debriefing). **No exemptions for Student Seminars will be granted.** Students should not schedule other courses or TA responsibilities during Student Seminars. TA positions that overlap with Student Seminars should not be taken up until a student has completed the Student Seminars course.

IMPORTANT: Note that as of Fall 2019, we will no longer scan T Cards to take attendance. Instead, Scantron-style paper evaluation forms will be used for attendance for all student seminar courses. To be counted as valid, the evaluation must include one question. The quality of the question will not be graded, but these questions and comments will be provided to the presenter and Supervisor, as they have always been.

MMG1015Y Speaking Requirements (all students)

M.Sc. and Ph.D. students enroll in MMG1015Y (aka MMG1011 and MMG1021) in which they will give two 15-minute seminars. Both seminars will be scheduled during the second year of enrollment. The final grade in MMG1015 will consist of the average grade of the two seminar presentations (minus any deductions for poor attendance as described in detail in the "Attendance at Student Seminars" section below).

Small Group Sessions:

Course Coordinator: Dr. Richard Collins

The first MMG1015Y seminar presentation takes place in September-October after at least 10 months in the program and is in front of a small group of students (~15) and professors (2). This portion of MMG1015 has been broken into its own course, MMG1011 in our new Core Curriculum. The first MMG1015 small-group seminar series provides students with experience in preparing and presenting a research seminar that effectively conveys their science to an audience of their peers. Students will receive extensive critical feedback that will help them identify and overcome weaknesses in their presentation. Students will also be expected to give critical feedback to their fellow student presenters.

At the first meeting of the series, the course coordinator will give a seminar highlighting some of the specific challenges encountered by the types of data and arguments that are frequently presented in molecular biology seminars. The coordinator and the students will identify commonly made mistakes and discuss ways to avoid them.

In subsequent weeks, students will meet in small groups of ~15 students. These small-group seminars take place every Thursday from the end of September throughout October, from 10 am to noon, with specific dates announced in the preceding summer. Attendance at every session is mandatory (no absences allowed). Each week, 3 or 4 students will present a 15 minute seminar based on their current graduate research, and critique the seminars of others. Two professors will also be in the room to help organize, encourage discussion, and evaluate the presentations. Each presenter will be given a set time, uninterrupted, to present the seminar. After the seminar, a typical critique session will consist of the presenter running through their presentation again (slide-by-slide), with comments and constructive suggestions from the evaluators (initially the students, then the faculty) being provided at appropriate places. The group will try to identify what makes a "good" slide "good" and how to revise and improve the less-effective slides. It is expected that opinions will vary among evaluators, and it will be helpful to everyone to hear a range of opinions.

For each seminar, each evaluator will provide written feedback on the form provided. This feedback will be provided anonymously to the presenter to help them revise their seminar for presentation to the department in the winter term.

Small group seminar attendance is mandatory. The only acceptable reasons for an absence are that the student is:
>1) at a scientific conference or adjacent travel day on that date.
>2) at an out-of-town collaborator's lab and the trip couldn't be scheduled to avoid a seminar date.

Students should try to avoid such scheduling conflicts and must let the Course Coordinator know of such issues as soon as they are recognized.

Grade breakdown:

The grade for the first MMG1015Y small-group seminar will be calculated as follows:
>a) The student's seminar presentation (75%)
>>(Presentation grade = .2X student avg. mark + .8X Faculty avg. mark)
>b) The student's attendance participation in the post-seminar critique sessions (25%)

The presentation marks will be composed of grades from student and faculty evaluators. The participation mark is assigned by the professor leading the group. Overall, the small group grade contributes 1/3 of the total MMG1015 grade.

Full Department Seminars:

Course Coordinators: Dr. Richard Collins, Xi Huang, Ran Kafi, Kenichi Okamato
Instructors: Scott Gray-Owen, C.C. Hui, Lucy Osborne, Laurence Pelletier, Juri Reimand, Daniel Schramek, Ian Scott, Lincoln Stein
The second MMG1015Y seminar (now known as MMG1021) will be presented within the forum of the full Department (formerly known as "Topic or Field Specific Student Seminars") in the Winter Term. Students will present a 15 minute seminar in front of faculty and peers, generally whose primary research area falls within the same research field. These seminars will take place from January until May.

Grade breakdown:
The first seminar grade will comprise 1/3 of the final grade in MMG1015Y; the other 2/3 will come from the second MMG1015Y seminar. Any penalties for insufficient attendance will be deducted from the final grade (see below).

The topic specific seminar grade will be = .2X student avg. mark + .8X Faculty avg. mark.

Deductions for attendance below minimum

Students enrolled in both MMG1015 and MMG1017 are encouraged to attend all student seminar sessions, the number of which varies from year to year but is typically around 40. MMG1015 and MMG1017 are Graduate Courses and as such, your attendance is mandatory. Minimum attendance requirements for MMG1015 are for 60% of the MSc Topic Seminars (23 total seminars for the 2019-2020 academic year) and 10 total PhD seminars. Attendance is measured by filling out a student seminar evaluation form, including one question for the presenter. For every two MSc or PhD seminars missed below the minimum attendance requirements, there will be a one letter mark deduction from your overall grade. These deductions are cumulative. For example, missing 2 MSc and 2 PhD seminars would mean two deductions in overall mark (e.g. A to B+). The large number of seminars necessary to meet the minimum attendance requirement reflects the importance the department places on training students in the skill of communicating research results and in receiving a comprehensive education in the broader field of Molecular Genetics.

MMG1017H Speaking Requirements (Ph.D. Students)

Ph.D. students must fulfill the course requirements of MMG1017H (now MMG1031), which includes presentation of one 18-minute seminar. The final grade in MMG1017 is the average of a student's seminar mark (minus any letter grade deduction due to poor attendance of the student seminar sessions - see "Deductions for attendance below minimum" section below for more details) and the mark for one topic course (see Department website for list of topics offered). In addition, MMG1017 students must evaluate 30 student seminars over the course of their PhD (and not necessarily in a given year) before MMG1017H is considered complete. For an evaluation to be counted for credit, students must write one follow up question related to the seminar on the evaluation form, in addition to providing other feedback.

Grade breakdown:

The grade for MMG1017 is calculated as follows:

a) 50% of the grade is from the Topic Course portion of MMG1017. Topic courses are not applied to MMG1017 until all topics for MMG1016 have been completed.

b) 50% of the grade is from the seminar presentation, where:

Presentation grade = .2X student avg. mark + .8X Faculty avg. mark

IMPORTANT: In May/June of each year the Graduate Program Administrator notifies those students who will be automatically scheduled to give their MMG1017H seminar the following year. These are typically students who will be entering their 5th year and who have not yet completed their speaking requirement. If there is sufficient time in the schedule, Ph.D. candidates in year 4 are also contacted to determine if they would like to be added to the schedule. If there is any chance a student will graduate from the program during the following year it is very important that they respond to the annual May/June survey to ensure that the seminar is scheduled appropriately. It is exceedingly difficult to accommodate exceptions later in the year.

Deductions for attendance below minimum

Students enrolled in both MMG1015 and MMG1017 are encouraged to attend all student seminar sessions, the number of which varies from year to year but is typically around 40. MMG1015 and MMG1017 are Graduate Courses and as such, your attendance is mandatory. Minimum MMG1017 attendance requirements are for 60% of the PhD Topic Seminars and 10 total MSc seminars during years three and four of your PhD. Attendance is measured by filling out a student seminar evaluation form, including one question for the presenter. For every two MSc or PhD seminars missed below the minimum attendance requirements, there will be a one letter mark deduction from your overall grade. These deductions are cumulative. For example, missing 2 MSc and 2 PhD seminars would mean two deductions in overall mark (e.g. A to B+).

The large number of seminars necessary to meet the minimum attendance requirement reflects the importance the department places on training students in the skill of communicating research results and in receiving a comprehensive education in the broader field of Molecular Genetics. Only members of the Department of Molecular Genetics (students, PDFs, technicians, research associates, and faculty) are welcome to attend the student presentations. Please remain for the entire session and do not enter late and/or leave early.

Student Seminar Evaluations

Following the seminar presentations, faculty members and students scheduled to speak in a given academic year will critique each seminar speaker. This feedback is intended to help presenters identify their strong and weak points, to improve future seminars and to provide feedback on the research project. Students from MMG1017 scheduled to speak in fall term are invited to stay for the Ph.D. debrief. Students from MMG1015 scheduled to speak in winter term are invited to stay for the M.Sc. debrief.

Each Ph.D. student must evaluate at least 30 student seminars throughout the course of their PhD as a requirement of MMG1017H. To be counted for credit, students must write one follow up question related to the content of the seminar on the evaluation form, in addition to providing feedback in all other areas on the form. In the new grading scheme adopted in fall 2019, this number of 30 evaluations will generally be exceeded, as attendance is scored by filling

out an evaluation instead of by T card scanning. Evaluation quality is not factored into the numerical grade, but again, students are required to fill out the form including one question to receive credit for attendance and the evaluation. To be considered valid, the person who fills out an evaluation form must have been present at the seminar.

Critiquing Guidelines
Public questions after each presentation should focus on scientific content and clarification of details in the presentation. The post-seminar period is intended for constructive comments on the speaker's presentation skills. The instructor will limit non-productive comments.

Completion of Student Seminars
Students are enrolled in MMG1017 upon registration in the PhD program. Students admitted directly into the PhD program will begin the requirements of this course only after completion of MMG1015 AND passing their qualification exam.

MMG1017 is a continuing enrollment course. It is complete only when the following conditions have been met:
- MMG1017 student seminar is completed, generally in 4th or 5th year (50% mark)
- Final course topic is completed (50% mark). Topic courses are not applied to MMG1017 until the courses for MMG1016 have been completed. Note that the Topic course component of MMG1017 is not linked to attendance requirements for student seminars. That is, if a student has yet to complete the Topic Course, but has met the minimum attendance requirements and presented their seminar, they no longer need to attend.
- At least 30 student seminars have been evaluated. In the new grading scheme adopted in fall 2019, this number will generally be exceeded, as attendance is scored by filling out an evaluation instead of by T card scanning. Evaluation quality is not factored into the numerical grade, but students are required to fill out the form including one question to receive credit for attendance and the evaluation.
- Attendance requirements (see below) have been met for all previous years, and for the final year in which you are enrolled in this course until the beginning of the MMG1015 student seminars, which typically start between December and February depending on class sizes.
- Good standing with SGS has been maintained.
- There are no outstanding obligations that have resulted from lapses in attendance at student seminars for previous academic years.

Failing a Course
The School of Graduate Studies requires students to complete all of their graduate courses with at least a B- or 70% grade. Failure to achieve a mark of 70% or greater in any required course may result in the termination of the student's enrollment in the program. If a student fails a course, a Supervisory Committee meeting must be held, to decide whether the student is allowed to continue in the program. An Examination Committee member must be present at this meeting. If the student is allowed to remain in the program, the failed course must be repeated. The School of Graduate Studies requires that both the grade in the failed course and the grade in the repeated course be recorded on the student's transcript.

Undergraduate Courses

Our graduate students may take undergraduate courses relevant to their degree at the University of Toronto free of charge, with the written permission of their supervisor and approval by the Graduate Coordinator. Graduate students taking undergraduate courses must fill out an Add/Drop Course(s) form, obtain signatures from their supervisor and the course instructor and bring the form to the Graduate Program Administrator two weeks before the course add deadline.

