



**UNIVERSITY OF
SASKATCHEWAN**

**Policies and Procedures
Graduate Programs in Anatomy and Cell Biology
University of Saskatchewan**

Revised March 2016

TABLE OF CONTENTS

TOPIC	PAGE
I. Introduction	1
II. Aims of Graduate Study in Anatomy and Cell Biology	2
III. Procedure for Application and Admission	3
IV. The Graduate Program in Anatomy and Cell Biology	5
Coursework	5
Research	6
Program Duration	7
Teaching Opportunities	7
Scientific Development	8
Administrative Participation	9
Transfer from M.Sc. to Ph.D. and the Qualifying Examination	9
Comprehensive Examination	10
Preparation and Defence of the Thesis	12
V. Administration of the Graduate Program	14
Graduate Program Committee	14
Advisory Committee	14
Supervisor	15
VI. Financing Graduate Studies	17
Financial assistance available from the Department of Anatomy and Cell Biology	17
Financial assistance available from the College of Medicine	17
Financial assistance available from the College of Graduate Studies and Research	17
Financial assistance available from extramural sources	18
Travel funds	18

I. Introduction

The Department of Anatomy and Cell Biology, University of Saskatchewan offers graduate programs and facilities for research training in the areas of Molecular, Cellular and Tissue Biology; Developmental Biology; Neurobiology; Functional Anatomy and Advanced Anatomical Imaging. The Master of Science (M.Sc.) and Doctor of Philosophy (Ph.D.) degrees are offered. The departmental Graduate Program Committee develops policy and administers the graduate program. Immediate oversight for each student is provided by a faculty Supervisor, and each student has a unique faculty Advisory Committee. Direct financial support to graduate students is derived from a variety of sources. All aspects of the program, including conferral of degrees, are ultimately governed by the College of Graduate Studies and Research, which sets or approves the policies and procedures that departments follow. The Policies and Procedures Manual of the College of Graduate Studies and Research can be found at:

<http://www.usask.ca/cgsr/policy-and-procedure/index.php>

The Graduate Program of the Department of Anatomy and Cell Biology is designed to provide advanced training leading toward a career in the biomedical sciences. Eventual career paths may include academics, the health professions, industry, or other choices. The Department endeavors to provide flexibility in the program so as to match the needs of individual students.

II. Aims of Graduate Study in Anatomy and Cell Biology

The primary responsibility of the Department of Anatomy and Cell Biology toward its graduate students is the provision of an environment that provides advanced training, fosters scholarly development, involves the student in current research, and develops skills in scientific communication, including teaching. A primary goal of the Department is to provide an educational experience that will enable its graduates to continue training at a more advanced stage, or to obtain employment. Additionally, the Department has the responsibility of ensuring that its graduates will reflect credit upon the Department and on the University.

In order to meet these aims, graduate students should acquire:

- A. **Specialized knowledge in an area of research.** This includes familiarity with the scientific literature and techniques common in their area of specialization, and practical experience in the design and conduct of scientific experiments. Students are required to develop proficiency in the collection and interpretation of data sufficient to enable them to successfully initiate and continue research as independent investigators and to supervise the work of others in that area.
- B. **General knowledge in Anatomy and Cell Biology** outside the primary research focus. A more general knowledge base prepares our graduates to assume responsibility for the dissemination of knowledge, for example through teaching, and provides them with a basis for broadening their scientific activities at subsequent stages of their careers.
- C. **Familiarity with the process of scientific reporting** sufficient to enable the independent preparation of manuscripts for journals, applications for research grants, and technical reports.
- D. **Experience with oral presentation** of scientific information sufficient to enable the preparation and delivery of reports or presentations at seminars or meetings of scientific societies.
- E. **A mature understanding of the process of scientific inquiry** sufficient to enable the assessment and constructive criticism of the work of others. In addition, the Department endeavors to prepare students for collaborative and interdisciplinary interaction reaching beyond their area of expertise.

