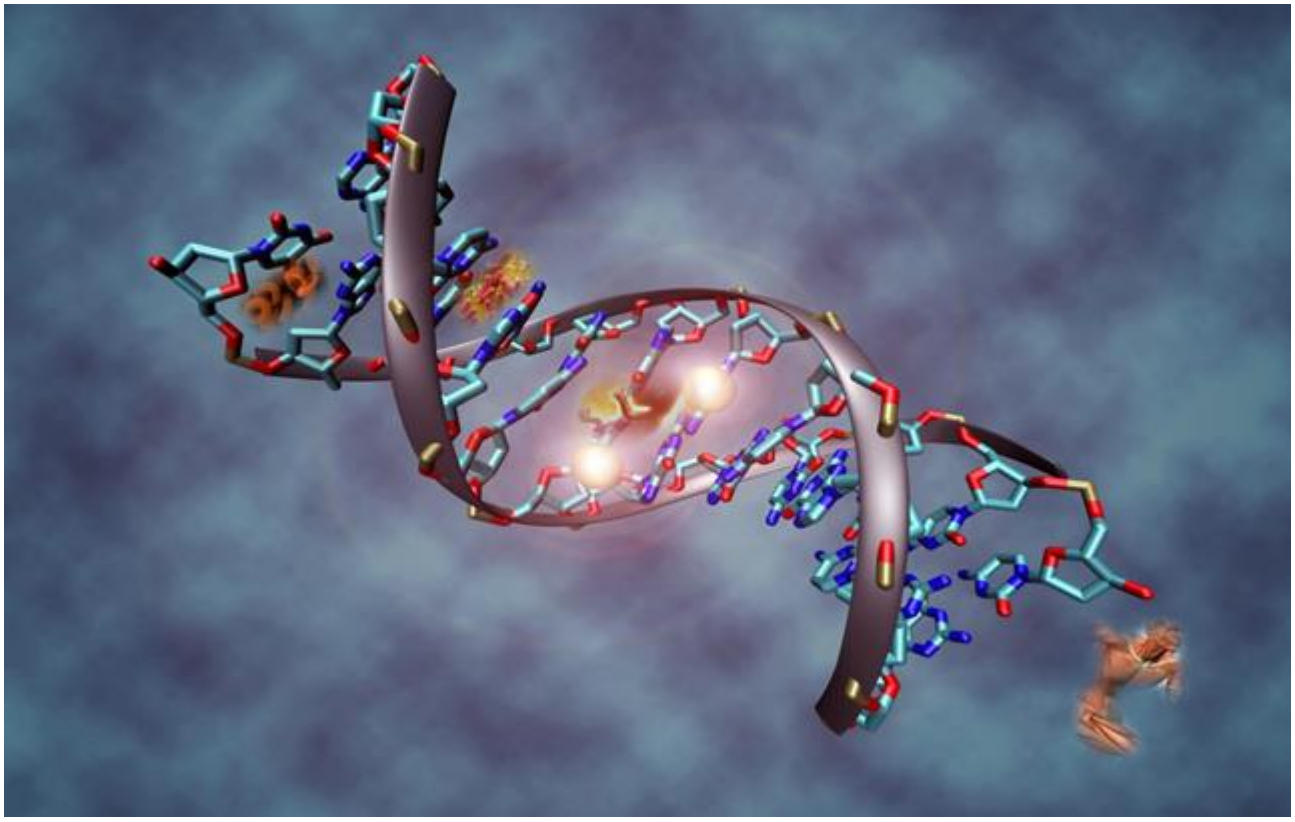
MEDICAL SCIENCES GRADUATE PROGRAM

2020-2021
Handbook
Approved June 2020



McMaster University
HEALTH SCIENCES

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WELCOME FROM THE ASSISTANT DEAN OF MEDICAL SCIENCES

McMaster University has a long-standing reputation as Canada's most innovative university and the 'Medical Sciences' program has been its flagship graduate program for over 40 years. The main strength of our program is our research faculty, whose laboratories are carrying out cutting-edge research in multiple health-related areas, including cancer, infection and immunity, cardiovascular disease, genetic disorders, metabolism and nutrition, physiology and pharmacology and epidemiology. McMaster also offers a unique interaction between basic scientists and clinical faculty that fosters opportunities for translational research. In addition to being leaders in their fields of research, our faculty members are also trained to provide students with high quality supervision. Our students are further supported by an excellent group of administrators and administrative staff, along with an established committee for each graduate student, offering individual attention. Our goal is to provide our graduate students with high-level training in technical research skills, further complemented by extensive development in communication and critical thinking skills. Additional opportunities in career development and training are also available to our students. Together this training will prepare our students for making significant contributions in health and non-health related fields within academia, industry, government and business. Finally, the city of Hamilton, where McMaster University is situated, is a great place to work and play with vibrant entertainment and extensive green space. Hamilton has also been ranked as a 'Top North American City' by FDI Magazine for its quality of life.

To summarize, graduate studies in Medical Sciences offers students unlimited opportunities for innovation and discovery in research, encourages intellectual and social interaction among students and faculty and provides the skills necessary for positioning candidates favourably for current and emerging job markets. Please take the opportunity to explore our website and learn more about McMaster's Medical Sciences Graduate Program.

This document is not intended to replicate or modify the information contained in the School of Graduate Studies (SGS) Calendar available at http://graduate.mcmaster.ca/current-students/graduate-calendar.html

This purpose of this handbook is to outline the policies and procedures followed by the Medical Sciences Graduate Program, which supplement the policies and procedures contained in the SGS Graduate Calendar. Students and Faculty are encouraged to look at the general and program specific sections of SGS Calendar for information about:

- Graduate study at McMaster University
- General regulations of the School of Graduate Studies
- University policy, regulations, and governing bodies
- Graduate fees and financial assistance
- University services
- Scholarships, fellowships, bursaries and other awards
- Student appeals
- Degree program requirements
- The Medical Sciences Program

For further information on the topics covered by this handbook, students are advised to consult the staff in the Medical Sciences office (HSC-4H4), or email medsci@mcmaster.ca.

Students should also consult the Graduate Calendar for sessional dates and other relevant information. Students are expected to follow University policies on both academic and research integrity and should be familiar with Sections 6.1 and 6.2. Academic Integrity and Code of Conduct of the School of Graduate Studies Calendar. Students are expected to read these policies and be familiar with them within the first month of enrolment in the program. In addition, all students are expected to keep a personal copy of their primary research records, analyzed data, figures, manuscripts and other documents to ensure their integrity

ADMINISTRATIVE ORGANIZATION OF THE PROGRAM

ASSISTANT DEAN OF MEDICAL SCIENCES

Dr. Judy West-Mays ext. 26237, email westmayj@mcmaster.ca

PROGRAM FIELDS AND AREA COORDINATORS

Each of the five broad fields of research in the Program including Cancer/Genetics (CG), Blood/Vascular (BV), Infection/Immunity (II), Metabolism/Nutrition (MN), and Physiology/Pharmacology (PP) is headed by an Area Coordinator. The primary role of the Area Coordinators is to provide students with additional guidance for development of their Education Plan, Supervisory Committee meetings and reports, and to assist in conflict resolution, if needed. The Area Coordinators work closely with the Assistant Dean of Medical Sciences and the Administrative Staff to ensure that all aspects of the Graduate Program run efficiently and according to the policies and procedures of McMaster University's School of Graduate Studies.