Core Curriculum (Sept. 2019 or later entry into program)

M.Sc. Course Requirements

MMG1001H: Foundational Genetics Approaches I
MMG1002H: Foundational Genetics Approaches II
MMG1011H: Student Seminars I (Formerly MMG1015 Small Group Seminars)
MMG1021H: Student Seminars II (Formerly MMG1015 Topic Seminar)
RST9999Y: Thesis

Ph.D. Course Requirements

All M.SC. Course Requirements, Plus:
MMG1031Y: Student Seminars III (Formerly MMG1017)
MMG1041H: Topics in Molecular Genetics II (Two PhD Topic Courses)
RST9999Y: Thesis
(Along with reclassification or qualification exam)

Course requirements for reclassification/qualification (Core Curriculum)

To reclassify or qualify, a student in the core curriculum:

- Must have completed and received an acceptable mark in MMG1001 and MMG1002.
- Must have completed and received an acceptable mark in MMG1011 and be in the process of completing MMG1021.
- No Topic Courses are required prior to qualification/reclassification.

Course Descriptions

MMG1001H – Foundational Genetic Approaches I

Course Coordinator: Dr. Howard Lipshitz
This course is offered during the Fall term. Students who enter the program in September will take this course first, followed by MMG1002 in the Winter term, while students who enter in January will complete MMG1002 (Winter term) first, then complete MMG1001 in the Fall term of their first year. MMG1001 is composed of three five week core modules held 2 hours/day on MWF:

1. Genetics Unit: Instructor, Dr. Howard Lipshitz
2. Genomics Unit: Instructor, Dr. Tim Hughes
3. Proteomics Unit: Instructor, Dr. Anne-Claude Gingras

Each module will have its own assignments and format. A combined final exam will be held in January, and marks achieved in each module will be used to calculate the final grade.

MMG1002H – Foundational Genetic Approaches II

Course Coordinator: Dr.Philip Kim

This course is offered during the Winter term. MMG1002 entails:
1. Departmental Colloquium (formerly MMG1010): Instructors, Drs. Tae-Hee Kim, Julie Lefebvre, Lori Frappier, Julien Muffat, Miguel Ramalho-Santos.
2. Introduction to Programming: Instructors, Drs. Philip Kim and Gary Bader
3. Advanced Computational Biology I: Instructors, Drs. Fritz Roth and Quaid Morris
4. Advanced Computational Biology II: Instructors, Drs. Fritz Roth and Quaid Morris

Student Seminar Courses

No exemptions for Student Seminars will be granted. Students should not schedule other courses or TA responsibilities during Student Seminars. TA positions that overlap with Student Seminars should not be taken up until a student has completed the Student Seminars course.

MMG1011H – Student Seminar I

Course Coordinator: Dr. Richard Collins

MMG1011 entails its own course that was previously the small group seminars portion of MMG1015. MMG1011 takes place in September-October after at least 10 months in the program and entails a seminar presentation in front of a small group of students (~15) and professors (2). This seminar series provides students with experience in preparing and presenting a research seminar that effectively conveys their science to an audience of their peers. In most instances, this will be the first seminar an M.Sc. student has presented on their work. Students will receive extensive constructive and critical feedback that will help them identify and overcome weaknesses in their presentation thus enabling them to improve the presentation. Students will also be expected to give constructive and critical feedback to their fellow student presenters.

At the first meeting of the series, the course coordinator will give a seminar highlighting some of the specific challenges encountered by the types of data and arguments that are frequently presented in molecular biology seminars. The coordinator and the students will identify commonly made mistakes and discuss ways to avoid them.

In subsequent weeks, students will meet in small groups of ~15 students. These small-group seminars take place every Thursday from the end of September throughout October, from 10 am to noon, with specific dates announced in the preceding summer. Attendance at every session is mandatory (no absences allowed). Each week, 3 or 4 students will present a 15 minute seminar based on their current graduate research, and critique the seminars of others. Two professors will also be in the room to help organize, encourage discussion, and evaluate the presentations. Each presenter will be given a set time, uninterrupted, to present the seminar. After the seminar, a typical critique session will consist of the presenter running through their presentation again (slide-by-slide), with comments and constructive suggestions from the evaluators (initially the students, then the faculty) being provided at appropriate places. The group will try to identify what makes a "good" slide "good" and how to revise and improve the less-effective slides. It is expected that opinions will vary among evaluators, and it will be helpful to everyone to hear a range of opinions.

For each seminar, each evaluator will provide written feedback on the form provided. This feedback will be provided anonymously to the presenter to help them revise their seminar for presentation to the department in the second academic term.

Through this course, first year students are required to attend MMG1021/MMG1015 and MMG1031/MMG1017 seminars beginning in fall 2019 so as to not incur deductions in their mark due to lapses in attendance. The small group seminar portion of the course will occur in fall 2020 for students who enter in fall 2019. Seminars are 15 minutes in length.

Small group seminar attendance is mandatory. The only acceptable reasons for an absence are that the student is:
1) at a scientific conference or adjacent travel day on that date.
2) at an out-of-town collaborator's lab and the trip couldn't be scheduled to avoid a seminar date.
Students should try to avoid such scheduling conflicts and must let the Course Coordinator know of such issues as soon as they are recognized.

Grade breakdown:
80% Presentation in small group
Presentation grade = .2X student avg. mark + .8X Faculty avg. mark

20% Attendance and Participation at MMG1011:
5 small group sessions (including orientation)

In which case missing one small group session will result in a 4% reduction in grade.

Attendance and participation at MMG1021/MMG1031 is also mandatory, but not counted as a portion of the mark. Not meeting the minimum requirements for MMG1021/MMG1031 attendance will result in reductions to the overall grade for MMG1011.

Deductions for attendance below minimum
Students enrolled in MMG1011, MMG1021, and MMG1031 are encouraged to attend all student seminar sessions, the number of which varies from year to year but is typically around 40. These are Graduate Courses and as such, your attendance is mandatory. Minimum attendance requirements are for 60% of the MSc Topic Seminars (23 total seminars for the 2019-2020 academic year) and 10 total PhD seminars. Attendance is measured by filling out a student seminar evaluation form, including one question for the presenter. For every two MSc or PhD seminars missed below the minimum attendance requirements, there will be a one letter mark deduction from your overall grade. These deductions are cumulative. For example, missing 2 MSc and 2 PhD seminars would mean two deductions in overall mark (e.g. A to B+).

The large number of seminars necessary to meet the minimum attendance requirement reflects the importance the department places on training students in the skill of communicating research results and in receiving a comprehensive education in the broader field of Molecular Genetics.

MMG1021H – Student Seminar II
Course Coordinators: Dr. Richard Collins, Xi Huang, Ran Kafi, Kenichi Okamato
Instructors: Scott Gray-Owen, C.C. Hui, Lucy Osborne, Laurence Pelletier, Juri Reimand, Daniel Schramek, Ian Scott, Lincoln Stein
MMG1021 was previously the topic specific seminar portion of MMG1015 (see above). This course occurs in the Winter term (Jan. to May), and is usually broken into two parallel sessions,

in which 2-3 student present each week. Students will present in front of faculty and peers, generally whose primary research area falls within the same research field. Attendance will not be used to deduct marks, but is instead factored into the overall grade. Seminars are 15 minutes in length.

Grade Breakdown:
80% Presentation in a large-group forum
Presentation grade = .2X student avg. mark + .8X Faculty avg. mark

20% Attendance and Participation at MMG1021/1031
Minimum requirement: 60% of MSc and 10 PhD student seminars, filling out evaluation forms with 1 question (see number of seminars/grading breakdown below)

MMG1031Y – Student Seminar III

Course Coordinators: Dr. Richard Collins, Xi Huang, Ran Kafi, Kenichi Okamato
MMG1031 was previously known as MMG1017, Ph.D. Seminars. One major difference between MMG1031 and MMG1017 is that there is no Topic course required for MMG1031, while MMG1017 requires the completion of a Topic course. In these seminars, students will present a talk to the entire department in the fall term of their 4th or 5th year. Again, no topic course is required to successfully complete MMG1031. Students are enrolled in MMG1031 upon registration in the PhD program. Students admitted directly into the PhD program will begin the requirements of this course only after completion of MMG1011, MMG1021 AND passing their qualification exam. Students complete MMG1031 in the year when they present their PhD seminar. Seminars are 18 minutes in length.

Grade Breakdown:
80% Presentation in a large-group forum
Presentation grade = .2X student avg. mark + .8X Faculty avg. mark

20% Attendance and Participation at MMG1021/1031
Minimum requirement: 60% of PhD and 10 MSc student seminars, filling out evaluation forms with 1 question (see number of seminars/grading breakdown below). Attendance is required during third and fourth years of enrollment in the program.

Attendance grades for MMG1021/1031:
A+   60% or more + 10 or more seminars
A   55% to 59% + 10 or more seminars
A-   50% to 54% + 10 or more seminars
B+   45% to 49% + 10 or more seminars
B   40% to 44% + 10 or more seminars
B-   35% to 39% + 10 or more seminars
F   Less than 35%
For every 2 of the 10 PhD (1015/1011/1021) or MSc (1017/1031) seminars missed, there will be deduction of one mark for the attendance grade. For example, if a student in MMG1021 attended 60% of the MSc seminars (29 seminars), but only attended 6/10 PhD seminars, the student would receive an A- for the attendance portion of the grade.

Topic Courses

MMG1041H – Topics in Molecular Genetics II

This course entails two Topic Courses. These Topic Courses for Ph.D. students are to be completed after the reclassification or qualification exam, but can occur during any year of the Ph.D. Topic Courses are as described above (pg. 29). Discuss which courses would be best to take with your Supervisor before signing up. No waivers are considered.

EXAMINATIONS

Reclassification/Qualification Exam

Reclassification exams are for students who wish to transfer directly from the M.Sc. program to the Ph.D. program without completing an M.Sc. thesis.

Qualification exams ensure that students who have entered the Ph.D. program directly successfully prepare and defend an original research proposal leading to a Ph.D. degree. It also tests a student's general scientific knowledge and technical skills. Students who have successfully defended an M.Sc. in the Department and who have been admitted into the Ph.D. program will generally be exempted from this exam if they are continuing on the same project and if they had an exemplary M.Sc. defence (see below).

Timeline

Reclassification/qualification exams will be held during May of the 2nd year of studies, for students who started their program in September or during October of the 2nd year of studies, for students who started their program in January.

All proposals will be handed in on May 1 (October 1 for January admits). These deadlines are absolute.

For students in the **legacy curriculum** (entering prior to Fall 2019), in order to proceed with the reclassification/qualification exam a student MUST have either:

- Completed and received an acceptable mark in two Topic Courses (MMG1012) before the time of the reclassification exam OR
- Completed and received an acceptable mark in one Course Topic before the time of the reclassification exam AND be in the middle of taking the second Course Topic at the time of the exam.

For students in the **core curriculum** (entering in or after Fall 2019), in order to proceed with the reclassification/qualification exam a student MUST have:

- Completed and received an acceptable mark in MMG1001 and MMG1002.
- Completed and received an acceptable mark in MMG1011 and be in the process of completing MMG1021.
- No Topic Courses are required prior to qualification/reclassification.

Reclassification/Qualification Exam Procedure

Students are required to prepare a proposal describing the research that they intend to carry out during their Ph.D. program. The proposal text should be a maximum of 12 double-spaced (23 lines per page) pages with 2 cm margins and 12-point font. Figures, tables, and references on additional pages are allowed. The page limit will be strictly enforced, and is monitored by the Student Services Assistant and Exam Chair. **Failure to adhere to the 12 page limit and format will result in a failing mark in this part of the exam evaluation. Missing the proposal due date will result in a forfeiture on the part of the student to take the exam.**

Proposal Preparation

Proposals must include some background information pertaining to the project and clearly identify the primary objectives of the work. In addition, the experimental methods to be

employed and their possible limitations must be described. The recommended organization for the proposal is as follows:

- **Abstract**: A 250-word summary of the proposal (not included within the 12 page limit).
- **Introduction** (3 pages): The relevant background of the project. What is known about the system, and what is not known? What are the open questions in the field?
- **Relevant experimental progress** (3-4 pages): The relevant work completed so far by the student. A brief mention of other relevant work done in the laboratory by others that has led to choosing this particular project may also be required to put the proposal into proper context.
- **Rationale** (1 page): What key question(s) are being addressed? Why has the student chosen to address this question using this particular system? What is the hypothesis or hypotheses to be tested?
- **Specific aims** (4-5 pages): The specific experiments that the student intends to carry out during their Ph.D. studies are described. The purpose of the experiments with respect to the general rationale (part 2) should be made clear. Possible pitfalls in the experimental design should be pointed out and alternative approaches should be suggested. Generally two to three distinct aims should be described. Possible outcomes of the experiments, and how to proceed given these outcomes, should be discussed. Convince the Exam Committee that the experiments are feasible and will produce relevant and significant data.
- **Summary & Potential Impact on the Field (~0.5 pages).**

The student is to write the proposal. Supervisors and other members of the supervisory committee *may only assist* the student in preparing the proposal by giving advice and opinions on its format and clarity. *Supervisors should not perform extensive rewriting of students' proposals* (e.g., supervisors should not open the document on their own computers and work on it; comments should instead be written on a print-out of the student's proposal draft).
It is strongly recommended that students spend at least four weeks away from the lab to prepare the proposal and study for this exam. Supervisors should not pressure students to do experiments during this period. It is also recommended that students obtain example proposal from other students in their topic area and within their lab who recently successfully completed the exam.