III. Procedure for Application and Admission

Students interested in the Graduate Program in Anatomy and Cell Biology should learn about the department, its research activities, and the availability of opportunities by visiting its web site at:

<http://medicine.usask.ca/department/schools-divisions/biomed/acb.php#Welcome>

Online application for admission to the Graduate Program in Anatomy and Cell Biology begins at:

<http://www.usask.ca/cgsr/admission/forms.php>

However, prospective applicants are encouraged to consult with potential Anatomy and Cell Biology faculty supervisors before completing the online application.

Only students who have completed, or expect to complete, a Bachelor level degree from a recognized college or university may apply for entry into the M.Sc. program. Only students who have completed or expect to complete a Masters or equivalent level degree may apply for entry into the Ph.D. program. The Department of Anatomy and Cell Biology does not allow direct entry to the Ph.D. program for students possessing only a Bachelor's degree. However, promising students may enter at the M.Sc. level, then transfer to the Ph.D. program after 12 months (see section IV, below).

Applicants must have a grade point average of at least 70% in the last two years of study (different grading scales will be converted to a University of Saskatchewan standard.). Entering students must submit their previous diploma, or a letter from a responsible academic official indicating that all degree requirements have been completed, before enrolling in graduate study at the University of Saskatchewan. Applicants from non-Canadian universities may be required to demonstrate evidence of English proficiency.

If the above minimum requirements are satisfied, the most important factor that will determine whether a student is admitted to our program is the identification of a faculty member who is willing to serve as Supervisor and mentor. Potential applicants are therefore advised to contact potential faculty Supervisors and discuss their prospects for finding a suitable training environment before completing the online application and paying the application fee.

Students applying online for admission to Graduate Studies in the Department of Anatomy and Cell Biology will be asked to complete an online application form, solicit three confidential letters of recommendation from former teachers or supervisors who can comment on their potential for success, arrange for delivery of official copies of all postsecondary academic transcripts, and arrange for delivery of the results of an English competency exam such as the Test of English as a Foreign Language (TOEFL), if applicable. There is a non-refundable application fee of \$75. No application will be approved unless a willing Supervisor can be identified.

Applications for admission that are approved by the Department of Anatomy and Cell Biology must also be approved by the College of Graduate Studies and Research. Applicants will receive final notification from the College of Graduate Studies and Research as to whether or not they have been accepted for graduate study in the Department of Anatomy and Cell Biology.

Although applications can be received at any time of the year, entrance into the program can only occur at the beginning of a term on September 1, January 1 or May 1. Applications with supporting documents should be received by the Department of Anatomy and Cell Biology before June 1 to be considered for September admission. Applicants wishing to be considered for scholarship support must submit their application documents to the Department of Anatomy and Cell Biology before February 1 to be considered for scholarship support beginning in September of that year.

Foreign applicants (except United States of America, Great Britain, Australia, etc.) are required to score at least 550 on the written TOEFL Examination, or 80 on the computer-based TOEFL exam, in order to be considered for admission. Alternatively, certain other standardized tests of English proficiency may be taken. See:

<http://www.usask.ca/cgsr/admission/language.php>

Foreign applicants are advised that a student visa will be necessary to enter Canada. It may take several months to obtain a visa from the Canadian embassy in your home country. The Saskatchewan climate is very sunny in the summer, and very cold in the winter. The cost of living in Saskatoon may be considerably higher than in other countries.

IV. The Graduate Program in the Department of Anatomy and Cell Biology

Coursework

Ideally, graduate students entering the Department of Anatomy and Cell Biology will have a background similar to that provided by the undergraduate program in Anatomy and Cell Biology outlined in the calendar of the College of Arts and Sciences, University of Saskatchewan. However, it is recognized that some students will enter the Department with training that does not conform to this undergraduate program. In these cases, the eventual Program of Studies outlined for the student may include undergraduate courses in order to allow development of the required background knowledge.

As much as possible, the Program of Studies will be tailored to the needs and future career plans of each individual graduate student. Courses will be selected by the student in consultation with their Supervisor and Advisory Committee. The course program is subject to approval by the departmental Graduate Program Committee.