Blood & Vasculature Area (BV) - Patricia Liaw, ext. 40788, email: patricia.liaw@taari.ca
Cancer & Genetics Area (CG) – Roma Sehmi ext. 22963 email: sehmir@mcmaster.ca
Infection & Immunity Area (II) – Ali Ashkar, ext. 22311, email: ashkara@mcmaster.ca
Metabolism & Nutrition Area (MN) Thomas Hawke, ext. 22372, email: hawke@mcmaster.ca
Physiology and Pharmacology Area (PP) - Alison Holloway, ext. 22130, email: hollow@mcmaster.ca

PROGRAM OFFICE STAFF (located in MDCL 2235)

George Bijelic, Manager, Health Sciences Graduate Studies, ext. 22735
email: gbijel@mcmaster.ca
Daphne Kilgour, Graduate Officer ext. 27458 email: kilgoud@mcmaster.ca

ADMISSION TO THE PROGRAM

The Program seeks candidates who show high scholarly promise and who hold undergraduate degrees in the biological sciences including but not limited to Biology, Biochemistry, Medicine, Microbiology, Molecular Biology, Health Sciences, Pharmacology or Physiology. See our Website for detailed information at http://fhs.mcmaster.ca/medsci/prospective_students.html

MD/PhD Program

Students enrolled in the MD/PhD Program that wish to do their PhD degree in Medical Sciences should consult the MD/PhD Program Admissions requirements at
http://fhs.mcmaster.ca/mdphd/admission.html

Clinical Investigator Program

The McMaster University Postgraduate Medical Education Program offers a Clinician Investigator Program for physicians to pursue research training as part of their education, with completion of either a Master's or PhD degree. Interested individuals, who wish to complete a degree in Medical Sciences as part of Clinician Investigator training should contact the Medical Sciences Program and also the Director of the Clinician Investigator Program.

Clinician Investigator Program Director:

Clive Kearon, MD, MRCPI, FRCPC, PhD
Professor, Medicine, McMaster University
Juravinski Hospital, Room A3-73
711 Concession Street, Hamilton, ON L8V 1C3
Tel: 905-525-2100, ext. 42426
Fax: 905-389-0108
Email: kearonc@mcmaster.ca

FINANCIAL SUPPORT OF STUDENTS

Stipend: A minimum stipend for in-time, full time students in the program is approved each year by the Medical Sciences Program. The 2018-2019 regular support is $21,000/year for MSc and $24,000/year for PhD students. The stipend typically includes a contribution from the supervisor, a program scholarship and/or a teaching assistance support. Students can expect minimum support for either 2 years at the MSc or 4 years for PhD level. Students are encouraged to finish their degrees on time as MSc students who are overtime (in third year) and PhD students who are overtime (in fifth year) are not guaranteed funding.
Salaries of students who hold external or internal scholarships will be adjusted according to our Program website at
http://fhs.mcmaster.ca/medsci/financial_information.html. **Important note**: The amount of program scholarship awarded decreases with the level of funding provided by external awards.

Students are encouraged to seek external funding opportunities since this is important for their CV and brings prestige to the University.
Important information about the distribution of graduate payments is available on the School of Graduate Studies website at
http://gs.mcmaster.ca/resources

For information of the composition of their individual funding, students should contact the Medical Sciences Program Office.

It is the students' responsibility to contact their supervisor a couple of months before their funding expires and discuss the possibility of further support. If the supervisor is willing to continue to financially support his/her students that will be overtime or out-of-time, they should inform the Medical Sciences program staff as soon as possible.

In some circumstances, the student may be asked to repay all or a portion of their funding (i.e. overpayment, degree completion prior to final month in program). Each situation is addressed individually, and you will be contacted by the program office. It is the responsibility of the student to ensure he/she budgets their finances appropriately and is prepared in the event of a repayment.

Teaching Assistantships

Each year, the Program receives an allocation of Teaching Assistantships (TAs) to help support our students. These TA positions not only provide financial support but also provide an excellent teaching experience for students. The number of TAs available usually falls short of demand. Thus, at present, the Program offers half-TAs (equivalent to 130 hours of teaching) to most of the students. MSc and PhD students can receive a maximum of two years and four years of TA support, respectively. TA awards and conditions of employment are regulated by the School of Graduate Studies and by the collective agreement between the university and CUPE Local 3906.

Awards

A variety of internal and external scholarships are awarded each year, and graduate students are encouraged to submit an application to all for which they are eligible. Details on External Scholarships and Internal Scholarships, Bursaries and Travel Scholarships may be found on the School of Graduate Studies website. Students will receive e-mail notification of outlining procedures for applying for the scholarships. Both internal and external awards may be used either

to add to, or to make up, the minimum student stipend at the discretion of the student's supervisor and the program manager in accordance with policies outlined in Graduate Calendar.

All students must provide a copy of any external funding to the Medical Sciences program office in HSC-4H4.

VACATIONS

Students are permitted two weeks of vacation plus statutory holidays and university holidays while enrolled as full-time students. Please see section 2.5.8 of the School of Graduate Studies Calendar.

LEAVES OF ABSENCE

If students require a leave of absence for specific reasons such as medical leave or parental leave they should consult the Graduate Calendar section 2.5.7 for eligibility and forms to be completed Leaves must be approved by the School of Graduate Studies. Any absence from the laboratory for any reason should be brought to the attention of the student's supervisor.

PETITIONS FOR SPECIAL CONSIDERATION

In addition to requests for a leave of absence, other situations may require a Petition of Special Consideration. These might include requests for bereavement leave for the death of a family member. Students should consult section 2.5.9 of the Graduate Calendar.

PERMISSION TO WORK AT MCMASTER

Full-time graduate students who wish to work at McMaster outside of their TA employment must consult section 2.5.4 of Graduate Calendar.

SUPERVISION AND THE SUPERVISORY COMMITTEE

Each graduate student will be supervised by a Supervisor who is a member of graduate faculty and additional faculty who will provide leadership and guidance to the student throughout the time that the student is registered in the Program. The Supervisory Committee will consist of 3 Faculty members (including the Supervisor), two of which must hold supervisory privileges in the Medical Sciences graduate program. Faculty members who agree to supervise students should see the Graduate Calendar outlining their responsibilities (see Section 1.2). In some cases a fourth member may be added to the Supervisory Committee if additional expertise is warranted. This request for an external faculty to sit as a member of the Supervisory Committee requires a letter stating the reason for the request as well as the faculty members CV. The appointment of any committee member that is not a faculty member of McMaster University must be approved by the Associate Dean of Graduate Studies (FHS) and the Dean of the School of Graduate Studies.

Supervisory Committee

The supervisor is responsible for assembling a Supervisory Committee usually consisting of the Supervisor and two other faculty members. Changes to the Supervisory Committee membership including the Supervisor are only considered under exceptional circumstances as outlined in the Graduate Calendar (see section 1.2.4 on The Supervisory Committee). If the supervisor leaves the University temporarily, or is on extended research leave, or is required by the University to perform

other duties which prevent effective supervision, the supervisor must make formal arrangements for an interim supervisor (usually another Supervisory Committee member) in consultation with the Assistant Dean of Medical Sciences and their Departmental Chair.

Supervisory Committee Meetings

The Supervisory Committee must meet with the student within six months from the time that the student first registers in the Program. Before the first meeting of the Supervisory Committee, the supervisor will provide the Area Coordinator with an Education Plan for the student which may be downloaded from the web at: (http://fhs.mcmaster.ca/medsci/documents/MS-EDUC-PLAN.doc). The Education Plan, which must be completed by the end of the third month of registration in the graduate program, will name the chosen committee members, summarize the student's thesis topic, identify the required Graduate Courses (M, D or EC) to be taken by the student, identify the forum in which to present a research seminar (e.g. Smooth Muscle, Allergy and Immunology, Vascular Biology Group) and provide the date of the first supervisory committee meeting. If any changes are made in the Education Plan the Area Coordinator must be informed by the Supervisor.

It is the responsibility of both the student and the Supervisor to schedule regular committee meetings. The purpose of these meetings is to discuss the progress of the student. The Area Coordinator will attend the first supervisory committee meeting as a non-voting observer to acquaint him/herself with the student and members of the committee. The Area Coordinators provide a useful channel of communication between graduate students and supervisors and can assist the Assistant Dean of Medical Sciences and the Associate Dean of Graduate Studies (Health Sciences) in cases of conflict resolution. After the first meeting, each student is expected to meet with his/her Supervisory Committee at least once a year and in some cases, the committee may recommend more frequent meetings. A Supervisory Committee meeting may be particularly important if the student is having academic problems or difficulties with the research project. On these occasions, more frequent, follow up meetings may be recommended.