Responsibilities Prior to the Exam

- The student must write the proposal and prepare for the exam.
- The Supervisor may not require a student to perform experiments during the four week preparation period.
- At the end of the Pre-reclassification/qualification exam, the student, Supervisor, and Supervisory Committee must schedule the date and time of the exam in May.
- The student and Supervisor must select and invite the External Examiner to the exam they have scheduled.
- The student and Supervisor must schedule the room for the exam at the date/time established.
- The student must notify the Student Services Assistant and Graduate Administrator of the date, time, room, External Examiner, and Supervisory Committee Members who will be in attendance at the exam. Due by April 1 (Sept. 1).

- The Student Services Assistant will schedule the Exam Committee member and the Chair (Executive Committee member) in the time slot provided by each student.
- The student must distribute the proposal to the reclassification/qualification exam committee on May 1 (Oct. 1) or one week earlier than the exam, if the exam is scheduled within the first week of May (Oct.).
- The student must bring the voting ballots to the exam for all committee members, along with a single copy of the proposal.

Reclassification/Qualification Exam Quorum

The composition of the exam committee is as follows (normally 6 members in total):

1. Executive Committee Member (exam chair) (see "Organizational Structure" on pg. 6). A Supervisory Committee Member who is also on the Executive Committee CANNOT fulfill this role.
2. Examination Committee Member (see "Organizational Structure" on pg. 6). Assigned by the Department based on the student's primary research field. A Supervisory Committee Member who is also on the Exam Committee cannot fulfill this role.
3. External Committee member (an arm's length faculty member from outside or within the Department). Selected by the student and Supervisor.
4. Supervisory Committee members (usually 2); quorum requires at least one committee member aside from the Supervisor to be present. If there are more than two committee members, **a maximum of two** committee members (not counting the Supervisor) are allowed at the exam.
5. Supervisor (If there are co-supervisors, only one must be present.)

A minimum of five committee members must be present for the exam to proceed, including:

- The Supervisor
- The exam chair
- The examination committee member
- The external committee member
- At least one Supervisory Committee member who is not the Supervisor.

The five members must have read the complete proposal before the exam begins and must be at the examination for its entirety, including the student's oral presentation. If no supervisory committee member attends the exam (not including the student's supervisor) due to unforeseen circumstances, the exam can proceed only with the expressed written permission of the student, emailed directly to the Graduate Program Administrator, before the start of the exam.

Note: that all reclassification/qualification exam committee members must have an arm's length relationship with the student and their work. For example, Professors with whom the student has had collaborations during their graduate studies in our Department are not allowed to serve as an Examination, or External Committee Member for the respective reclassification or qualification exam.

Only if absolutely necessary due to scheduling problems, a reclassification exam may be scheduled knowing that only one regular Supervisory Committee member is able to attend.

The Examination

1. The student may be asked to briefly leave the room. After this, the examination will commence with the student's uninterrupted oral presentation of their proposal (no more than 20 minutes in length).
2. The Exam Committee then questions the student on their knowledge of technical and theoretical matters related to their proposal, and to their general knowledge of the research area. This usually entails one round of questions by most of the committee and a second, shorter round of questions. The examination, including the oral presentation, should not exceed 90 minutes, but leaves an additional 30 minutes for discussion (totaling 2 hours maximum).
3. The Exam Committee then has a closed-door discussion and votes on the reclassification/qualification. All committee members including the supervisor must vote. Abstentions are not permitted. Details of the reclassification/qualification exam evaluation can be found below.

Additional rules for the exam process:

i. The Supervisor (and Co-supervisor) are not allowed to ask questions.
ii. In cases where the Chair's area of expertise does not overlap with that of the student being examined, the Chair is strongly encouraged to give their time over to members of the exam who are more knowledgeable in the subject area or are having an insightful conversation with the student during their first Q & A period.
iii. The Chair of the exam is strongly encouraged to extend the time of questioners who are having an insightful Q & A period beyond 10 minutes and limit the time of questions for examiners whose discussion is less insightful to around 8 minutes.
iv. The Chair will determine which examiners asks questions in round 2 of the Q& A session, placing emphasis on continuing insightful lines of inquiry and allowing questions from those who require additional information to determine pass/fail judgements.

Students are responsible for bringing enough copies of the Reclassification/Qualification Exam Evaluation Forms for all members of their committee and a copy of the proposal to the meeting.

Evaluation of the Reclassification/Qualification Candidate

The exam is intended to probe the breadth and depth of the student's knowledge. The exam committee will evaluate the student and project in three general areas:

- Feasibility: If possible, Ph.D. projects should be designed so that any outcome is likely to be of scientific interest and to form the basis of a thesis. In other words, if the results do not turn out as expected, the data might still have sufficient interest to be publishable and constitute the student's Ph.D. thesis. In some cases, a student may wish to start on a risky project where only one outcome would be interesting. In this case, it is important to state why the payoff merits such a high-risk approach. The student should also state how long they will pursue this high risk project before dropping it, and what criteria will be used to decide that the project cannot be done. In addition, feasible back-up projects should be proposed.
- Understanding of the Project: The student is expected to understand all of the concepts associated with their proposed area of research. They should also have a thorough understanding of the literature in all aspects related to their proposed area of investigation.

- Ability to function in a Research Environment: The student must be able to collect interpretable data, understand the importance of controls, and design and execute internally consistent experiments. To this end, it is very important to include in the proposal information about the research that they have done during their time in the program. Even if this research is unrelated to what the student proposes to do for their Ph.D. thesis, it nevertheless provides an opportunity for the Exam Committee to evaluate their competence in a research environment.

Evaluation of students at Reclassification and Qualification examinations has both objective and subjective components. Because of the latter and because the faculty members are evaluating both the student and the project, it is difficult to state unequivocally the weight to be given to each of the above components. The best way to ensure a positive outcome is to ascertain that one's proposal is feasible and to consider as many of the potential pitfalls as possible. Related to this point, advice on the outline of the proposal from the Supervisory Committee at the Pre-reclassification/qualification meeting is extremely useful. Students should also know the literature relevant to the proposed area of research. The best sources of information and help are the student's supervisory committee and senior students who have successfully defended a research proposal at this type of exam. It is extremely helpful to ask fellow students and post-doctoral fellows, especially those with research interests further afield from the research field of the reclassifying/qualifying student, to hold a mock exam prior to the actual exam

Specific Procedure for Exam Evaluation

Prior to the exam, the committee is likely to ask the student to briefly leave the room. Following the oral exam, the student will leave the room. Prior to any discussion, each examiner will evaluate the student in several different categories. The criteria for which specific marks are given and details of the exam evaluation can be found on the Reclassification/Qualification Exam Evaluation Forms. The committee chair will collate the evaluations, present a summary to the committee and determine the nature of the subsequent discussion. Once a decision has been reached, the student will be invited back, informed of the decision, and provided with constructive feedback. Copies of the evaluations will be made available to the student, but originals are returned by the Exam Chair to the Student Services Assistant and Graduate Program Administration, and will be kept in the student's file.

Failure of a reclassification exam will result in one of the following four outcomes (to be determined by the exam committee):
- The student is asked to retake the oral exam within 4 to 8 weeks without revising their proposal.
- The student is asked to submit a revised written proposal and must retake the oral exam within 4 to 8 weeks.
- The student is asked to complete and defend a M.Sc. thesis.
- The Department terminates the student's enrollment in the program.

Failure of a qualification exam will result in one of the following three outcomes (to be determined by the exam committee):
- The student is asked to retake the oral exam within 4 to 8 weeks without revision of the proposal.

- The student is asked to submit a revised written proposal and must retake the oral exam within 4 to 8 weeks.
- The Department terminates the student's enrollment in the program.
- In cases where the student does not have an M.Sc. in a field that is directly related to their current area of research, the committee may consider recommending to the student that they reclassify into the M.Sc. program.

In the situation of a failure, even if the student is given the option to retake the exam, they have the option to ultimately not proceed after discussion with the Supervisor and/or the Supervisory Committee. If the student changes their mind, they must let the Graduate Administrator know as soon as the decision is made or at least two weeks before the rescheduled exam was to occur.

Transferring to the Ph.D. Program
(For reclassifying students)
- The Exam chair submits the evaluation forms to the Graduate Program Administrator to be kept in the student's file.
- A copy of the forms is forwarded to the student for their information.
- If a student passes, they will be asked by the Graduate Program Administrator to sign a "Program Transfer", which is then forwarded to the School of Graduate Studies for approval.
- The School of Graduate Studies notifies the student of a successful transfer in writing.

M.Sc. Oral Exam

When all course requirements have been met and the Supervisory Committee has read and approved the thesis, students may schedule an M.Sc. oral exam. M.Sc. oral exams should take place 2 to 2.5 years after first registration (see "Time Limits for Writing the M.Sc. Thesis" section below). This examination is a formal defence of a thesis based on original scientific research conducted in the Department as well as a test of the student's general scientific knowledge and abilities.

Requesting Permission to Write the M.Sc. Thesis
Permission to write an M.Sc. thesis is given at a terminal supervisory committee meeting upon completion of the M.Sc. Terminal Committee Meeting Report (available on the Departmental website). A detailed outline of the proposed thesis (generally in point form and no longer than one page) is presented at this meeting. The detailed outline should also be included in the student's committee meeting progress report that is distributed to supervisory committee members at least seven days prior to the terminal committee meeting. After the "M.Sc. Terminal Committee Meeting Report" has been signed by all relevant parties, the student should be writing their thesis full-time and should not conduct additional experiments until the "Request to set up an M. Sc. Oral Examination" form has been completed by all relevant parties. The Graduate Program Administrator will record the date that the supervisory committee gave the student permission to write their thesis. (Please see pg. 62 "Commitments that Conflict with the Completion of a Student's Degree".)

Time Limit for Writing the M.Sc. Thesis

Students are allowed **three months** to write and obtain approval of the thesis draft from the supervisor and supervisory committee. Students, therefore, have **three months** from the time the "M.Sc. Terminal Committee Meeting Report" form is signed until the "M.Sc. Exam Request" form has been submitted. Students must allow enough time within these three months for the Supervisor and Supervisory Committee Members to critique the thesis, which should take no more than four weeks in total (two weeks for Supervisor and two weeks for Committee members, see below). Students must also allow enough time to make the required changes after the supervisor has critiqued the thesis and then again after the supervisory committee members have critiqued the thesis.

Organization and Content of the M.Sc. Thesis

The thesis should describe the student's work. This is not the same as a publication describing the work (see below for details). Obtaining an M.Sc. in our Department is not dependent on obtaining publications. Obtaining authorship on a publication, however, is encouraged. Many of our M.Sc. students obtain first-author publications.