A minimum of 9 graduate credit units are required for the M.Sc. degree and a minimum of 3 additional graduate credit units are required for the Ph.D. degree. Credit-bearing graduate courses are numbered in the academic calendar at the '800' level. Students should endeavor to complete the coursework for the M.Sc. or Ph.D. program within the first year after admission, in order to leave subsequent years as free as possible for completion of a research project and preparation of a written thesis.

Students who transfer from the M.Sc. to the Ph.D. program (see below) will be required to take a minimum total of 12 credit units of graduate coursework.

Beyond the minimum credit requirements, additional coursework can be chosen by the student, or can be required by the Advisory Committee. Coursework beyond the minimum levels will be required whenever the Advisory Committee deems that it is necessary to make up for background deficiencies, or to insure that the student is properly trained in their area of specialization. Coursework beyond the minimum requirement may include either graduate or advanced undergraduate ('300' or '400' level) courses. If a student registers for any additional course not approved by the Advisory Committee, and not listed on their Program of Studies, additional tuition will be charged.

In addition to the credit requirements, M.Sc. and Ph.D. students in the Department of Anatomy and Cell Biology are required to participate in non-credit activities. These include training in laboratory safety, animal care, and radiation safety, if appropriate. Also, all M.Sc. and Ph.D. students must register for, and participate in, ACB 990 Scientific Communication to improve their skills in written and oral scientific communication. ACB 990 includes a weekly seminar series in which graduate students make presentations about their work, or about current topics in the scientific literature. Each student must make one presentation in this series for each year

they are registered in the program. All students admitted to the M.Sc. or Ph.D. program must also register for and complete GSR 960 Introduction to Ethics and Integrity during their first year. This on-line course introduces principles of ethical decision-making in the contexts of research, teaching, supervision, consultation and collegial relationships. Finally, all M.Sc. students must register for ACB 994 Research and all Ph.D. students must register for ACB 996 Research, to signify that they are carrying out a research project. ACB 990, GSR 960, ACB 994 and ACB 996 earn no course credit.

Research

Each graduate student benefits from the support of an Anatomy and Cell Biology faculty member who serves as their Supervisor and mentor. Each graduate student also has a faculty Advisory Committee. Advisory Committees for M.Sc. students must include at least two faculty members in addition to the Supervisor. Advisory Committees for Ph.D. students must include at least four faculty members in addition to the Supervisor, and one of these must be from outside the Department of Anatomy and Cell Biology. Any Co-supervisor should also be a member of the Advisory Committee, but is not counted toward fulfilling Advisory Committee membership requirements.

First year students should consult with their Supervisor to choose a research project as early as possible. The student and Supervisor must also select and meet with an Advisory Committee as early as possible (i.e. within one week of arrival), in time to review the initial selection of coursework that the student must complete as part of their Program of Studies. Before the first meeting of the student's Advisory Committee, the student and Supervisor should complete the departmental Initial Program of Studies form. After approval by the Advisory Committee, the Initial Program of Studies is reviewed by the departmental Graduate Program Chair for final approval within one month following initial enrollment.

Students should begin their laboratory work as soon as possible. The Supervisor is responsible for providing the student with adequate resources to complete the research project, including laboratory space, research materials, instrumentation, instruction and guidance.

Students will be required to again meet with their Advisory Committee and present a progress report in May of each year that they are in the program. The student will prepare and submit two items to the Graduate Secretary on or before May 1 of each year: (1) the Annual Progress Report form filled out as completely as possible, and (2) a written progress report, including research results obtained thus far. The written progress report should contain the following components:

- A. Descriptive Title, Student's Name, and Date
- B. Background
- C. Specific Aims
- D. Methodology
- E. Results (clearly delineate which results were obtained in the past year)

F. Future Experiments

The Supervisor should review the written progress report before it is submitted. At the meeting, the graduate student will make a concise oral report (15-20 minutes) of the project, to be followed by a discussion of all aspects of the student's program.