Supervisory Committee Reports

One week prior to each Committee Meeting, students will forward a written report to committee members outlining their progress to date and planned experiments. The Report should be organized into sections including Introduction, Hypothesis, Specific Aims, Methods, Results, Discussion and Future Directions. The Report should not exceed 25 pages double spaced including Figures and References and should be viewed as a learning tool in the art of communicating science. At the end of the meeting, a Supervisory Committee Report Form will be completed and forwarded to the Medical Sciences Office (HSC-4H4). The MSc and PhD Report forms can be found on Medical Sciences website at http://fhs.mcmaster.ca/medsci/booklets_and_forms.html
On the report, each committee member must indicate whether the progress made by the student has been excellent, satisfactory, marginal or unsatisfactory. It is the responsibility of the student and Supervisor to ensure that PhD students have a committee meeting at least once per year or the supervisor will be penalized in the amount of $8,000. If a marginal or unsatisfactory grade is given by any one member, another committee meeting must be held within three months to re-assess the student's progress and the Area Coordinator or Assistant Dean may be invited to attend this meeting at the request of either the student or the supervisor. A student with unsatisfactory or marginal ratings on one or more supervisory committee reports may be required to withdraw from the Program.

ORIENTATION AND SGS MANDATORY COURSES

All graduate students, including part-time students, must complete two SGS courses within the first 12 months after admission. These two courses are:
SGS#101 - Academic Research Integrity and Ethics and
SGS #201 - Accessibility for Ontarians with Disabilities Act (AODA).

Students may not register for subsequent years or graduate until they have completed these courses**.** See section 2.6.5 of the School of Graduate Studies Calendar. A series of orientation sessions is provided for all new graduate students at the beginning of every year. These sessions include: Bio-safety training; Central Animal Facility orientation; WHMIS; Fire Safety lecture; Waste Management; Radio-isotope management (if required for their project); Health Sciences Library Tour. On-line health and safety courses must also be completed regarding slips, trips and falls, ergonomics and asbestos. Most of these sessions are mandatory and students who do not attend the mandatory sessions will not be allowed to work in research laboratories or in the central animal facility. Annual update sessions are also required for WHMIS, Biosafety and Fire Safety. Depending on the nature of the research additional training may be required and recommended by their supervisor.

COURSE REQUIREMENTS FOR MSc AND PHD DEGREES IN MEDICAL SCIENCES

At the MSc level the candidate must complete, with at least B- standing, at least one half 700-level graduate course in Medical Sciences, and one graduate-level half course in Medical Sciences or any other Faculty (with approval from the supervisory committee and Assistant Dean of Medical Sciences).
A candidate for the Ph.D. degree must comply with the School of Graduate Studies Regulations for the Degree Doctor of Philosophy, including the completion of the equivalent of three half graduate courses beyond the B.Sc. or one additional half course in Medical Sciences beyond those required for the Master's degree. The three half courses beyond the B.Sc. must include at least one half 700-level graduate course in Medical Sciences, and two graduate-level half courses in Medical Sciences or any other Faculty (with approval from the supervisory committee and Assistant Dean of Medical Sciences). If the additional half course beyond those required for the Master's degree is taken outside of the Faculty of Health Sciences, the approval of the candidate's supervisory committee and the Assistant Dean is required.

Every opportunity is extended to the students enrolled in any graduate course to provide feedback to the course coordinator (e.g. relevance and quality of content, quality of instruction, work-load, etc.) and program courses are formally evaluated. The Course Coordinator will provide each student with an opportunity to complete an anonymous electronic Instructor and Course Evaluation, which are compiled and forwarded to the instructor and Assistant Dean.

Registration

Students must access the Mosaic system to register for courses and add or drop courses. If students have completed their course requirements, they must indicate on Mosaic that they are continuing to conduct research.

A student wishing to take a course must get the permission of the Course Coordinator before registering for that course. A course outline will be provided by the Course Coordinator to graduate students. The outline must specify the following: the content and duration of the course; the nature

and timing of course assignments; the method of assessment that will be used to evaluate the student's work and any penalties that may be assessed for lateness. If the course is to extend beyond the academic term or session, or if assignments are to be due beyond the end of term or session, such arrangements must be specified clearly in the course outline. A Course Coordinator will be allowed some flexibility to shift the focus of the course as research in a particular field may evolve over time. However, the amount of work expected, the schedule of assignments and due dates, and the procedures for evaluation should not change without approval. The Course Coordinator is responsible for keeping students informed (in writing) of any changes to a course (e.g., lecture and assignment dates) as it progresses.

Course failure

A student who fails to obtain at least a B- grade in a Graduate Course is normally asked to withdraw from the Graduate Program. In some cases, the student's Supervisory Committee, and Assistant Dean, may advise the Associate Dean of Graduate Studies (Health Sciences) that the student should: a) take an alternative course, or b) repeat the course. Such a recommendation should be made in writing to the Associate Dean of Graduate Studies (Health Sciences) within one month of the student's grade being announced, outlining the possible reasons for the failure. The Associate Dean will consider this request and make a decision on withdrawal recommendations on behalf of the Faculty's Graduate Admissions and Study Committee. If a student is ill or absent for personal or family reasons prior to an examination or course deadline, this must be brought to the attention of the Course Coordinator as early as possible, so that the examination or deadline can be deferred at the Course Coordinator's discretion. Excuses made after the fact will not be accepted.

Withdrawal from the Program

Any student wishing to withdraw for personal reasons is expected to submit a Request for Change in a Graduate Student's Status form, accompanied by a letter outlining their reason for withdrawal. The form is available on the web at
https://gs.mcmaster.ca/resource-category/student-forms-guides

RESEARCH SEMINAR REQUIREMENT

In addition to the course requirement for the MSc and PhD degrees, all graduate students in Medical Sciences are expected to present at least one research seminar at McMaster during their MSc and their PhD studies. These seminars should be to a research audience larger and external to the student's usual research group and provide the student with the opportunity to answer questions about their research. There are regular forums (e.g. Smooth Muscle, Allergy and Immunology, Vascular Biology Group, FHS Research Plenary, Medical Sciences Research Day) in which to present a research seminar (a poster presentation does NOT qualify). If there is no appropriate forum in which to present a seminar, the Assistant Dean of Medical Sciences should be consulted to discuss with the Supervisor and Area Coordinator where and when the student may present. This information should be provided by the Supervisor on the student's Education Plan, MSc and PhD committee report forms or in a separate letter stating when the student fulfilled this requirement.

TRANSFER FROM MSc TO PhD DEGREE

The Program encourages students who are making excellent progress with their project and desire to continue onwards for a PhD degree to consider transferring directly into PhD degree without defending their MSc. Generally, a student who wishes to transfer to the PhD program prior to the

completion of a master's degree will be expected to have completed the course requirements for the MSc (one full course or equivalent) with at least a B+ average. If, however, the course requirement is not complete at the time that the student wishes to transfer (e.g. a desired half-course is not offered until the following academic year), then a letter seeking permission to proceed with the Transfer should be sent to the Assistant Dean of the Medical Sciences Program requesting the transfer and the student needs to complete a Petition for Special Consideration form to the Program, who will forward the request for consideration of approval by the Associate Dean of Graduate Studies (Health Sciences). Students wishing to transfer should see section 2.1.2 and 2.1.3 of the General Regulations and the statement entitled "Policy and Procedure for Transfer from MSc to PhD - Medical Sciences" of the School of Graduate Studies Calendar.