The Department strongly encourages students to obtain examples of theses from previous members of their lab. In addition, theses from previous students in the program can be found online: https://onesearch.library.utoronto.ca/faq/how-can-i-find-university-toronto-thesis.

In addition to the SGS format rules for the M.Sc. and Ph.D. theses, we highly recommend using 12 point uncondensed Times New Roman font for clarity.

The thesis should be written in the first person (use of the pronoun "I"), as it describes the student's individual work: experiments, rationale, hypotheses and conclusions.

- **Introduction**:
    - Should provide the relevant background to the thesis work.
    - Should not be a general survey of every topic touched upon by the work.
    - Should clearly outline the state of knowledge in the field of the research and emphasize the outstanding questions in the field, especially those that are specifically addressed by the M.Sc. research.
    - Should end with a brief outline and rationale for the thesis research. The introduction should not exceed 15 pages.
- **Data Chapters**:
    - Should describe the experiments performed by the student.
    - The data chapter or any parts therein does not have to be a published paper. A data chapter should contain enough data to reach a significant conclusion. These data should be of a quality that it could be publishable in a good journal. These data might constitute only a portion of a complete paper. In other words, the student's work should culminate in at least one significant publishable figure or table that they produced themselves and can interpret on their own. The student should be able to propose detailed experiments for the future that are based on their work.
    - Work of collaborators may be included when this work is crucial for the understanding of the student's own data. When work by collaborators is

included, it should be clearly indicated which experiments were done by collaborators. In this case, there must be a general explanation on the cover page of each data chapter outlining the contributions, by experiment, from each person.

- o Use "I" in the body of the chapter to describe the student's experiments, and the name of the collaborator(s) (or "we", if appropriate) to describe others' experiments/data. The chapter must be written to emphasize the student's own work.
- o The introduction to a data chapter should not repeat material already presented in the general introduction of the thesis.
- o **Figures and tables** not exceeding three pages in length (-see the note below for instructions on how to present very large datasets) should be placed in the body of the chapter, on the page following its first introduction, and not in a separate section at the end of the chapter. Where possible, the legend should be on the same page as the displayed item. Aside from very large datasets or movies (see below), there should be no reference to supplemental materials/figures/tables; all relevant data should be presented in the results section of the data chapter. Sometimes, figures that have been copied into a thesis are of inadequate resolution. Please ensure that all figures within a thesis are at least 300 dpi.
- o In no case is it permissible for a **published or unpublished manuscript to be used as a data chapter without some alteration.** Even in the case of a single author paper by the student, the introduction must be modified to avoid repetition with the thesis introductory chapter, and all supplementary materials will be incorporated into the results section of the chapter as described above.
- o If a study involves **Human Subjects**, a section in the materials section should be included indicating the study was approved by an Institutional Review Board (specify which), and that informed consent was obtained from all human subjects. If a study involves vertebrate subjects, a section in the materials section should be included that indicates that all related protocols used were reviewed by the appropriate animal care board (specify which).
- o The term 'data not shown' does not belong in a thesis. Arguments that rely on casual observation because no data was collected should not be present in a data chapter as this provides evidence of poor scientific method. Speculation based on casual observation is permissible within a concluding chapter, so long as it is clearly stated that the argument relies on casual observation and not on real data.
- **Concluding Chapter**:
  - o Should begin with an overall summary of the thesis work explaining how the work has advanced the field.
  - o Should refer to questions and hypotheses posed in the Introduction and explain how the research has solved (or maybe not solved) these problems.
  - o The thesis should end by proposing several future investigations that could further address the key issues in the field.

Inclusion of Very Large Datasets, Movies, and References to Published Supplemental Materials
All data relevant to the M.Sc. thesis must be included within the thesis and distributed to supervisory and examining committee members for editing and evaluation purposes. It is not acceptable to refer to online supplementary materials published by the student within the

thesis. The University cannot rely on outside agencies to maintain the integrity of data that are directly relevant to the thesis.

Figures and small tables (not exceeding 3 pages) must be presented within the appropriate data chapter. Display items that exceed 3 pages in length should be presented in the appendix of the thesis. If the student and supervisor feel that the data within a very large table (more than ~10 pages) would be better presented in an electronic format, the student may include these data as a CD/DVD appended to the thesis, or provide a permanent link to a cloud storage file.

Movies should be presented as a series of representative stills in the appropriate data chapter. The movie should also be included on a CD/DVD that is physically appended to the thesis or sent as a permanent cloud storage link.

Once approved by the examining committee, the thesis and the associated data that are contained on a CD/DVD is electronically submitted to the School of Graduate Studies (SGS). A PDF copy of the thesis must be sent to our Graduate Program Administrator for archival purposes, including all additional large data sets as permanent links to cloud storage.

Thesis Formatting

We strongly recommended that authors use an SGS thesis template. The template can be applied at any stage of the writing process, but using one early on will simplify writing and later PDF conversion. These templates are meant to assist with the formatting and production of a thesis but, whether or not an SGS template is used, it is the student's responsibility to ensure that the thesis meets SGS formatting requirements.

Technical Requirements

The thesis must be in PDF format and may also include supplementary files for multimedia, sound, video or HTML pages with embedded files. For specific information please see: https://www.sgs.utoronto.ca/academic-progress/program-completion/formatting/.

Guidelines for the main text-based thesis file:

- **Font size**: Text must be a minimum of 12 points. A smaller font size may be used for graphs, formulas, and appendices.
- **Line spacing**: Text line spacing must be at least one-and-a-half spaces, except for the thesis abstract, which should be double-spaced. Single spacing may be used for long quoted passages and footnotes.
- **Footnotes and References**: Decisions as to the form and location of footnotes and the presentation of references and bibliography are to be made by the student and the supervisor. The preferred location for footnotes is either at the bottom of the page or at the end of the chapters to which they refer. Style manuals should be consulted in conjunction with the Guidelines. For questions not answered in either the Guidelines or any style manual, students are urged to use their discretion and to maintain a consistent style.
- **Page and margin sizes**: The size of the pages should be 8 1/2" x 11" (21.5 cm x 28 cm), the text reading across the 8 1/2" (21.5 cm) dimension. The left-hand margin should be at least 1 1/4" (32 mm), and the remaining three margins should be at least 3/4" (20 mm) to the main text.

Scheduling the M.Sc. Oral Exam
The supervisor and all supervisory committee members must approve the student's thesis prior to the online submission of the "M.Sc. Exam Request" form (available on the Departmental web site). The Supervisory Committee and Supervisor will be emailed by the Student Services Assistant after submission of the form for confirmation. Supervisors are expected to read and return the thesis to their students within two weeks, after which the student will distribute a revised draft to the Supervisory Committee members. The Supervisory Committee members are expected to read and return the M.Sc. thesis with comments within two weeks. Failure of faculty members to meet these deadlines must be reported to the Graduate Coordinator as described below.

Students will submit an "M.Sc. Exam Request" form online once they have confirmed a date and time for the exam with all members of the exam committee. This request must be submitted no less than 3 weeks prior to the exam. It is the student's responsibility to distribute a final copy of the thesis to each member of the Exam Committee (including the Supervisory Committee members) at least two weeks prior to the exam. Failure to do so may result in rescheduling of the exam.

Choosing the M.Sc. Thesis Defence Exam Committee
The final composition of the committee is subject to the Graduate Coordinator's approval. The Exam Committee is composed as follows:
- An Examination Committee member from the student's **primary research field** (voting member), will chair the Exam Committee. The Examination Committee is expected to read the thesis and participate in the examination of the student. (See pg. 6-7 for committee composition). This member is to be selected and invited by the student and Supervisor.
- The student's Supervisor (voting member). The Supervisor may participate in the exam by asking questions and/or the discussion about the student.
- At least **one** Supervisory Committee member in addition to the Supervisor must be in attendance (voting member).
- One 'Arm's-Length Examiner' (voting member). This faculty member must hold a graduate appointment in SGS and may be from within the Department of Molecular Genetics or from another department. This examiner should have an arms-length relationship to both the student and the supervisor. This member is selected by the Supervisor and student.

The Student Services Assistant will issue a formal exam notice to all parties concerned once the exam committee is approved by the department. A copy of the notice is kept in the student's file and recorded on the database. As noted above, the student is responsible for the distribution of the thesis. The student and Supervisor are also responsible for determining the time and place of the meeting.

M.Sc. Exam Quorum:
Quorum will be
i)   The Supervisor
ii)   The Examination Committee Member
iii)   At least One Supervisory committee member (other than the student's supervisor); and
iv)   The Arm's-Length Examiner.

Delays in Scheduling the M.Sc. Oral Exam

If an oral exam is not scheduled within three months of the date permission was given to write a thesis and the "M.Sc. Terminal Committee Meeting Report" was signed, the student must submit an "Request to Extend the Time Limit for Completing the M.Sc. or Ph.D. Thesis" form to the Graduate Administrator, which will be signed by the Graduate Coordinator. This request must include the following information:

1. Which chapters have been written and approved by the supervisor(s)
2. Which chapters are written but not yet approved Which chapters are incomplete and the reason(s) for this
3. When the student expects to provide the supervisory committee with a complete draft of the thesis
4. A realistic timeline for the oral exam

If additional details are required, the Graduate Coordinator may contact the student and Supervisor. If the three-month deadline passes without an approved extension, the graduate stipend may be withdrawn due to failure to meet program requirements. HOWEVER, a Supervisor may not withdraw a student's stipend without prior consultation with the Graduate Coordinator. If a student has set up the exam within the required time frame, the stipend must be paid until both the oral exam and thesis revisions recommended by the Exam Committee have been completed.

Delays in Providing Feedback on the M.Sc. Thesis by the Committee

Since thesis writing and committee feedback must be completed within a tight timeframe, supervisors and supervisory committee members are obliged to read and provide feedback on the draft thesis promptly. Supervisors are expected to read and return M.Sc. theses to their students in two weeks or less. Committee members are expected to read and return M.Sc. theses with comments in two weeks or less. If students do not receive the corrected thesis within these time frames, they should contact their supervisor or committee member by email and obtain a revised deadline for finishing the corrections. If this subsequent deadline is unreasonable or if this deadline is not met, the student should report the situation to the Graduate Coordinator along with appropriate documentation. The Graduate Coordinator will take immediate measures to resolve the situation. It is important for the student to remember that the Graduate Coordinator and Graduate Team are allies in facilitating the timely revision of the thesis.

Students will submit the M.Sc. Oral Request form only after the thesis committee members have read and critiqued the thesis. At that time, committee members will return the critiqued thesis and any additional suggestions for revisions. Students are expected to incorporate these changes before distributing the thesis to the External Examiner and other Exam Committee members. If there are disagreements between a Committee member and the student and/or Supervisor about the nature and/or extent of the changes to be made to the thesis, the Graduate Coordinator should be consulted. The Graduate Coordinator will decide on how to proceed. It is important to note that this resolution process will not be influenced by prior unofficial arrangements of M.Sc. oral exam dates (e.g. having agreed on a date with an External Examiner).

The Department will not tolerate excessive delays by faculty members in reading and approving theses. Offenders will be sanctioned and may lose their graduate appointments.

M.Sc. Examination Process

Oral Presentation

- Up to 20 minutes in length.
- Uninterrupted presentation of thesis research, including a reasonable introduction, explanation of research aims and accomplishments, and conclusions. A broad description of future aims is acceptable, but should not be treated as future aims that the student themselves would execute. Note that the presentation strategy is different if the student intends to re-apply to the PhD program and work on the same project (see "Defending an M.Sc. With Subsequent Admission to the Ph.D. Program" on pg. 54).

Questions

- The Exam Committee will question the student on technical and theoretical knowledge related to the thesis, and to the student's general knowledge of the research area. The exam, including the oral presentation, should not exceed 90 minutes, leaving an additional 30 minutes for discussion and deliberation by the committee.

Exam Committee Discussion

- A closed-door discussion of the thesis and its defence.
- Decide on recommendations.