The student or Supervisor may ask the Chair of the Advisory Committee to convene additional meetings of the Advisory Committee at any time during the year. These other meetings may deal with problems that arise in the course of the student's program, or may be used by the student to obtain permission to write the thesis, obtain permission to transfer from the M.Sc. to the Ph.D. program, or to schedule the comprehensive exam, if required. Students are also encouraged to discuss their research with their Advisory Committee members on an ongoing, informal basis. The Advisory Committee is there to provide scientific expertise as well as to provide academic guidance or to help with any difficult situations that may arise. Graduate students should use their Advisory Committee to their advantage.

Students should be aware that they may not have exclusive right to ownership of materials, data or other intellectual property arising from their thesis research. Other parties who may have an interest in intellectual property arising from the research project include the Supervisor, collaborators, the University of Saskatchewan, and the financial sponsors of the research. Students should discuss this issue with their Supervisor should any questions arise. Further information about intellectual property rights and commercialization at the University of Saskatchewan may be found at:

<http://research.usask.ca/research-process/commercialization.php>

Program Duration

The Department endeavors to have students complete their thesis research and obtain their degree within a reasonable length of time. While the College of Graduate Studies and Research will allow students up to five years to complete a M.Sc. degree, and six years to complete a Ph.D. degree, the goal of the Department of Anatomy and Cell Biology is for M.Sc. students finish within two years, and Ph.D. students to finish within four years.

In order to complete the graduate program in a timely manner, careful planning is required. The student and the Supervisor need to communicate on an ongoing basis about what is expected, where the research is headed, how technical obstacles will be resolved, and whether changes to the research program would be advised. It is imperative that the student and Supervisor seek the counsel of the Advisory Committee. A fresh, outside perspective can often provide insight that can expedite the research program. In addition, it is advised that students finish coursework and other requirements as soon as possible in order to have more uninterrupted time to complete their laboratory work. Once the research project is completed, several additional months are usually required to write the thesis, and one additional month is required to schedule the thesis defense.

Students supported by intramural and external scholarship awards (see Section VI) should make

themselves aware of the time limits that apply to each of these awards. Supervisors who provide financial assistance to their students from their own research accounts may also place reasonable time limits on the duration of financial support. Discuss this with your Supervisor.

Because of the intensive nature of graduate research, the Department of Anatomy and Cell Biology does not encourage students to work outside the University. Graduate students are expected to spend a minimum of 40 hours/week in the Health Science Building of the University of Saskatchewan as they complete coursework and carry out research. An absence of more than two weeks for vacation during the summer, or one week at any other time of the year for non-medical reasons, must be approved in advance by the Supervisor. Students are not permitted to engage in separate, paid departmental or non-departmental employment (including teaching) amounting to more than 10 hours/week, on average.

Teaching Opportunities

Graduate students, particularly those in the Ph.D. program, are offered the opportunity to participate in teaching or to serve as demonstrators in laboratory sessions. To this end, the Department of Anatomy and Cell Biology offers a number of Graduate Teaching Assistantships each year. Participation as a Graduate Teaching Assistant will bring the student into direct contact with undergraduate students and afford an appreciation of the problems associated with the delivery and administration of courses. Graduate Teaching Assistants should participate in meetings of course committees and should also attend the lectures. Graduate Teaching Assistants will be appointed by faculty course instructors, and compensated according to a standard hourly rate set by the University of Saskatchewan. Students will be compensated for direct contact hours, and for hours spent in preparation, as specified in the departmental Policy on Compensation for Graduate Student Teaching Assistants. All compensation must be approved by the Department Head.

Students who wish to obtain more extensive teaching experience may wish to apply for a CGSR Graduate Teaching Assistantship or a Graduate Teaching Fellowship (see Section VI). These awards are administered and governed by CGSR.

A maximum of 12 hours/week may be spent in teaching. Duties assigned to students holding Graduate Teaching Appointments will be in accordance with College of Graduate Studies and Research guidelines.