Transfer procedure

Students requesting to transfer from the MSc to the PhD program will indicate their intention to transfer at their 2nd or 3rd supervisory committee meeting (no sooner that 8 months, and no later than 22 months after registration in the MSc program). For the committee meeting, the student must submit a one-page outline of the PhD project, including hypothesis and specific aims. The supervisory committee will then reach a consensus on one of the following recommendations:
1. Proceed to PhD without completing MSc 2. Do not proceed to PhD, but complete MSc degree.
Following the meeting and the decision, the supervisor must submit a letter to the Assistant Dean of Medical Sciences indicating the rationale for the student to be transferred to the PhD program.

ADMISSION TO THE PhD PROGRAM FOR STUDENTS COMPLETING AN MSc DEGREE

The following procedure will be used for students completing an MSc and wanting to transfer to a PhD program.

The student, having completed at least the first draft of his/her MSc thesis, and the supervisor shall call a supervisory committee meeting. If the Supervisory committee agree that the student should proceed to the PhD stream, then the supervisory committee form shall be completed to provide the following information:

i. A statement from the supervisory committee that the student should be admitted to the PhD Program (with a letter of agreement appended from the proposed supervisor to the funding of the student).

ii. An approximate date when the student expects to have defended the MSc thesis.

iii. The signature of the Area Coordinator which indicates that the Area Coordinator is prepared to recommend the student to the Admissions Committee for admission to the PhD stream with the proposed supervisor. The student should also append a letter of support from the proposed supervisor if they wish advanced credit for one half graduate course taken in excess of the minimum requirement for the MSc degree; such requests are handled by the Assistant Dean, who then forward a recommendation to the Associate Dean of Graduate Studies (Health Sciences).

iv. The student will be expected to submit the signed form from the supervisory committee to the Admissions Officer together with the letter, and transcript. When complete, the student's application to join the PhD Program will be submitted by the Chair of the admissions Committee to the School of Graduate Studies for Associate Dean's approval.

v. If the Admissions Committee approves the student for admission to the PhD Program, then a "Request for Change" form will be submitted by the Chair of the Admissions Committee to the School of Graduate Studies for Associate Dean approval.

vi. It is conceivable that a student could be admitted to the PhD Program before having completed all requirements for the MSc degree, for example, if they transfer after the first year of graduate studies. Such requests for approval ("to be concurrently registered in both the MSc and PhD Programs") are normally consider for up to two months.

PhD COMPREHENSIVE EXAMINATION

It is a University regulation that PhD students must pass a Comprehensive Examination before they can be awarded a Doctoral Degree. The purpose of the Examination in the Medical Sciences Graduate Program is to establish that the doctoral student has acquired the intellectual skills and abilities appropriate for an individual embarking on a career as an independent scientist.

The first attempt of the Comprehensive Examination must occur within twenty-one months of a student's registration in the PhD program. In the event that a re-examination is required, it must be completed within twenty-three months of the student's initial registration in the program. No Medical Sciences Program Comprehensive Examinations may take place in August.

The central aims of the Comprehensive Examination are to evaluate the doctoral student's ability to acquire and critically appraise information on a health topic relevant to the CIHR mandate, to formulate a hypothesis addressing an outstanding question in the field, and to design an experimental plan to test this hypothesis. These goals are to be achieved in the form of a CIHR-style grant proposal, acknowledging that creative writing is critical for the student's future success.

The key elements examined during the Comprehensive Examination are the efficient assimilation of essential information about the specific topic, the identification of important issues, the formulation of a hypothesis that brings order into the field under review, and the validity of the experimental plan. The student will be expected to present and defend his/her grant proposal. This includes providing reasoned arguments in support of his/her interpretation of the scientific area under study, demonstrating his/her ability to use the information acquired to formulate a hypothesis, and rationalization of the weaknesses and strengths of the experimental approach.

The grading of the Comprehensive Exam is Pass, Pass with Distinction or Fail. In the event that a second examination is required, this must be completed within twenty-three months of registration as no Medical Sciences Comprehensive Examinations take place in August.

Only two attempts at the Comprehensive Examination are permitted under any circumstances. If a student fails both attempts at the Comprehensive Examination, he/she will be requested to withdraw from the PhD Program. However, a student who has transferred from the MSc Program may be permitted to complete their MSc degree, if this is recommended by the Associate Dean of Graduate Studies (Health Sciences).

The Comprehensive Examination consists of a written and oral part. The written component of the Comprehensive Examination is a Canadian Institutes of Health Research (CIHR) -style grant proposal. In the oral component of the Comprehensive Examination, the student is expected to provide reasoned arguments in support of his/her interpretation of the scientific area under study, to demonstrate his/her ability to use the information acquired to formulate a hypothesis, and develop an experimental plan that addresses the hypothesis, to rationalize weaknesses and strengths of the experimental approach.

Selection of topics

After careful consideration, the Student and Supervisory Committee must agree on the topic of the grant proposal that will be of interest and value to the student and which merits independent study. The topic may be related to the student's work, but must be an extension thereof or a new direction, and cannot be identical in content to any of the grants held or submitted by the supervisor. The topic may also be unrelated to the student's area of research.

Responsibilities for ensuring that the proposed research is genuinely novel rests initially with the student, who could be considered guilty of academic dishonesty, if a proposed research plan was subsequently found to be copied from any existing funded or applied for grant proposal. Students must therefore declare any related work on the registration form, when registering for their comprehensive examination with the program, so that no misunderstanding can occur.

Timing of the examination

The University expects PhD students to take the Comprehensive Examination between 12 and 20 months after registration and requires that students complete the examination within 24 months of registration. Exceptions require the approval of the Faculty Committee on Graduate Admissions and Study. Students are therefore normally expected to take the examination during the first or second term of the second year following their entry into the doctoral program and must complete their first attempt of the examination by the end of the twenty-first month and their final attempt by the end of the twenty-third month following the start of their doctoral studies in Medical Sciences. These time limits will be strictly enforced, except in cases of documented major medical problems or approved leaves. Any student who has not completed his/her first attempt at the Comprehensive Examination by twenty-one months will be considered to have failed in the first attempt and will only be permitted one further attempt within the following two months. A student who has not completed the examination within twenty-three months of entering the PhD Program in Medical Sciences will be asked to withdraw from the Program. There are three specific dates each year by which the students must register for the Comprehensive Examinations.

Time to prepare

Because the Comprehensive Examination is part of a PhD student's graduate training at McMaster, the final choice of the topic rests with the supervisory committee. After submission of the registration form, the student is not permitted to spend more than five weeks in preparation of the written part of the examination. An additional week (seven calendar days) is allowed for the completed grant proposal to be appraised by the Examiners. During this period, the student is expected to prepare for his/her oral presentation.

Once the date of the examination has been set, it may only be delayed for reasons of ill health or a similarly weighty reason. If a student fails to complete the grant proposal in time without such a reason, the student will be considered to have failed the first attempt at the examination. After a second failure to submit the proposal on time, the student will be considered to have failed the Comprehensive Examination and will be asked to withdraw from the PhD Program.

Composition of the examining committee

The examining committee will consist of one external examiner (voting) who will be chosen by Assistant Dean (Medical Sciences), the Area Co-coordinator (or designate) of the relevant Medical Sciences Area (voting) who will also chair the examination, a member of the supervisory committee (COMP advisor; voting), and the supervisor (non-voting). Only one member of the student's supervisory committee may be a voting member on the Examining Committee. At least two of the examiners must be from the Graduate Faculty, defined as those faculty approved for participation in the Graduate Programs in Health Sciences. It may be appropriate in some cases to include a faculty member from another graduate department at McMaster. The Assistant Dean (Medical Sciences) will select the external examiner, after taking into consideration those suggested by the Supervisory Committee. The final selection will be based upon the expertise and availability of the faculty suggested by the supervisory committee. In the case of a re-examination, the Examining Committee will, where possible, remain the same. The Assistant Dean (Medical Sciences) may act on behalf of the supervisory committee in approving topics.