M.Sc. Exam Voting Procedure

All committee members must vote by filling out and signing the M.Sc. Oral Examination Voting Ballot (found on the Departmental web site). Abstentions are not permitted. Two negative votes result in the failure of the exam. The student may be permitted to stage a second defence. If they fail the second defence or are refused a second defence, the department will terminate the student's enrollment in the program and no degree will be obtained.

The Chair of the M.Sc. oral exam must submit a signed copy of the M.Sc. Oral Examination Chair's Summary Form to the Graduate Program Administrator immediately after the conclusion of the exam. After a successful defence, and after revisions have been completed, the Supervisor must notify the Graduate Program Administrator in writing (by email) that the student has made all the recommended corrections to their thesis. Upon receipt of a report from the chair of the Exam Committee and the confirmation from the Supervisor, an "M.Sc. Degree Recommendation" form is signed by the Graduate Coordinator and sent to the School of Graduate Studies.

Post-Exam Thesis Preparation

Upon timely completion of the thesis revisions and obtaining written approval from the Supervisor, the student must prepare the thesis for submission to the School of Graduate Studies and the Department. The Supervisor also notifies the Grad Administrator that all revisions are finalized.

SGS has prepared guidelines outlining the regulations for the formatting and preparation of a thesis for electronic submission to the SGS. These guidelines, available on the School of Graduate Studies web site (www.sgs.utoronto.ca), must be strictly adhered to. SGS will inform the student of any additional completion requirements such as the payment of library fines, outstanding fees, etc.

As of 2019, the Department requires only a digital copy of all student theses, emailed to the Student Services Assistant and Graduate Administrator, within one month of it being submitted to SGS, and including any supplemental data (permanent links to cloud storage or CD/DVD). Students should keep in mind that Supervisors may require a hard-copy of the thesis for lab record keeping.

Defending an M.Sc. With Subsequent Admission to the Ph.D. Program

All students who wish to gain admission to the Ph.D. program in the Department of Molecular Genetics following a successful M.Sc. defence must submit an application via the SGS application system (see: http://www.moleculargenetics.utoronto.ca/application-procedures/). These students will fall under the following categories:

- a. Those who intend to continue within the same laboratory and continue the same (or similar) project;
- b. Those who wish to continue within the same laboratory, but pursue a different project (i.e. study a different subject matter, employ a different model system, and/or use an entirely different approach);
- c. Those who intend to join a different laboratory within the Department.

The Ph.D. Qualifying Exam will only be waived for the first class of students (i.e., 'a' above) who also:

- I. Successfully defend their M.Sc. with a special "Future Directions" section associated with both the written thesis and the oral exam; AND
- II. Have a letter (email) from the Chair of the exam attesting to the student's outstanding performance.

It is important that the Graduate Coordinator and/or Graduate Program Administrator be informed of the decision for an M.Sc. student to re-enter the Department as a Ph.D. candidate. The Graduate Coordinator or Administrator will generally meet with such students to counsel them on the appropriate path and procedures for their successful defence and re-entry to the Department.

Note that the M.Sc. examining committee does not make admission decisions. The committee can only recommend, in a letter to the Graduate Coordinator, whether the requirement of the qualification exam should be waived if the student joins the Ph.D. program. In cases where the student has completed an M.Sc., applied to our Ph.D. program, but has not distinguished themself over the course of their M.Sc., the Admissions Committee will consult with the Chair of the exam committee to determine whether their performance during the defence should have an impact on the Admissions Committee's decision.

It is important to note that students who rejoin the Department to complete a Ph.D. are held to the same standards as other Ph.D. students. All Ph.D. students are expected to have two complete and original data chapters in their Ph.D. thesis. Results reported in the M.Sc. thesis cannot be re-published as part of the results section of a data chapter within a Ph.D. thesis. They may, instead, be referred to in the introduction or discussion sections of any chapter along with proper citations.

Students who wish to defend their M.Sc. with the intent of applying to our Ph.D. Program in the same laboratory (and continue the same/similar project) in which they did their M.Sc. must:

- Discuss with the Graduate Coordinator their plan to re-enter the Department.
- Inform the Examining Committee Members at least three weeks before the date of the M.Sc. oral exam that they wish to be considered for admission to the Ph.D. program.
- Include a "Future Directions" section at the end of the M.Sc. thesis that describes the proposed Ph.D. project. This section should be a maximum of 6 double-spaced (23 lines/page, 12 point font, 2 cm margins) pages and may include additional figures and/or tables. This section should be similar to parts 3 and 4 of the reclassification proposal as follows:
  - **Rationale** - 1 page: What key question(s) is/are going to be addressed? Why address this question using this particular experimental system? What is the hypothesis or hypotheses to be tested?
  - **Specific aims** - 4-5 pages: Describe the specific experiments that will be carried out during the Ph.D. studies. The purpose of the experiments with respect to the general rationale should be made clear. Possible pitfalls in experiments should be pointed out and alternative approaches should be suggested. Generally two to three distinct aims should be described. Possible outcomes of the experiments, and how the student will proceed given these outcomes, should be discussed. The student should convince the committee that experiments are feasible and will produce relevant and significant data.
- Upon fulfilling all requirements for a M.Sc., the student must submit an online SGS application for the Ph.D. program in our Department. The Graduate Coordinator in consultation with the Chair of the Admissions Committee, and one or more Admissions Committee members, will promptly review the student's application (as these situations often occur outside of normal application cycles). M.Sc. students are held to a higher standard than B.Sc. students and it is often the case that we will not admit students with a M.Sc. into our Ph.D. program. However, if the application is approved, the student will be enrolled into the Ph.D. program at the beginning of the following term. Given that the student would be enrolled in the M.Sc. program until the end of term, the student will remain an officially enrolled student throughout the transition. However, it is important to consider timing of defence/re-entry to make the transition as seamless as possible.

Students are expected to answer the same types of questions that would be asked at a reclassification exam, whether they are planning to continue the same project or not.
Note: The caliber of performance required for acceptance into the Ph.D. program are significantly higher than for a terminal M.Sc. degree. Students may successfully pass the M.Sc. oral exam, but not be admitted to the Ph.D. program.

Students who wish to defend their M.Sc. with the intent of applying to our Ph.D. Program and joining a different laboratory in which they did their M.Sc. (or remain in the same lab, but pursue a different project):
- Do not have the option of writing a "Future Directions" as part of their M.Sc. thesis solely for the purposes of waiving the Qualifying exam.
- Upon fulfilling all requirements for a M.Sc., the student must submit an online SGS application for the Ph.D. program in our Department. The Graduate Coordinator in consultation with the Chair of the Admissions Committee, and one or more Admissions Committee members, will promptly review the student's application (as

these situations often occur outside of normal application cycles). M.Sc. students are held to a higher standard than B.Sc. students and it is often the case that we will not admit students with a M.Sc. into our Ph.D. program. However, if the application is approved, the student will be enrolled into the Ph.D. program at the beginning of the following term. Given that the student would be enrolled in the M.Sc. program until the end of term, the student will remain an officially enrolled student throughout the transition.

Students who rejoin our Department and stay in the same lab should not do rotations. Students who plan to join a different lab can rotate in up to three labs upon joining the Ph.D. program. At the discretion of the Graduate Coordinator, the student may have the option of forgoing rotations if they have significant experience in the lab in which they want to join.

In almost all cases, a student who successfully defends their M.Sc. and transfers to a different lab as a Ph.D. student will be required to undergo the Ph.D. Qualification Exam. This compels students to become knowledgeable in their new field. However, students who have performed at an excellent-to-outstanding level in the M.Sc. program may have the requirement for a qualification exam waived at the conclusion of the M.Sc. defence. For this to occur, the student must meet with the Graduate Coordinator ~6 weeks prior to the exam and discuss why they should not have a Ph.D. Qualification Exam. In the rare case that the Graduate Coordinator concurs, s/he will notify the M.Sc. examining committee to hold the student to a higher standard. The Chair of the oral exam must indicate whether the student is exceptional and should be granted a waiver of the Ph.D. Qualification Exam.

It is important to note that work done in partial fulfillment of the M.Sc. degree cannot be used in partial fulfillment of the Ph.D. degree. Thus, courses completed during the M.Sc. do not count toward the Ph.D. degree; thus Course substitution option or special exemptions may be required. This is decided by the Graduate Coordinator upon re-admission of the student to the Department.

PhD Oral Exam

When all course requirements have been met and the supervisory committee has read and approved the thesis, students may proceed to the Ph.D. oral exam. The Department expects that the typical Ph.D. student will take about 5.5 years after first registration to complete the Ph.D.-related research, course work and thesis writing (see "Time Limit for Writing the Ph.D. Thesis" below). It is the Department's expectation that a Ph.D. thesis will contain at least two complete data chapters. The Ph.D. thesis exam is a formal defence of a thesis based on original scientific research as well as a test of the student's general scientific knowledge and abilities.

Requesting Permission to Write the Ph.D. Thesis

Permission to write a Ph.D. thesis is given at a terminal supervisory committee meeting upon completion of the Ph.D. Terminal Committee Meeting Report form (available on the Departmental website). A detailed outline of the proposed thesis (generally in bullet point form and typically longer than a page) is presented at this meeting. The detailed outline should be included in the student's committee meeting progress report that is distributed to supervisory committee members at least seven days before the terminal committee meeting. After the "Ph.D. Terminal Committee Meeting Report" has been signed by all relevant parties, the student should be devoted full-time to thesis writing and should not conduct additional experiments

until the " Ph.D. Oral Exam Request" form has been submitted online. Exceptions to this guideline can arise over the course of the writing period. For example, reviews from a submitted manuscript might compel the student to perform additional experiments, or holes in the thesis may become apparent during the writing process that necessitates additional experimentation. The student's discretion should be applied here. Under no circumstances, however, should new experimental avenues be explored at this point in the program. The Graduate Program Administrator will record the date that the Supervisory Committee gave the student permission to begin writing the thesis. (See "Commitments that Conflict with the Completion of a Student's Degree" on pg. 62.)

Time Limit for Writing the Ph.D. Thesis

Students have **4.5 months** from the time the "Ph.D. Terminal Committee Meeting Report" form is signed until the "Request to set up a Ph.D., Oral Examination" form has been signed. Within that **4.5-month** period, students must allow enough time for the Supervisor and Supervisory Committee Members to critique the thesis, which should take no more than 6 weeks (see below). Students must also allow for enough time to make the required changes after the supervisor and the supervisory committee members have critiqued thesis.

Organization and Content of the Ph.D. Thesis

- Although obtaining a Ph.D. in the Department is not dependent on obtaining publications, it is a strong expectation that any Ph.D. graduate will obtain first-author publications during their thesis studies. In practice, almost 90% of our Ph.D. students obtain at least one first-author publication and more than 55% obtain at least two.
- The thesis should be written in the first person (use of the pronoun "I"), as it describes the student's individual work: experiments, rationale, hypotheses and conclusions.
- The Department strongly encourages students to obtain examples of theses from previous members of their lab. In addition, theses from previous students in the program can be found online: https://onesearch.library.utoronto.ca/faq/how-can-i-find-university-toronto-thesis.