Scientific Development

A graduate student's academic maturity is nurtured largely through his or her exposure to the scientific acumen of departmental colleagues. The active participation of graduate students in seminars, discussions and study groups accelerates this process.

The Department has a series of requirements and policies designed to help students develop as professional scientists.

- A. Graduate students are required to attend communication training sessions as part of ACB

990 Scientific Communication during their first year in the program. These sessions will provide specific training in scientific written and oral communication, and are designed to provide preparation for writing scientific papers and the thesis, for making oral presentations, and for teaching.

- B. Students are also required to attend each meeting of the Graduate Student Seminar Series, held during Term 2 each year. Failure to attend seminars without valid reason (e.g. away at meeting, illness) can jeopardize your status in the program. Each graduate student is required to make a presentation in the Graduate Student Seminar Series each year they are registered in the graduate program.
- C. Students should participate in study groups or journal clubs related to their area of specialization. These groups generally include faculty and students, and provide an informal setting in which students can discuss and evaluate the current scientific literature, especially as it relates to their own areas of interest.
- D. Students should participate in local, regional, national and international scientific meetings as much as possible. Ideally, graduate students should present an abstract of their work at a national or international scientific meeting at least once during their program. Students should discuss with their Supervisor whether funding is available for travel to scientific meetings for presentation of their work. Travel funds may be also be available from the College of Medicine and other sources to assist students who attend meetings. At an absolute minimum, students should take advantage of opportunities to present their work at local and regional forums (e.g. Health Science Research Day).
- E. Throughout the scientific world, all research projects that utilize animal or human subjects are subject to ethical review. In addition to completing GSR 960 Introduction to Ethics and Integrity, students in our programs are encouraged to take advantage of training in evaluation of ethical issues surrounding the use of animal and human subjects. All projects involving animal and human subjects must be approved beforehand by a local ethical review panel. In most cases, projects that require ethical review will already have received protocol approval as part of the Supervisor's ongoing research program. In cases where a student's project is not covered by an existing approved protocol, a new project protocol must be submitted to the appropriate ethical review panel, and must be approved before the project begins.
- F. Informal discussion of scientific ideas is a mainstay of the research culture. Students should look for opportunities to discuss their work, new findings appearing in the scientific literature, or any scientific topic of interest with other students, with co-workers, or with faculty members. Scientists have chosen this profession because they enjoy the interchange and analysis of scientific ideas.

Administrative Participation

Graduate students are included whenever practical in the processes of decision-making and

administration of the graduate program. This involvement is achieved by inviting a graduate student volunteer to membership on the departmental Graduate Program Committee. The graduate student representative has full voting privileges at meetings, and can be consulted by faculty members on any matters concerning graduate student affairs. Graduate student input to departmental decision-making is taken very seriously.

Transfer from M.Sc. to Ph.D. and the Qualifying Examination

Students in the M.Sc. program are not required to take a qualifying examination.

Students who have earned a relevant M.Sc. degree at the University of Saskatchewan or any other recognized university are considered to be qualified for study in the Ph.D. program, and do not need to take a qualifying examination.

Some students may seek permission to transfer from a M.Sc. program to a Ph.D. program before completing the requirements of the M.Sc. program, and without preparing and defending a M.Sc. thesis. This option is generally reserved for students who are doing very well in the M.Sc. program, and who show high promise for success at the Ph.D. level. M.Sc. students who have completed at least 9 credits of graduate coursework, with a grade point average of 80 or higher, may seek permission to transfer to the Ph.D. program as early as one year after entering the program. M.Sc. students who have been in the program more than two years will not be permitted to transfer to the Ph.D. program.

Students who wish to transfer from the M.Sc. program to the Ph.D. program must pass a Qualifying Examination. The examination will be held at a meeting of the Graduate Advisory Committee. This may be the regular Annual Progress Report meeting of the Advisory Committee, or it may be an additional meeting called at any other time. Final approval to transfer from the M.Sc. program to the Ph.D. program is given by the College of Graduate Studies and Research, and is not guaranteed even if the student passes the Qualifying Examination.