Composition of the re-examination committee

In the event that a candidate's first attempt is considered unsatisfactory, either the Assistant Dean of Medical Sciences or a senior faculty member delegate (usually an Area Coordinator) **must** attend the candidate's second examination attempt. In either case, he/she will not take part in the examination and will not vote on the candidate's performance. The purpose of his/her presence is to ensure that proper procedures are followed and that examinations are comparably conducted. He/she may be asked by the Examination Committee to comment on these points.

Role of the examination chair

The Program Coordinator (or designate) of the relevant Medical Sciences Area will chair the comprehensive examination. The Comprehensives Board of the Medical Sciences will designate an alternate Chair, if the student’s supervisor is the corresponding program area coordinator. The chair will ensure that the rules governing the conduct of the examination are observed by both the Examiners and the student and maintain comparable examination standards from one occasion to another.

The Chair must ensure that the examination takes place in a constructive atmosphere, and that the Examiners’ questions are both pertinent (i.e. fall within the boundaries of the topic) and sufficiently probing. The Chair may also question the candidate. He/she may wish to rephrase questions/answers for clarification or bring a line of questioning to a close if the limits of a student’s knowledge or understanding have been reached. The Chair also makes brief notes of the Examiners’ questions and of the student’s responses.

Role of the comprehensive examination advisor

The comprehensive examination advisor will guide the student in preparing for the Comprehensive

Examination by helping to define the limits of a topic and by offering help with interpretation of difficult points. The comprehensive examination advisor normally meets with a student on two or three occasions prior to the examination, but should not read or comment on the draft or final proposal prior to the examination. A copy of the grant proposal must be provided to each examiner and, in addition, an electronic copy must be submitted to the Medical Sciences Program office by 3 p.m. on the corresponding submission deadline date. All examiners must read the research proposal. All voting examiners must bring their completed evaluation forms of the written grant proposal to the examination using the form provided by the program. These evaluations must clearly indicate whether or not the proposal is acceptable. These evaluations will later be forwarded to the student by Medical Sciences Program.

During the oral examination, each examiner is expected to ask questions related to the topic of the grant proposal, and the strengths and weaknesses of the experimental plan. Examiners should ask questions that probe the depth of the student's knowledge and require the student to use his/her reasoning powers. Examiners should avoid providing answers to questions and should not prompt the student. Examiners may take notes of their questions and the answers if they wish, but are not required to do so.

Role of the supervisor

The role of the supervisor is restricted to helping the student select possible topics for examination and suggesting possible examiners. Since the Comprehensive Examination is intended to provide an independent evaluation of the PhD student's abilities, the supervisor is not expected to help his/her student prepare for the examination. The supervisor must not make any demands (for laboratory work etc.) on his/her student during the five weeks that the student devotes to the Comprehensive Examination. A supportive and encouraging attitude is expected, since this may be a stressful time for the student. The supervisor, as a non-voting member of the examination committee, will be allowed to ask questions and will be part of the deliberations.

Preparation for a comprehensive examination

1. Each student who is required to take the Comprehensive Examination will be notified in writing by the Medical Sciences Program Office. This letter will be sent after the student has been in the PhD Program for 9 months. Along with this letter, the student will receive a schedule of registration dates and the registration form. Copies of the letter will be forwarded to the student's Supervisory Committee and Program Area Coordinator.

2. The members of the supervisory committee will agree on a comprehensive examination advisor. The Supervisor must reply to the Medical Science Program office indicating when the student intends to take the examination and the name of the COMP advisor.

3. The student will meet with the comprehensive examination advisor to clarify the examination procedures and complete the Medical Sciences Comprehensive Examination Registration Form (available on Medical Sciences website). It is the student's responsibility to submit the form (in hard copy and e-copy) to the Medical Sciences Program Office by 3 p.m. on the day of registration. **Failure to submit the form by that time will disqualify the student from taking the comprehensive examination in the corresponding round.**

4. The student will prepare a CIHR-style grant proposal. It is expected that the comprehensive examination advisor will offer the student help in locating key references and review articles, as

well as in the discussion and interpretation of difficult points, and the formulation of the hypothesis. However, the student should not expect the comprehensive examination advisor to comment on the text of his/her grant proposal prior to their submission. The comprehensive examination advisor must make him or herself available to meet with the student on two or three occasions to discuss aspects of the grant proposal.

5. The grant proposal will follow CIHR guidelines (minimum 10 pages - maximum 11 pages excluding references and figures, plus a one-page summary). A progress report, response to previous reviews, expertise and resources, budget and CV module as denoted by CIHR are not required. All text must be single-spaced, font size 12, with references cited by number. References given in the proposal must be cited in full, using a single consistent journal style, and must include the title and first and last page numbers. Students will be assumed to have read all references cited, unless the reference is unobtainable, in which case the secondary source must also be cited (e.g. reference # in [#]). Please note: a) letters of collaboration are not required; b) a detailed budget is not required however, students are to assume an average budget of $100,000 to $150,000 per annum and a 2-5 year funding time-frame; c) students may include their own preliminary data; d) students do not have to be experienced in the technology but should have an understanding as to the strengths and limitations of the proposed research.

6. The Graduate Program Officer will book a room for the examination and send written confirmation to the student, his/her supervisor, the examiners, and the program area coordinator. The examination form will be sent to the Examination Chair. Students should feel free to contact the Examination Chair or the Graduate Program Officer at any time for a progress report, or if they experience difficulties of any sort. The examination room will be equipped with Computer, AV equipment & Smart Board technology.

7. The student must deliver a copy of the grant proposal to all members of the Examining Committee and submit an electronic copy of the grant proposal to the Medical Sciences Program Office by 3 p.m. on the submission due date. If a grant is received late without adequate reason, examiners will have the option of failing the student. The cost of providing copies of the grant proposal is the responsibility of the student. At this point, the student may contact the Examination Chair to review the final steps in the procedure and to clarify any questions they may have about the oral examination.

<u>The examination</u>

The Examination Committee will meet 15 minutes before the scheduled time of the oral examination. The Chair will first brief the examiners on the aim of the examination and the procedures that will be followed. This briefing is of particular importance to faculty who function infrequently as examiners. The Examination Committee will also discuss the written evaluations of the grant proposal provided by each examiner and areas that require probing in the oral examination. These preliminary discussions will take place in the absence of any observers. A maximum of 2 hours and 15 minutes will be allowed for the oral examination.

The Chair will then allow a brief recess during which the candidate and any observers may enter the room. AV equipment is to be set up prior to the examination. The Chair will then allow 15 to 20 minutes for the student to present his/her proposal. Although visual aids may be used and brief notes consulted, the student’s presentation may not be read from a prepared text. No interruptions are permitted during a student’s presentation.

Each examiner is expected to question the student at the end of the presentation. Questions should be fair and non-threatening and the student should be given sufficient time to digest questions and to formulate answers. The Chair may rephrase or clarify questions asked by the examiners. The Chair should terminate any line of questioning that proves unproductive.

At the end of the examination, everyone except the Examining Committee is asked to withdraw while the Committee assesses the performance of the student. The Chair secures the written votes of the Examiners (the Chair, the comprehensive examination advisor and the External) on the form provided. The student's supervisor is a non-voting member of the examination committee but will be allowed to ask questions and be part of the deliberations. The supervisor will not vote and cannot influence the pass/fail decision or the pass with distinction decision. For a student to pass the unanimous approval of the examiners is required; abstentions are not permitted. In the case of a negative vote or votes the Committee will determine the requirements for re-examination of the student, specifically whether the written grant must be revised and whether the topic must be re-examined orally. The Chair will then communicate the decisions of the Examining Committee to the student verbally and send the original signed examination form to the Program Office, which will forward the completed form to SGS.