- **Introduction**:
  - Should provide the relevant background to the thesis work.
  - Should not be a general survey of every topic touched upon by the work.
  - Should clearly outline the state of knowledge in the field of research and emphasize the outstanding questions in the field, especially those that are specifically addressed by the thesis research.
  - An excellent Introduction will be interesting to read, and will propose hypotheses (possibly novel) to explain data in the literature. This is the student's chance to demonstrate mastery of the subject matter of the thesis studies. Students should not be afraid to express their opinions. This is the student's thesis, and their opportunity to write their own story. The Introduction should end with a brief outline and rationale for the thesis research. The Introduction should not generally exceed 25-30 pages.
  - Frequently, excellent Introduction sections may be published as Review articles in the field of the student. The student and Supervisor may wish to coordinate these efforts to obtain such a publication.
- **Data Chapters**:

- o Students should aspire to have two data chapters in their thesis. Note that the data chapters are not required to be published papers. A data chapter should contain enough data to reach a significant conclusion that could be published in a high-quality journal for the field in question.
- o The data chapters should describe the experiments performed by the student.
- o Work of collaborators may be included when this work is crucial for the understanding of the student's own data. When work by collaborators is included, those experiments done by collaborators should be clearly indicated. There must be a general explanation on the cover page of each data chapter outlining the contributions from each person.
- o In the body of the chapter, use "I" to describe the student's experiments, and the name of the collaborator(s) (or "we", if appropriate) to describe others' experiments/data. The chapter must be written to emphasize the student's own work.
- o The introduction to a data chapter should not repeat material already presented in the general introduction of the thesis.
- o **Figures and tables** not exceeding three pages in length (-see the note below for instructions on how to present very large datasets) should be placed in the body of the chapter, on the page following its first introduction, and not in a separate section at the end of the chapter. Where possible, the legend should be on the same page as the display item.
- o Aside from very large datasets or movies (see below), there should be no reference to supplemental materials/figures/tables; all relevant data should be presented in the results section of the data chapter.
- o Sometimes, figures that have been copied into a thesis are of inadequate resolution. Students must ensure that all figures within a thesis are at least 300 dpi.
- o It is never permissible for a published or unpublished manuscript to be used as a data chapter without some alteration. Even in the case of a single author paper by the student, the introduction must be modified to avoid repetition with the thesis introductory chapter, and all supplementary materials will be incorporated into the results section of the chapter as described above.
- o If a study involves **Human Subjects**, a section in the materials section should be included that indicates that the study was approved by an Institutional Review Board (specify which), and that informed consent was obtained from all human subjects. If a study involves **vertebrate subjects,** a section in the materials section should be included that indicates that all related protocols that were used were reviewed by the appropriate animal care board (specify which).
- o Finally, the term 'data not shown' does not belong in a thesis. Arguments that rely on casual observation because no data was collected should not be present in a data chapter because this provides evidence of poor scientific method. Speculation based on casual observation is permissible within a concluding chapter, so long as it is clearly stated that the argument relies on casual observation and not on real data.
- **Concluding Chapter**: Should begin with an overall summary of the work that explains how it has advanced the field. Students should refer to questions and hypotheses raised in the Introduction and explain how the research has solved (or maybe not solved) these problems. This chapter can propose hypotheses and models, and should emphasize the

student's own view of the field. The thesis should finish by suggesting several future investigations that would further address the key issues in the field.

A Note on the Inclusion of Very Large Datasets, Movies, and References to Published Supplemental Materials within the Thesis (see pg. 49)

Thesis Formatting (see pg. 50) - In addition to the SGS format rules for the Ph.D. theses, we highly recommend using 12 point uncondensed Times New Roman font for clarity.

Scheduling the Ph.D. Oral Exam
The Supervisor and all Supervisory Committee members must approve the student's thesis prior to the online submission of the "Ph.D. Oral Exam Request" form (available on the Departmental web site). The supervisory committee and supervisor will be emailed by the Student Services Assistant after submission of the form for confirmation. Supervisors are expected to read and return the thesis draft to the student within three weeks, after which the student will distribute a revised version to the supervisory committee members. The supervisory committee members are then expected to read and return the thesis with comments within three weeks. Failure by faculty members to meet these deadlines should be reported to the Graduate Coordinator as described below.

Students will submit the "Ph.D. Oral Exam Request" form online once they have confirmed a date and time for the exam with all members of the exam committee. This request must be submitted no less than 7 weeks prior to the exam. This allows the Student Services Assistant sufficient time to find rooms for the public seminar and subsequent oral examination, and have the exam committee approved by the School of Graduate Studies. It is important to note that the student must not have any contact with the External Examiner prior to the Ph.D. thesis defence, including the distribution of the thesis. This communication should be carried out by the Supervisor.

Immediately following the Ph.D. Exam Request submission, students must submit a 1-page double-spaced abstract, and a curriculum vitae containing their name, education and publications to the Student Services Assistant. A curriculum vitae for the proposed External Examiner/Appraiser must also be provided. If a student cannot find a current CV online for the prospective External Examiner/Appraiser, the Supervisor must obtain one on the student's behalf. Note that Ph.D. Exam Requests cannot be considered until the supporting documents are received.

The student's Supervisor will send the External Examiner/Appraiser the edited Ph.D. thesis at least **six weeks** prior to the exam date. It is the student's responsibility to distribute the thesis at least **four weeks** prior to the exam date to all other exam committee members.

The External Examiner/Appraiser must submit a written appraisal of the thesis to the Student Services Assistant at least 2 weeks prior to the exam. If the report is not received by that date, the School of Graduate Studies may cancel the examination and request another six weeks' notice for rescheduling.

Choosing the Ph.D. Oral Exam Committee
Final composition of the committee is subject to the Graduate Coordinator and SGS approval.

The Exam Committee is composed of:
1. **An Examination Committee member** within the student's primary research field, (see "Organizational Structure" on pg. 6), chosen and invited by the student and Supervisor;
2. The student's **Supervisor;**
3. **Supervisory Committee members** (if unavailable, Supervisory Committee members must be replaced by at least one Department faculty member upon approval by the Graduate Coordinator);
4. An **External Examiner/Appraiser** (a faculty member from another university, who must be at least an Associate or Full Professor or equivalent). The External Examiner must have an arm's length relationship to both the candidate and the supervisor. The student is not permitted to have any contact with the examiner prior to the exam. An External Examiner cannot be used more frequently than once every two years for committees with substantive overlap of members with whom the external has served within the past two years (i.e. more than three voting members.). The External Examiner is selected by the student and Supervisor.
5. An **Academic Faculty Member** from another University of Toronto department. This examiner cannot have been closely involved in the supervision of the thesis. This member is selected by the student and Supervisor.
6. An **Exam Committee Chair** - a non-voting member appointed by the School of Graduate Studies.

Thesis Defence Exam Committee members from the University of Toronto must be Full Members of the Graduate School.

Both the student and Supervisor should bear in mind that the Department has very limited funds to pay the expenses of the External Examiner. The Department will cover up to $400 for travel expenses (supervisors are responsible for any amount above this), a standard 1-2 night accommodation and a $250 honorarium, if and only if the External Examiner presents a Departmental Seminar on campus. All additional expenses are the responsibility of the supervisor. The Student Services Assistant can help to schedule the Departmental Seminar as needed and at the request of the Supervisor.

Delays in Scheduling the Ph.D. Oral Exam
If a PhD Oral Examination is not scheduled within 4.5 months from the time permission was granted for thesis writing and the "Ph.D. Terminal Committee Meeting Report" was signed, the student must submit a "Request to Extend the Time Limit for Completing the M.Sc. or Ph.D. Thesis" form to the Graduate Adminstrator for the Grad Coordinator to sign. See the appropriate form for details, which includes proposing a new realistic timeline for the oral exam.

If the 4.5 month deadline passes without an approved extension, the graduate stipend may be withdrawn due to failure to meet program requirements. HOWEVER, a supervisor may not withdraw a student's stipend without prior consultation with the Graduate Coordinator. If a student has set up the exam within the required time frame, the stipend must be paid until both the oral exam and thesis revisions recommended by the Exam Committee have been completed.

Delays in Approval of Ph.D. Thesis
Since thesis writing and committee approval must be completed within a tight timeframe, supervisors and supervisory committee members are obliged to promptly read and approve a

draft thesis. Supervisors are expected to read and return theses to their students in three weeks or less. Committee members are expected to read and return theses with comments in three weeks or less. If a student does not receive the corrected thesis within these time frames, they should contact the supervisor or committee member by email and obtain a revised deadline for finishing the corrections. If this subsequent deadline is unreasonable or if this deadline is not met, the student should report the situation to the Graduate Coordinator along with appropriate documentation. The Graduate Coordinator will take immediate measures to resolve the situation. Students should keep in mind that the Graduate Coordinator and the Grad Team are allies in this situation.

The Ph.D. Oral Exam form can be submitted only after the Supervisory Committee has read and critiqued the thesis. At that time, committee members will return the critiqued thesis and any additional suggestions for revisions. Students are expected to incorporate these changes before distributing the thesis to the External Examiner and other Exam Committee members. If there are disagreements between a committee member and the student and/or supervisor about the nature and/or extent of the changes to be made to the thesis, the Graduate Coordinator should be consulted. The Graduate Coordinator will decide on how to proceed. Note that this resolution process will not be influenced by prior unofficial arrangements of Ph.D. exam dates (e.g. having agreed on a date with an external examiner).

The Department will not tolerate excessive delays by faculty members in reading and approving theses. Offenders will be sanctioned and may lose their graduate appointments.

Ph.D. Examination Process
Public Seminar
- 40-45 minutes in length
- Given prior to the Ph.D. oral examination.
- Exam committee members may not ask questions.

Oral Examination
- Follows immediately after the public seminar.
- Up to 120 minutes in length, varies depending on committee size (~10-15min per examiner).
- Exam Committee questions the student on their knowledge of technical and theoretical matters related to thesis, and on general knowledge of the research area.

Discussion
- The student leaves the room and the Exam Committee has a closed-door discussion of the thesis and its defence and deliberates the outcome. Approximately 15 minutes.

Possible Outcomes of the Ph.D. Oral Exam (taken from the SGS website, www.sgs.utoronto.ca) At the conclusion of the Ph.D. thesis defence, the Exam Committee decides whether or not the written thesis and oral defence are acceptable. If the thesis defence is deemed unacceptable, then the examination is adjourned. The Ph.D. candidate will fail and be ineligible to receive the Ph.D. degree if the thesis remains unacceptable at a reconvened examination.

If the thesis defence is deemed acceptable, the committee decides whether:
1. The thesis is acceptable in its 'present' form

2. The thesis requires 'minor corrections'. Minor corrections involve typographical errors, errors in punctuation or problems in style; they must be correctable within one month. The Supervisor will inform the Candidate of the necessary corrections and must certify in writing to the Ph.D. Examinations Office (via our Graduate Program Administrator) that the corrections have been made. Or

3. The thesis requires 'minor modifications'. Minor modifications are more than changes in style and less than major changes in the thesis. A typical example of a minor modification is clarification of textual material or the qualification of research findings or conclusions. Minor modifications must be feasibly completed within three months. The Chair of the Examination Committee must appoint a supervising Subcommittee to be approved by the Examination Committee and a Convener is thus designated. The Convener of the Subcommittee shall report with a brief written statement the necessary minor modifications preferably before the Examination Committee disperses, but as soon after the examination as possible and ensure that the Candidate, Supervisor, and Ph.D. Examinations Office receives a copy of the statement (via our Graduate Administrator). The Convener of the Subcommittee shall also within three months of the date of the examination report in writing to the Ph.D. Examinations Office and the Examination Chair the state of completion of the required minor modifications (via our Graduate Administrator).

Post-Exam Thesis Preparation (See pg. 53)

Commitments that Conflict With the Completion of a Student's Degree

Students often pursue other academic endeavors after completing a M.Sc. or Ph.D. Arrangements for the commencement of these endeavors are sometimes made by students prior to the scheduling of the thesis defence date, or even before formal permission is given by the Supervisory Committee to write the thesis. This may result in a desire to complete the degree in what may be an unrealistic timeframe. The Supervisor and thesis committee members are sometimes put in a position of choosing between upholding the academic standards of the Department or being sympathetic to the student's career plans. In these situations, it is important that all concerned consider the following:

- It is the Supervisory Committee's primary role to assist in educating the student in the art of doing science and all that this entails, including upholding the standards that have given our Department its excellent reputation.
- It is the **student's** responsibility to ensure that any external deadline is met. If completion of the M.Sc./Ph.D. degree is not possible within the proposed timeline, the student must defer entrance to the post-graduate program or other opportunity.
- The student should consult the supervisor and supervisory committee regarding planned time to completion of a degree before making commitments with a fixed deadline to other academic programs or employment options.
- The student should be aware of the time allowed for a Supervisory Committee member to critique their thesis (See pg. 51 " Scheduling the M.Sc. Oral Exam", and pg. 59 "Scheduling the Ph.D. Oral Exam"). These timelines do not include any vacation time that a committee member might take. Professors cannot be expected to read theses while on vacation.
- The student should be aware that many faculty members submit grant applications to CIHR or other agencies at various times throughout the year. These faculty members typically focus exclusively on grant writing for a month or more ahead of each deadline.