The Qualifying Examination is designed to test the student's general scientific knowledge, familiarity with the scientific literature in his or her area of interest, and suitability for study at the Ph.D. level. It has both written and oral components. The written component is a formal proposal for the Ph.D. research project. It must be given to members of the Advisory Committee at least one week before the meeting, and should contain the following components:

- A. Descriptive Title, Student's Name, and Date
- B. Background
- C. Specific Aims
- D. Rationale
- E. Preliminary Results (M.Sc. work)
- E. Proposed Research Plan and Methodology

G. Significance

The oral component includes a 15 – 20 minute oral presentation of the proposed research plan and methodology. This is followed by questions from members of the Advisory Committee. Questioning by the Advisory Committee is designed to determine whether the student has a sufficient command of the area of research interest to insure that there is a high probability of success at the Ph.D. level.

If the student fails the qualifying examination on the first try, a second examination can be undertaken within three months. However, a second failure automatically disqualifies a student from transferring directly to a Ph.D. program.

Once a student is given permission to transfer to the Ph.D. program, they must prepare and submit a new Initial Program of Studies form. Students who transfer from the M.Sc. to the Ph.D. program will be required to take a minimum total of 12 credit units of graduate coursework.

Comprehensive Examination

Students in the M.Sc. program are not required to take a comprehensive examination.

All candidates for the Ph.D. degree are required to pass a comprehensive examination. Normally, the comprehensive exam will be completed within approximately 18 months after the student first enters the Ph.D. program or transfers from the M.Sc. program. The comprehensive exam will be carried out in oral examination format. The student should meet with their Advisory Committee to select their choice of examination areas no more than 15 months after entering the Ph.D. program.

EXAMINATION FORMAT

The comprehensive examination is designed to test the student's general competence in three major sub-disciplines of Anatomy and Cell Biology chosen from the following list: Cell Biology, Histology, Biochemistry and Molecular Biology, Gross Anatomy, Developmental Biology, Neurobiology, Neuroanatomy, Biomedical Imaging. If appropriate, additional sub-disciplines may be identified, pending approval of the Graduate Program Committee. The student is also tested for specific knowledge in the area of research specialization.

The examining panel will be chaired by the Chair of the Advisory Committee. The Examiner in the area of research specialization will be the student's Supervisor. Additional Examiners will be chosen as appropriate for the selected sub-disciplines. Following the oral examination, the examining panel assigns a grade of Fail, Pass or Excellent. In the event of a failure, the student must retake the comprehensive examination in those sub-disciplines where performance is judged to be inadequate. In this case, the second attempt must take place within two to six months following the first examination, depending on how many sub-disciplines require re-examination. The student will be required to discontinue and exit the Ph.D. program in the event of a second failure.

Preparation and Defense of the Thesis

Students in the graduate program are advised to plan their progress toward thesis defense well in advance, allowing several months for the actual writing and editing of the thesis document. When a student and his or her Supervisor believe that the research work is complete, the student must ask the Advisory Committee for permission to write a thesis. This request can be made at the regular summer meeting to review progress, or at a different meeting of the Advisory Committee called especially for that purpose. At this meeting, the student must present (1) a complete outline of the thesis to be written (e.g. table of contents), and (2) preliminary figures of all results to be included in the thesis. The Advisory Committee must satisfy itself that the quantity and quality of the research is adequate, and that the student has a good grasp of his or her own work in relation to the existing knowledge base in the area of specialization. The Advisory Committee will either grant permission to stop research and concentrate on data analysis and text preparation, or specify additional research work that must be carried out.

Preparation of the written thesis is done with the advice of the Supervisor. The thesis must be prepared in accordance with the form, format and style specified by the College of Graduate Studies and Research. For more information, and for instructions on how to submit a thesis document that conforms to University of Saskatchewan requirements, see:

http://www.usask.ca/cgsr/for_students/thesis.php

For M.Sc. candidates, the final written document must be presented to the Advisory Committee for internal review at least four weeks before the scheduled thesis defense date. If given preliminary approval by the Advisory Committee, it must be delivered to the External Examiner three weeks before the thesis defense date. This timetable will be strictly enforced, and delay at any stage will require that the defense will be rescheduled.