Assessment of the examination

The examiners will evaluate the written and oral components of the examination separately and must unanimously agree that the student's performance is satisfactory in both written and oral components for a pass to be granted. The key elements examined in the written component of the Comprehensive Examination are, the significance, impact or importance of the work proposed; the likelihood that it will, directly or indirectly, lead to the creation of new knowledge, the originality, or novelty of the concepts and hypotheses being pursued in the application, the innovation shown in the approach to the research problem, and the appropriateness of the research plan, including its feasibility and the use of the best available methodologies. Please refer to the criteria for assessment outlined in the table below. Failure to meet the designated length of the grant proposal or to address the topic adequately is unacceptable and will be considered as an unsuccessful first attempt, regardless of the student's performance in the oral examination. All examiners (the Chair, comprehensive examination advisor and the External) must bring the completed evaluation forms of the grant proposal to the oral examination. These evaluations must indicate clearly whether or not the grant proposal is acceptable. For the oral component of the Comprehensive Examination, the student is expected to provide reasoned arguments in support of his/her interpretation of the scientific area under study, to demonstrate his/her ability to use the information acquired to formulate the hypotheses, and to rationalize weaknesses and strengths of the experimental approach. Comprehensive knowledge of the basic concepts and facts relating to the disciplines that underlie the grant proposal and the field of the student's thesis work will be expected upon questioning by the examiners. After the examination, the Chair of the Examining Committee will summarize the opinions of the Committee with respect to the written proposal and oral examination, and within one week, will send this written summary together with the evaluations of individual examiners to the Medical Sciences Program Office, which will then forward copies to the Student, the Supervisor and the Assistant Dean of Medical Sciences. These written reports are sent whether the student passes or fails. At the same time, if re-examination is required, the Chair of the Examining Committee will inform the student in writing.

Criteria for Assessing the PhD Comprehensive Examination: Written Proposal

Criterion	Pass	Fail
Conforms to requirements and includes all components	Conforms to the requirements outlined in graduate handbook including introduction and background, problem statement and research questions, literature review, research design and methods, feasibility and timeline. Submitted within prescribed parameters (e.g., page length).	Does not conform to the requirements and does not include all components.

Criterion	Excellent	Satisfactory	Unsatisfactory
Coherence (Conceptual Organization)	Comprehensively summarized the evidence, commonalities and discrepancies across literature to address the purpose/hypothesis of the proposal. Identified novel ideas and solutions. Reasoned persuasive	Summarized the evidence to address the purpose/hypothesis of the proposal. Arguments are presented to support interpretation of the issues under study.	There is limited or weak summary of the evidence to address the purpose/hypothesis of the proposal. Arguments to support interpretation of
Presentation and Quality of Writing	Paper is very well organized. Ideas flow very logically and clearly. Grammar and spelling are consistently accurate.	Proposal is well organized. Ideas flow logically and clearly. Grammar and spelling are mostly accurate.	Paper is not well organized. Ideas do not flow logically and clearly. Many errors in grammar and spelling.
Significance	Very clear statement of purpose/hypothesis of the proposal. Thorough support provided for importance of the research using relevant literature. Clear rationale for relevance of the research. The	Clear statement of purpose/hypothesis of the proposal. Some evidence provided for importance of the research. Some rationale for the relevance of the research.	Lack of clear purpose statement. Limited discussion of rationale for the research and relevance. Purpose is not well addressed in the proposal.
Originality	An innovative hypothesis is proposed with novel techniques/approaches.	Some innovation in the hypothesis and or methods is proposed.	Study proposed is very similar to recent work and there is little to no innovation in the hypothesis or approaches.
Appropriateness of the Research Plan	The research plan will test the hypothesis and proposes to use novel tools and appropriate methodology. The aims/objectives are integrated but are not dependent on one another. The proposed plan is feasible with sound justification for testing hypothesis and is within the ethical standards of the field of research.	The research plan will test the hypothesis and proposes to use appropriate methodology. The aims/objectives are somewhat integrated. The proposed plan is feasible with some justification for testing hypothesis and is within the ethical standards of the field of research.	The research plan does not adequately test the hypothesis. The rationale for the study is poorly described. Methods are poorly described and unsubstantiated and do not test hypothesis. The aims/objectives are not integrated well and

Criteria for Assessing the PhD Comprehensive Examination: Oral Defense

Criterion	Excellent	Satisfactory	Unsatisfactory

Knows the material	Critical appraisal and knowledge of a wide range of literature relevant to the proposal and leading to the research question. Comprehensively identified and presented methodological strengths and limitations of the	Critical appraisal and knowledge of the literature to support the research question. Identified and presented some of the methodological strengths and limitations of the included	Limited critical appraisal of the literature and presentation of the methodological strengths and limitations of the included literature.
Understand the fundamentals of the topic of the proposal	Demonstrated a clear and cohesive understanding of the fundamental concepts related to the proposal.	Demonstrated a general understanding of the fundamental concepts related to the proposal.	Limited understanding of the fundamental concepts related to the proposal.
Shows adequate critical analytical sense	Consistently demonstrated critical analysis and thinking throughout all aspects of the oral exam.	Demonstrated a moderate amount of evidence of a critical analysis in the oral exam.	Limited or no evidence of a critical analysis throughout the oral exam.
Can apply knowledge to answering questions	Demonstrated a great ability to address questions that were posed during the oral defense.	Demonstrated a moderate ability to address questions that were posed during the oral defense.	Was unable to address questions that were posed during the oral defense.
Ability to present and defend an argument	Excellent ability to present evidence to support and defend arguments discussed during the oral defense.	Moderate ability to present evidence to support and defend arguments discussed during the oral defense.	Was unable to present evidence to support and defend arguments discussed during the oral defense.

Pass with Distinction

Students who are deemed by all the examiners to have performed outstandingly in both written and oral parts of the Comprehensive Examination will be awarded a pass with distinction.

Re-examination

If a student fails his/her first attempt at the Comprehensive Examination, the student will be given a maximum of three additional weeks to undergo re-examination of the written and/or the oral component. If the revised grant proposal is judged to be unsatisfactory, the student will be deemed to have failed without a second oral examination and no further attempt at the Comprehensive Examination will be permitted. If the student fails the second oral examination following a second and successful attempt at producing an acceptable grant proposal, a failure will be recorded and no further attempt permitted. If a student fails the oral component of the first examination but the written part is satisfactory, then no new grant proposal will be required and the student will only be re-examined orally. Similarly, if a student fails the written part of the first examination but the oral component is satisfactory, then only a revised grant proposal will be required and the student will not be re-examined orally. The examination committee will reconvene also following a 2nd attempt at the written grant proposal which the student will also be required to attend. Only two attempts at the Comprehensive Examination are permitted under any circumstances. The composition of the Examining Committee should, whenever possible, will remain the same for a repeat examination. The procedural rules of the repeat examination and its assessment are the same as for the first examination. If a student fails both attempts at the Comprehensive Examination, he/she will be requested to withdraw from the PhD Program. However, a student who has transferred from the MSc Program may be permitted to complete a Master's degree, if a recommendation is made by the

Supervisor and the Assistant Dean of Medical Sciences and approved by the Associate Dean of Graduate Studies (Health Sciences).

Summary of examination procedures

1. The student receives notification of the Comprehensive Examination after 9 months in the PhD Program. The Student and Supervisor reply and indicate when the examination will be undertaken.

2. The Supervisory Committee will designate one of the committee members (not the supervisor) to assist in the coordination of the comprehensive exam ("COMP advisor") and serve on the examining committee. The COMP advisor will advise the student in the preparation of the grant proposal.

3. The student, in consultation with his/her supervisory committee, will select a topic for the grant proposal. The supervisory committee will identify possible external examiners.

4. The student will register for the comprehensive examination on one of the three pre-set dates for each academic year by completing and submitting the comprehensive exam form. The student will then have five weeks to prepare the written grant proposal (11 pages, excluding the one-page summary, references and figures).

5. The Assistant Dean (Medical Sciences) will select the external examiner based upon the suggestions of the supervisory committee. The Medical Sciences Program Office will recruit the external examiner and arrange the date of the examination.