Hence, finding non-supervisory members willing to sit on the student's examining committee can be a challenge during these periods.

The minimum time required by our Department to approve and finalize an oral exam after the Student Services Assistant receives the appropriate form is **3 weeks for a M.Sc.** and **7 weeks for a Ph.D.** This timeline is not negotiable. It is set by SGS to enable the External Examiner and examining committee to properly review the thesis and, for the External Examiner of a Ph.D. thesis, to submit a critique of the thesis.

Note: Simultaneous registration in two full-time academic programs is a violation of the School of Graduate Studies rules.

STUDENT FUNDING

With only a few exceptions (see below), graduate students must be paid a full stipend throughout their graduate career. Funding will come from various scholarships/fellowships that the student has applied for and been awarded, and in the absence of that, from the Supervisor's grant. The stipend is paid to the student up to and including the submission of supervisor-approved corrections to their thesis to SGS, after which payment of the stipend must stop.

The Faculty of Medicine's Harmonized Base Funding Agreement currently governs the stipend amount and top-up policies for students in all eight Basic Science departments (see the GLSE website for details: http://glse.utoronto.ca/graduate-student-financial-support). Yearly stipend amounts are calculated based on an estimate of living expenses (living allowance) and the current year's tuition fees. Current tuition fee rates are available on the web site of the Vice-President and Provost

The stipend can be interrupted if:
1. The student takes a department-approved leave of absence.
2. After the student has their committee's approval to write a thesis, the student takes an unreasonable amount of time in completing the writing (see "Time Limit for Writing the M.Sc. Thesis" on pg. 48 and "Time Limit for Writing the Ph.D. Thesis" on pg. 57).
3. For those students who extend their Ph.D. program beyond six years (direct entry PhD students) or beyond seven years (students who reclassified into the Ph.D. program), SGS reduces the student's tuition fees by ~50%, and the tuition portion of their stipend is decreased accordingly

Tuition Fees
All students are responsible for paying their own tuition fees by the deadlines set by the University of Toronto. Many students choose to defer tuition fees until April of the academic year. This must be done in August/September before the academic year begins. The Department is unable to pay the fees on any student's behalf because this will disqualify him/her from receiving a tax credit.
Students who are in arrears are not eligible to register with the School of Graduate Studies.

Administration of Student Funding
During a student's rotation period, the stipend is paid through the Department. Once a student has settled into a permanent lab, payment of the stipend is administered through the node at which the student is located. General enquiries should be directed to the Business Officer in the student's node. The final thesis lab for each student will be invoiced by the Department for the entire stipend paid to the student during the rotation period.

Students and Supervisors are required to fill out GEMS agreements online, detailing all funding sources for a student by October 1 each year. Students and Supervisors will be notified each year when the GEMS system is operational. GEMS agreements are important, and enable the Department to maintain quotas for fellowships and funding, thus it is critical for the Department to achieve 100% compliance. For more information see:
https://www.glse.utoronto.ca/graduate-education-management-system-gems.

 Students must to ensure that any changes or problems with stipend payments are brought to the attention of their Business Officer as soon as possible. It is particularly worth noting that in cases where awards are concerned. It is the student's decision whether to accept or decline an

award as well as the duration for which they may accept the award; the onus is thus on the student to inform their Business Officer as to which award they are accepting, when and for how long. Students must also notify the Graduate Program Administrator of all awards and funding changes. On the other hand, it is in effect the Supervisor and Supervisory Committee's decision to terminate a student's stipend if they fail to fulfill the requirements of this handbook, in consultation with the Graduate Coordinator.

Up to one month's notice may be required to make payroll changes. Students must inform the Graduate Administrator and relevant Business Officer personally of the following changes:
- Selection of a permanent lab
- Change of supervisor
- Receipt or cancellation of an award
- Long-term leave of absence
- Withdrawal from the program
- Completion of the degree (if it coincides with the supervisor's decision to terminate stipend payments)

Any attempt to retain an award while registered as a full-time student in another program is in clear violation of the rules of the awarding body and the School of Graduate Studies. The student must familiarize themself with the rules of the award they have accepted and abide by those rules.

Awards & Scholarships
Students are encouraged to apply for external scholarships from such agencies as:

Natural Science and Engineering Research Council (NSERC)
Canadian Cancer Society Research Institute
Canadian Institutes of Health Research (CIHR)
Vanier Canada Graduate Scholarships
Ontario Graduate Scholarships (OGS)

Applications and eligibility requirements are available on the respective websites.

Apart from these major awards/scholarships, the School of Graduate Studies (https://www.sgs.utoronto.ca/awards-funding/) and the Faculty of Medicine's Graduate & Life Sciences Education Office (https://www.glse.utoronto.ca/graduate-student-financial-support) maintain full lists of available awards and scholarships to which graduate students can apply.

Switching labs after rotation period
On rare occasions, a student will move to a different lab and Supervisor to carry out their thesis project well after the rotation period has ended. This move can be initiated only by the student, not the Supervisor, and can occur only after the student has discussed the situation in detail with the Graduate Coordinator (and the initial Supervisor when appropriate). If the student switches labs within a 4-month period (excluding all initial rotations) of joining the first lab, the second lab will fully reimburse the first lab for covering the stipend costs during the rotation period upon request by the first Supervisor. If the student switches labs after the 4-month of being in the first lab (excluding all initial rotations), but before beginning their 9th month, the second lab will reimburse the first lab for half of the stipend costs during the initial rotation

period upon request by the first Supervisor. If the student switches labs after the completion of 8 months, the second lab will bear no responsibility for the costs of the student's stipend during the rotation period. In this case, the expense for the stipend during the rotation period will remain with the first lab. If a student leaves the Department at any time after joining a lab, that lab will not be reimbursed the stipend costs incurred during the rotation period by the department or any other lab.

Other Earnings

Graduate students in the Department are strongly encouraged to focus first and foremost on their thesis work.

Grant Paid Students

Under the CIHR General Guidelines for all Research Funding Program, Research Trainees on Grants section, with the approval of their supervisors, students may "earn from an additional source not exceeding the value of their academic fees or 35% of the amount received from the grant, whichever is greater." In the absence of an explicit policy from agencies such as NSERC or NCIC, the Department has adopted the CIHR guideline for all grant-paid students including those who hold a Connaught, an OGS or an UTO.

Students who hold a Studentship from a Granting Agency

Funding agencies set limits to the additional income students may receive. Students must make sure that they are abiding by the conditions of the award they are receiving. This includes the number of Teaching Assistant (TA) hours that are allowed. The Chair of the Department has delegated the authority of approval of TAships and commitments to Supervisors. Thus, all students must first obtain permission from their Supervisor prior to applying for a TAship. It is the Supervisor's responsibility to ensure that these guidelines are adhered to. The Supervisor must provide the course Instructor with written approval for the student to TA. If a student's earnings exceed the 35% limit the Supervisor is entitled to reduce the student's stipend by a corresponding amount.

PROFESSIONALISM, TIME OFF, LEAVES OF ABSENCE, WITHDRAWAL, AND SUPPORT SYSTEMS

Professionalism

Being a graduate student is an opportunity to learn and grow as a scientist. The following practices and tips will help you to succeed not only in MoGen, but in all professional settings going forward. Adapted from this post.

Email and Communication

- *Check your university email regularly* for announcements related to class and professional opportunities, as well as for essential university communication.
- **Reply promptly** to any emails requiring response. Use proper email etiquette.
  (Resources: Emailing your Professors | Emailing Professionally)
- **Proofread** emails, blogs, & other public materials online. These represent you and your brand.
- It's okay to send **a follow up email** as a *polite nudge* if the person has not replied. The length of time varies based on circumstance, but two business days for faculty, longer for professional contacts. Be patient: remember that your supervisor and coworkers have multiple duties.

Technology Use

- You may **use technology in the classroom** [except when expressly prohibited] to take notes, refer to e-readings, look up references, and work on tasks as directed. You should, however, create a plan and be mindful to **limit distractions** (close tabs with social media, email, news sites, and off-task items, or install a Web Blocker (e.g. Freedom) if you struggle with self-control in this area).
- Be mindful of your use of **cell phones,** mobile devices, and other distractions when in lab or engaging with others in a professional context. Silence your phone when in meetings or seminars. Focusing your attention on the science and the moment you are is both a good grad school and life strategy.

Respect

- **Please respect your peers and other professionals in person and online**. No bullying or disrespect will be tolerated. If you are experiencing any problems, please speak with your Supervisor or a member of the Grad Team immediately, so we can work together to resolve any issues.
- All students have a right to an **education free of harassment**. Each of us also carries the responsibility of ensuring our peers are experiencing a harassment-free education. (Resources: Office of the Vice Provost, Students Website)
- Be an **active listener**. (Resource: What Great Listeners Actually Do). Be respectful of different points of views. Be calm and judicious in your responses. Think before you react.
- In this program, you will create a **professional presence online** (resumes, portfolios, linkedin, etc.). Remember, *nothing you post online is truly private*, and anything could be viewed by future employers. Consider the image you're cultivating before posting.
- On all **social media** accounts used in this program, including department accounts, as well as students' personal accounts used for assignments, etc., students are expected to uphold professional standards that meet university and professional codes of conduct.

Academic Honesty & Plagiarism

- *You are in a graduate program, and thus should take the university Honour Code [Resources: U of T's [Academic Code](#) and [Website](#)] very seriously*. Please familiarize yourself with the guidelines for policies including academic honesty, plagiarism, cheating. The work you do in this program must be your own. Do not falsify or mis-represent your data.
- Be sure to **cite your sources** to avoid issues of plagiarism and dishonesty.
- **Collaboration** is a key component of science and will play a prominent role in our curriculum and your training. When collaborating with other students, fairly attribute their contributions. Respect others' opinions, fairly divide work, and communicate regularly with your team.
- Talk to your instructors or Supervisor immediately if you have questions or doubts about what constitutes academic dishonesty. Plagiarism in courses will result in a failing grade, and the incident will be reported to SGS for disciplinary action.

Professional Conduct
- **Be humble**. Know what you know, but listen to learn more. We aspire that you'll leave this program with the understanding that there's lots more to learn, and that you can learn from people who aren't necessarily like you or who study different things.
- **Show up prepared:** read for class, prepare for presentations, meetings with your Supervisor, lab meetings, etc. You will get more out of and contribute more to meetings in which you enter prepared and thoughtful.
- **Networking** is a great way to develop contacts. It engages you in a professional community. Networking can happen digitally via twitter, email, etc. Networking also gives you facetime with the people who are actually hiring.
  - Keep in touch with your professors, your peers, and other professional contacts from your time in graduate school. These people can bolster your professional success.
  - Our yearly [Alumni Symposium](#) and regular career workshops provide additional opportunities for networking. The MoGen website has career advice [here](#).
- Have a **positive attitude**. People will respond to your attitude. Practice being interested in other people by asking them questions about their work. Always be **courteous**.
- **Follow through** if you say you'll do something. Don't promise more than you can deliver, but also don't sell yourself short. This is true in networking and in your scientific efforts. What you deliver helps to build your reputation.
- **Don't be late.** If it is impossible to be on time with something (e.g. a task or a meeting), communication is key. Let the person know as soon as possible and propose an alternative ("I could submit this on Thursday."). If it is a classroom assignment/project, communicate with your team members, if relevant, and talk with the professor before the due date to *ask* if an extension is possible.
  - Attend class. Don't be late to class, lab meetings, seminars, meetings with your Supervisor, etc. If you're going to be late, communicate with your Supervisor ASAP **before** you're due to arrive.
- **Own your mistakes**. Learn from them. Take criticism for your mistakes in stride and improve going forward.
- **Own your project.** Read the literature deeply. Talk with others in your lab about your science daily. Think about your science outside of the lab. When your experiments go awry, think about why this might be the case and go to your supervisor with **solutions**

instead of problems (X Problem + Y Solution. What do you think?). Scientists are creative problem solvers!