6. The student will deliver a hard copy of the grant proposal to all members of the examining committee, including the external examiner by 3 p.m. on the pre-set submission date. In addition, an electronic copy of the proposal must be e-mailed to the Medical Sciences Program Office. **Please note: if a student fails to submit their grant proposal to all committee members on/by the pre-set submission date without adequate reason, the examining committee will have the option of failing the student's first attempt at the examination.**

7. Prior to the exam, all Examiners will assess the written grant proposal by completing the evaluation form.

8. The student will present and defend the grant proposal to the Comprehensive Examination committee, and answer questions relevant to his/her PhD thesis field.

9. The Examination Chair will inform the student verbally of the result of the examination and send the original signed examination form to the Medical Sciences Program Office.

10. The Examination Chair will send the written evaluations of the grant proposal and a summary of the Committee's opinion of the student's oral performance to the student and the Medical Sciences Program Office. Copies of this letter and the evaluations forms will then be forwarded on to the student and supervisor.

MSc AND PHD THESIS REQUIREMENTS

Thesis format

Students should consult the School of Graduate Studies booklet entitled *"GUIDE FOR THE PREPARATION OF THESES"*, that explains the style and format of the thesis. This can be found at https://gs.mcmaster.ca/resources

MSc THESIS REQUIREMENTS

The customary format for the MSc thesis is the traditional integrated document consisting of separate sections including Introduction, Methods, Results, and Discussion. In recent years there has been a trend to a "sandwich thesis" format, whereby the thesis is constructed around a core of papers that the student has either published or submitted for publication. Information on the regulations regarding the use of the "sandwich format" is available at the following website: https://gs.mcmaster.ca/sites/default/files/resources/guide_for_the_preparation_of_masters_and_doctoral_theses-_december_2016.pdf
Most MSc students will not have prepared sufficient publications within their 2 years of graduate studies in the Program allowing them to use the sandwich thesis format. If however, this is not the case and MSc students wish to use the sandwich thesis format then they should be aware that the Medical Sciences Graduate Program has additional requirements for a sandwich thesis including the following items:

a) All of the student's work must be presented in this format and based on published manuscripts, papers that are in press and papers that have been submitted for publication. Other experimental results can only be included in Appendices.

b) The student must be the first author on a majority of the papers and a major contributor to all the papers included in the body of the thesis.

c) In a 'sandwich thesis', the methods used must be described in detail, either in a separate chapter or in Appendices.

d) The student's supervisor (or acting supervisor) and Supervisory Committee will be responsible to the Assistant Dean of the Medical Sciences Program for ensuring that the above Program rules are fully implemented.

"Sandwich theses" that do not comply with these regulations will not be accepted for Defence.

Thesis preparation and defence

Regardless of the format that the student chooses, the procedure for the thesis preparation is as follows:

1. The student asks for permission to write the thesis. This request is considered formally at a Supervisory Committee meeting, usually after the student has summarized the research, which he/she has done to meet the objectives of the thesis work. The committee must agree unanimously with the request. "Permission to write" indicates that the student has essentially completed the

experimental work.

2. A first complete draft should be submitted to the supervisor for critical comments. After revisions and approval by the supervisor, a complete version should be given to each Supervisory Committee member for their comments. The length of the thesis should comply with regulations referred to in Section 2.8.1 of the Graduate Calendar.

3. When revisions have been made, the student submits a completed "*Approval to submit a Master's Thesis"* form to the Medical Sciences Office a minimum of 8 weeks before the expected date of the Defence. Please note that the majority of members of the supervisory committee must have approved the thesis by signing this form before the oral Defence can be arranged. This form is available on the web: http://fhs.mcmaster.ca/medsci/forms.html. The student then distributes a copy of the thesis to all examiners including an external examiner at least one week before the MSc Defence. The external examiner is selected by the Assistant Dean of Medical Sciences, usually from a list of three candidates suggested by the student and supervisor. The external examiner is usually a member of graduate faculty whose research interests may lie outside the student's immediate area of research.

4. **The Master's Thesis Defence is organized by the Medical Sciences Graduate Officers**. The Examination Committee consists of a minimum of four graduate faculty members, of which at least three are members of the student's Supervisory Committee. The Assistant Dean, Medical Sciences will appoint one member (not the student's supervisor or the external examiner) to chair the examination. The MSc Defence will be open to the Faculty of Health Sciences community. The Examination Chair will ask all persons except the Examination Committee to leave the room in order to discuss the format of the examination and the responsibilities of the examiners. The examination will consist of an oral overview (15 - 20 minutes) of the thesis given by the student, followed by a series of questions asked by the members of the Examination Committee in turn. All examiners are expected to ask at least one relevant question.

At the end of the Defence, the Examination Committee will consider their verdict in closed session. The Examination Chair does not normally have voting privileges. The majority rules in case of a split vote, but if there is a "tie" then the Chair must vote to break the "tie". The Chair will then call the student into the room to give the committee's decision. In the event that a re-examination is necessary, the examination committee will remain the same.

When the student has successfully completed their oral examination and has made all required revisions to the thesis as recommended by his/her examining committee, they must file an electronic version of their final thesis to MacSphere and forward the "Final Thesis Submission Form", which was previously signed by the Chair of their examination committee and later by the supervisor, to the Thesis Coordinator at the School of Graduate Studies. For detailed information consult
https://gs.mcmaster.ca/masters-degree-thesis

A student may choose to have their thesis bound for themselves and one copy for their supervisor however the Program does not require a bound copy. The cost of binding is borne by the student, not by the University.

PhD THESIS REQUIREMENTS

The PhD thesis may be submitted in the traditional format or a "sandwich" format. For either format, the entire length of the thesis must not exceed 300 type-written pages, including all figures, tables, references and appendices. If the student chooses the sandwich thesis format, then both the Graduate School rules and the Medical Sciences Graduate Program rules for a sandwich thesis must be followed. For more information see
https://gs.mcmaster.ca/doctoral-degree

Students should refer to the SGS guidelines on preparing a sandwich thesis for details of the requirements. A **minimum** of three published or submitted but not yet published scholarly works must be included within the sandwich thesis. N**ormally, at least one** of these must be published or 'in press"' at the time the thesis is submitted for defense. Students should discuss with their supervisor their thesis work publication plans as normally, requests to embargo a thesis are granted for one year only, with requests for a further one-year embargo considered on a case-by-case basis.

Procedure Leading up to the PhD Defence

1. For information concerning the details of PhD thesis defence see the Thesis Defence Scheduling timetable at:
https://gs.mcmaster.ca/doctoral-degree

The majority of the members of the Supervisory Committee must approve the thesis before the oral Defence can be arranged.

2. Following acceptance of the final version of the thesis by the Supervisory Committee, the student in consultation with their supervisor will submit their request to defend the thesis electronically through the Mosaic system.

The student will receive a confirmation email (to their McMaster email account) with a secure link to complete the thesis title and the estimated date to submit their thesis for examination to the School of Graduate Studies (usually four weeks from the date of the initial request to defend). Once the student has submitted this information, the supervisor will receive an email with a secure link to complete the "Nomination of an External Examiner to the AVP and Dean of Graduate Studies" electronic form. After consultation with the Supervisory Committee the supervisor will complete and submit this form online for the approval of all the committee members. This must be done at least one month prior to the anticipated date of approval of the thesis for submission for defence. Potential examiners should be chosen for their expertise in the area of the student's research and must not be recent collaborators of the supervisory committee members. From this list of recommended examiners, the School of Graduate Studies will contact an examiner and secure her/his agreement to read the thesis. The Supervisor must not contact potential examiners.

3. When the Nominations for External Examiners have been approved the student will receive a "Ready to Propose a Defence Date" email to complete the "Submission of a Doctoral Thesis for Examination and Identification of a Date for Oral Defence" form online. The student will submit the date and time of defence, which should be pre-approved by their supervisory committee. Once submitted, the committee will receive an email that will link them to the submission form to approve the date and time of defence. In addition, each member will indicate that they have read and judged the thesis in the form in which it is to be submitted. This should occur approximately 2 months and not later than seven weeks, before the anticipated defence. The Thesis Coordinator at the School of Graduate Studies (GH-212) and the Graduate Officer for the Medical Sciences

program (HSC 4H4) will be informed of the student's request to defend via email and will have access to the online process. The student usually checks with committee members to see whether they want an electronic or hard copy of the thesis.

4. **The PhD Defence is organized by the Thesis Coordinator in the School of Graduate Studies.** The Examination Committee will consist of the supervisor, two members of the supervisory committee, and an external examiner. The School of Graduate Studies will send a copy of the thesis to the external examiner who will be given one month to read the thesis. The external examiner will report back to Graduate Studies whether or not the thesis is acceptable for Defence. If it is acceptable, the School of Graduate Studies will confirm the date and time and will arrange the location for the examination.

A PhD Examination Chair, appointed by and representing the AVP and Dean of Graduate Studies, will oversee the PhD Defence; the examination Chair does not have voting privileges. If the External Examiner is unable to attend in person the Chair the questions of the External will be asked by the Chair or Supervisor in proxy.

5. Doctoral degree candidates who have successfully completed their oral examination and who have made all required revisions must file an electronic version of their final thesis to MacSphere and forward the "Final Thesis Submission Form", which was previously signed by the Chair of their examination committee and later by the supervisor, to the Thesis Coordinator at the School of Graduate Studies.

PERFORMANCE REVIEW AND APPEALS

Students wishing a review of a course grade or wishing to appeal an academic or non-academic matter or decision should consult the Graduate Calendar and the University Policy on Student Appeals (link below). Any appeals must be filed in a timely fashion as indicated in Graduate Calendar.
http://www.mcmaster.ca/policy/Students-AcademicStudies/StudentAppeal.pdf

CHANGE OF THE SUPERVISOR

Graduate student supervision is described in the sections 2.7 Supervision and 4.5 Supervision (as it relates to the PhD students). The section below outlines procedures specific to the Medical Sciences graduate program. In general, once a student has been accepted in to the program under a particular faculty supervisor, this constitutes a contract between the parties and it is expected that the students will complete their studies under the supervision of the same individual that was indicated as the faculty supervisor in their offer letter. Please note that supervision of a student is a significant investment for a faculty member and their research team. The supervisor not only makes a major funding commitment to the student's stipend and laboratory supplies (and animals for some projects), they also commit their time for supervision. Accordingly, students are expected to commit to working with the same faculty member (as stated on their offer letter) for the duration of their thesis. However, in extenuating circumstances in which the student/supervisor/laboratory working relationship is failing, the program outlines the following important considerations for both, students and their faculty supervisors.

Students:

- If you have any concerns regarding your position as a graduate student, first and foremost you should address them with your research supervisor and discuss an agreement to resolve

the issues. Following these attempts if you feel that the situation has not improved, you can bring it to the attention of your Area Coordinator (or the Area Coordinator of another research area if your supervisor is also your Area Coordinator). Your Area Coordinator will consider discussing it with the Assistant Dean, Medical Sciences, or taking other steps, if needed;

- After following the steps above, if your situation with your current supervisor and lab does not seem viable, the Assistant Dean will suggest the following options:
    1. You can withdraw from the program;
    2. The program will offer additional assistance to both you and the supervisor in working further to improve the relationship;
    3. You can look for another graduate supervisor within the program.

- If you decide to pursue the option #3, please keep in mind the following:

    - The program has no obligation to assist you in finding another supervisor;
    - You have to continue your duties as a graduate student, i.e. working in the lab with your current supervisor, TAing, doing your courses, etc. as specified by the requirements of your program. Failure to do so may result in being withdrawn by the program;
    - If you succeed in finding another graduate supervisor, in order to transfer you will need to complete the Petition for Special Consideration form with both your current and potential supervisors signing it. The transfer will be the subject of approval by the Assistant Dean, Medical Sciences and the Associate Dean, Graduate Studies, Health Sciences;
    - If the approval is granted, you will continue your graduate studies with your new supervisor, but your term count will not be reset and the program/university will not extend any obligations to your financial support, TA/RA, etc. beyond regular time frame as specified by the program. For example, if you transfer to a different supervisor after 3 terms as a Master's student, your term count will continue as being term 4 and so on. The program will not continue your funding beyond 6 terms, and if you had a TA/RA in lieu of TA position in your first year, you will have it in your second year in accordance with the Collective Agreement, but not beyond. Your new supervisor may continue providing you with some support beyond term 6, but it will be at their discretion and they will not be obliged to do so;
    - If you are a recipient of the external scholarship, the condition of your holding the award may be specific to the particular research project, so you should inquire with the granting agency whether your change of the supervisor will affect your eligibility to continue holding the award.
    - Students wishing to change supervisors should be aware that their contributions to research under the initial supervisor might, or might not, meet a threshold for authorship (or other intellectual property ownership) as a result of a change in supervisor. Such matters may require input of the supervisory committee.

Supervisors:

- Graduate student performance issues should be addressed by the channels and means described in other sections of this Handbook and Graduate Calendar;
- Every attempt should be made to resolve interpersonal conflicts between you and your graduate students, or in your lab, should the situation arise;
- Your student may express their desire to switch labs and look for another supervisor. While

they may or may not succeed in finding another graduate supervisor in the program, their search should not affect their duties as a graduate student in your lab and your responsibilities as their supervisor. Please note that until such transfer is officially approved by all appropriate parties, you are the official supervisor of the student and as such you are responsible for paying their research scholarship and providing appropriate supervision.

STUDENT SUPPORT SERVICES

McMaster University provides an excellent environment for graduate students who are interested in receiving specialized training beyond the regular curriculum and having access to a range of special intellectual opportunities and networking events. For instance, the School of Graduate Studies offers writing workshops (e.g., writing circles), programs on improvement of professional skills (e.g., effective networking, communication, career planning), seminars on etiquette through Mitacs (e.g., essential interpersonal, project management and entrepreneurial skills), a national non-profit organization, and seminars on how to submit a thesis. The SGS also provides a space called "The Action Research Commons Hamilton" – also known as The ARCH – where research and community intersects, and people connect. There is a Graduate Student Life Team that helps students balance their work and life and prepare for future success.

The libraries on campus also provide academic skills support for students and create a more visible and accessible service. They offer Academic Skills Assistance (e.g., note-taking, time management, effective reading strategies, research and exam preparation), Writing Support Services (thesis statement, writing style, reference systems), ESL Support (e.g., Conversation Circle and the SpeakEasy programs), and Note-taking Support for students with disabilities.

There are also a lot of resources for grad students available through the McMaster Institute for Innovation and Excellence in Teaching and Learning (MIIETL), such as its library resources, learning technology support, teaching assistant network, teaching and learning project support and resources.

The Student Wellness Centre provides services to both full and part-time graduate students that contribute towards your personal and academic success. The Centre is staffed by highly qualified service providers with a special interest in university student wellbeing. They provide student-centered, accessible, confidential and caring services for you. The Centre is located in the McMaster University Student Centre, Room B101. For more information see
http://wellness.mcmaster.ca/

The Ombuds Office offers impartial, independent, and informal dispute-resolution advice and assistance to students and all members of the University community
http://www.mcmaster.ca/ombuds/

EXIT INTERVIEW

All students completing their degree in Medical Sciences are requested to take a few minutes to complete a Program Exit Interview form. The contents of the Exit Interview form are confidential. The purpose of the exit interview is 1) to find out the student's opinion of the Medical Sciences Program, particularly its strengths and weaknesses, 2) to discover the type of employment the student will be engaged in, 3) to obtain a forwarding address (work and home), and 4) to return locker and access cards belonging to the Program.

MSc Exit Interview form is available on Medical Sciences website, and PhD Exit Interview is conducted by the School of Graduate Studies.