Tips for Getting the Most out of this Graduate Program
- Make a **calendar** with important tasks + deadlines. Set alerts for *approaching* deadlines. Plan ahead – don't procrastinate! And then, check your calendar regularly to see what is coming.
- Start building yourself a "**brand**" by wearing your passion on your sleeve. Standing out helps you get ahead in this field and helps you surround yourself with other passionate people.
- **Thank** those who support your research & professional development (librarians, archivists, supervisors, reference writers, draft readers, etc.)
  - **Be kind and gracious** to the librarians, archivists, and others who support your research. Treat them as professionals. Express your gratitude to them, and remember that some may become potential bosses, colleagues, and mentors.
  - Similarly, be kind and gracious to community members and others you involve in your research and projects. They are sharing their time, their memories, and their lives with you – be sure to thank them and respect them.
- **Embrace opportunities** for further professional development – conferences, collaborations, volunteering with science outreach. All of these things will help you network and build a diverse range of experiences.
  - **Be ambitious.** Take on opportunities where you'll meet new people and try new things outside of your comfort zone.
- **Attend department events and take advantage of university resources.** Take the lead in figuring out what you want or need from graduate school, postdoc training, and jobs beyond academics, and take advantage of the resources and opportunities available to you.
- **Support your colleagues:** take the time to listen to them, go to coffee or a happy hour with them, attend events or presentations they organize. Discuss your successes and failures. They are your support network through grad school and beyond.
- **Self-Care**: Maintain your friendships, outside hobbies and routines, and your health. Graduate school is overwhelming, and can quickly take over your life. Get a good night's sleep. Your health and well-being still should be priorities!
- Be attuned to your **mental health**. Anxiety and stress can creep up on you. Please reach out if you're overwhelmed or need assistance. (Resources: GLSE counselling, SGS wellness resources, U of T Health and Wellness)
- Don't undervalue what you've learned here. (e.g. "I've only taken one class in this specialization.") Sell your strengths, and keep a running list of your strengths & experiences on your portfolio/resume/linkedin.
- **Ask questions ASAP when you get stuck or you're confused.** It's better to ask early on, rather than staying stuck and not being able to continue on.

Personal Time Off
Faculty of Medicine Guidelines on Graduate Student Personal Time Off
From the Office of the Vice Dean, Graduate and Life Science Education (Adapted from the Institute of Medical Science guidelines on time off for students.)

Within the Faculty of Medicine, it is recognized that many graduate students conduct their research almost exclusively within a laboratory setting, where they may or may not have control over their hours and the flow of the research program. Students are not employees and therefore have no rights to employee benefits, including paid vacation entitlement. However, it is recognized that in order for a graduate student to reach their full potential and achieve academic excellence and maintain a healthy work life balance, they benefit from some personal time off or 'vacation'. There are SGS policies and procedures in place for students who require a leave of absence for parental, personal or medical reasons. However, there are no University or SGS policies regarding graduate student personal time off / 'vacation'. The following guidelines for faculty and graduate students provide a framework for reasonable expectations. As a general rule, students might reasonably expect up to three weeks (15 working days) per year in personal time off, plus statutory holidays, under the following conditions:

- Time off provisions should be negotiated, in a clear and transparent manner, between the supervisor and the graduate student.
- Time off should not compromise the research program and/or the student's graduate studies. Students must ensure that laboratory work, experimentation and other time sensitive activities are either completed, or arrangements made for others to continue ongoing work.
- Consideration should be given to when the building or lab is closed (i.e. winter holidays) when taking time off.
- Time sensitive deadlines (i.e. award applications, abstract submissions) must be taken into consideration.
- Time off cannot be carried forward from year to year.
- Time off should be requested as far in advance as possible.
- The student and supervisor should be able to maintain contact as appropriate if the student is away for an extended period.
- Given that students receive remuneration as a stipend, not salary, the stipend continues, unaffected by this personal time off.
- Attendance at social activities within the academic community (departmental picnic etc.) or scientific meetings does not fall under the category of personal time off.

Vacation time should be submitted in writing to the Supervisor and a record kept of days away from lab each year.

Sick leaves or absences for health reasons must also be documented by the student, communicated with the Supervisor, and do not fall under category of personal time off.

Leave of Absence

Graduate students may experience a temporary or permanent interruption during the course of their studies. In a situation where it may be necessary to take time out from the graduate program the students should make an appointment to see the Graduate Coordinator as soon as possible. An official leave of absence is not included in the time limit for completion of the degree and a student is exempt from paying fees for the duration of the leave. However, some benefits may cease during the leave, so it is important to plan accordingly. The Graduate Coordinator and Graduate Administrator can help students to navigate the application for a LOA. See the SGS website for more information.

A student may apply for a one-session to three-session leave during the program of study for the following reasons:

- Serious health or personal problems which temporarily make it impossible to continue in the program, or
- Parental leave by either parent at the time of pregnancy, birth or adoption, and/or to provide full-time care during the child's first year. Parental leave must be completed within twelve months of the date of birth or custody. Where both parents are graduate students taking leave, the combined total number of sessions may not exceed four sessions. Students should consult with their Supervisors on this point, as some funding agencies have provisions to allow for paid parental leave.

Leaves should ideally coincide with the start and end of a session. A leave should therefore begin on the first day of term, for a period of four, eight or twelve months. The degree time limit will be extended by the number of sessions that the student is on leave. If it is necessary for a leave to begin in mid-session, it is necessary to discuss with the Graduate Coordinator or Graduate Administrator.

While on leave, students are temporarily withdrawn from the graduate program and do not pay fees for the leave period. Please consult the Fees section of the SGS web site for more information on fees for students on a Leave of Absence. If a student returns from leave and is immediately ready to defend the thesis, fees are charged for the session(s) in which the student was on leave.

Stipendiary Support on Leave (GLSE, SGS)

Effective 2017, the Graduate and Life Sciences Education office in the Faculty of Medicine has made a Leave of Absence (LOA) Stipendiary Fund available for one term to students requesting an LOA due to health issues (see: http://www.glse.utoronto.ca/glse-leave-absence-stipendiary-fund for details). Beginning Fall 2017, Parental Grants are also available to students who are taking a parental leave. Visit the School of Graduate Studies website for details: https://www.sgs.utoronto.ca/awards/sgs-parental-grant/.

During a leave, a student may not make demands on the resources of the University, such as using library facilities, attending courses or expecting advice from a Supervisor/Supervisory committee. As an exception, students on leave for parental or serious health reasons who wish to consult with their Supervisor may do so directly. Research Reader privileges are available at the library for a fee. Students have the option of opting into receiving access to Student Life (http://www.studentlife.utoronto.ca/), Hart House (http://harthouse.ca/) and Faculty of Kinesiology & Physical Education services (http://www.physical.utoronto.ca/) for a fee (see: https://www.sgs.utoronto.ca/wp-content/uploads/sites/253/2019/07/Leave-of-Absence.pdf).

Students are not eligible for graduate awards during a leave. Note that award granting agencies, such as CIHR and NSERC, have their own policies on leaves for award holders. Students must consult with the appropriate funding agency.

If a student requires a leave, it is necessary to complete the [Request for Leave of Absence form](#) available on the SGS website and to submit it to the Graduate Administrator for the Graduate Coordinator to sign.

Termination of Enrollment/Withdrawal

A student's enrollment in the program may be terminated without obtaining a degree under the following circumstances:

1. Failure to achieve the goals set by the Supervisory Committee within a reasonable period of time (see "Lack of Sufficient Progress" on pg. 26); and upon unanimous decision by the Supervisory Committee.
2. Failing any course in the program
3. Two negative votes at a Reclassification exam, M.Sc. Oral exam. Ph.D. Qualification or Ph.D. Oral exam.

The student's stipend will be terminated upon termination of enrollment.

Academic Appeals

The Department maintains a standing 'academic appeals' committee. Its membership is periodically reviewed and the current committee can be found on the [Department website](#). This appeals path is only for academic matters pertaining to coursework and degree completion and not for other matters such as disputes about authorships, awards, funding, or admissions. The committee membership will be adjusted in cases where there is a conflict of interest. Students have 8 weeks from the time of a disputed decision to request an appeal. Students must use a form that can be obtained from SGS. The committee will only be called after initial attempts at resolution with the supervisor or committee or teacher have failed.

After meeting with all parties involved the committee will write a report and make a recommendation to the Chair, who may or may not accept the recommendation. Matters that remain disputed or unresolved may be elevated to another committee overseen by the Dean of the School of Graduate Studies. A more detailed outline of the process can be found on the SGS webpage: https://facultyandstaff.sgs.utoronto.ca/sgs-councils-and-committees/graduate-academic-appeals/gdaac/

Lapsed Candidacy

Students must be registered annually until all degree requirements are met. Students who fail to register and do not have an approved leave may only apply to re-register if they are within the maximum time allowed for the degree program. Students wishing to re-register must apply to the Department of Molecular Genetics. The Department and the School of Graduate Studies must approve the reinstatement. Reinstated students will be required to pay fees owing for any sessions in which they did not register.

Mental Health and Wellness Resources

These resources were compiled by the Graduate Conflict Resolution Centre and students in the Dept. of Medical Biophysics.

In crisis, visit the closest Emergency Room or call 911

Counselling Services
School of Graduate Studies Embedded Counsellors (free)
During the academic year, GLSE provides dedicated counselors for students in the Faculty of Medicine. Information about these counselors can be found here: (http://www.glse.utoronto.ca/student-health-and-wellness). The Grad Team can also help you to contact these counselors.
Phone: 416-978-8030, Ext. 5.
Book an appointment for counselling by phone or walk-in at 214 College Street, Room 111
Note: Phone rarely answered; may be on hold for 30-60 minutes.
OISE Psychology Clinic (~$25/session)
Email: oiseclinic@utoronto.ca, Phone: 416-978-0620
Location: 252 Bloor Street West, Suite 7-296
Free Walk-In Counselling Services: List of locations at www.utgsu.ca/insurance/walk-in-counselling/

Conflict or Challenges in Professional Relationships
Graduate Conflict Resolution Center (GradCRC)
Email: gradcrc@utoronto.ca, Phone: 416-978-8920

Community Helplines: 24-hour access to anonymous support (unless otherwise noted)
Good 2 Talk Student Helpline: 1-866-925-5454
Distress Center Hotline: 416-408-4357
Suicide Prevention Hotline: 1-800-273-8255
Gerstein Center Mental Health Crisis Line: 416-929-5200
Assaulted Women's Helpline: 416-863-0511
My SSP for International Students: 1-844-451-9700
Anishnawbe Health Mental Health Crisis Line for Aboriginal students: 416-891-8606
Drug and Alcohol Helpline: 1-800-565-8603
Ontario Mental Health Helpline: 1-866-531-2600
Ontario Problem Gambling Helpline: 1-888-230-3505
Sexual Assault & Domestic Violence Care Centre: 416-323-6040
Toronto Rape Crisis Centre: 416-597-8808
LGBTQ Youthline (peer support, open Sun-Fri 4-9pm): 1-800-268-9688

Confidentiality

As per University of Toronto guidelines, the Department of Molecular Genetics administration requires the expressed written permission of the student in question before we are able to communicate with people outside of the University of Toronto (parents, other family members etc.) regarding the status of said graduate students in our program.