For Ph.D. candidates, the final written document must be presented to the Advisory Committee for internal review at least six weeks before the scheduled thesis defense date. If given preliminary approval by the Advisory Committee, it must be delivered to the College of Graduate Studies and Research five weeks before the defense date. If approved by the College, it must be delivered to the External Examiner four weeks before the thesis defense date. This timetable will be strictly enforced, and delay at any stage will require that the defense will be rescheduled.

Internal review of the thesis by the Advisory Committee is designed to insure that the thesis is free of fundamental flaws before it is sent to an External Examiner. If members of the Advisory Committee find that the thesis contains numerous errors of spelling or grammar, errors of organization, inadequate or erroneous references to the scientific literature, or substantial omissions in the review of the scientific literature, the analysis and presentation of data, or the discussion of the research findings, it will be returned to the student for further work. Thus, the date of the thesis defense will be postponed.

The Supervisor should make informal contact with potential External Examiners for the thesis

defense. The names (and curriculum vitae in the case of Ph.D. defense) of potential External Examiners should be forwarded to the College of Graduate Studies and Research along with two copies of the thesis and a suggested defense date. The College of Graduate Studies and Research must approve the choice of External examiner, and will issue the official invitation to the External Examiner.

An External Examiner should have no conflict of interest (collaboration, personal relationship, etc.) with the student, the Supervisor, or any member of the Examining Committee. Once identified, the External Examiner must have absolutely no contact with the student until the day of the oral defense.

A final oral defense of the M.Sc. thesis will be conducted with an Examining Committee that includes the members of the Advisory Committee plus an External Examiner who is a member of another Department of the University, who has not been a member of the student's Advisory Committee, and who is approved beforehand by the College of Graduate Studies and Research. The Examining Committee for a M.Sc. defense will be chaired by the Chair of the Advisory Committee.

A final oral defense of the Ph.D. thesis will be conducted with an Examining Committee that includes the members of the Advisory Committee plus an External Examiner from outside the University and approved beforehand by the College of Graduate Studies and Research, and such other persons as the Advisory Committee may select with the approval of the College of Graduate Studies and Research. A designate of the Dean of the College of Graduate Studies and Research acts as Chair of the Examining Committee at a Ph.D. defense.

Both the M.Sc. and Ph.D. thesis defenses are in the form of an oral examination, approximately three hours in length. It will begin with a formal twenty minute summary presentation of the research by the graduate student followed by a question and answer period.

At the conclusion of the thesis defense, the Examining Committee will choose one of five outcomes:

- 1) Thesis acceptable, with or without minor revisions. Oral defense acceptable. Candidate passes.
- 2) Major revision of written thesis required. Oral defense acceptable. Revisions must be completed in six weeks.
- 3) Thesis acceptable. Oral defense inadequate. A second oral examination is scheduled within three months.
- 4) Major revision of thesis required. Oral defense inadequate. New thesis must be submitted and a second oral defense scheduled in 6-12 months.
- 5) Either the thesis or the oral examination is completely unacceptable, with no prospect for improvement to acceptable level. Candidate exits program with no degree.

V. Administration of the Graduate Program

Graduate Program Committee

The general functions of the Graduate Program Committee of the Department of Anatomy and Cell Biology are to administer the graduate programs, to ensure that each graduate student fulfills the requirements necessary for an advanced degree in Anatomy and Cell Biology, and to ensure that the standards of the departmental graduate program are maintained. The Graduate Program Committee also serves the following specific functions:

- A. Assess applications for admission to the graduate program and submit recommendations for action to the Dean of the College of Graduate Studies and Research.
- B. Guide the formation of Advisory Committees.
- C. Approve the program of course work, initial research proposals, and any substantial alterations in the Program of Studies for each graduate student.
- D. Assess the progress of students as reported to Advisory Committees to insure that students can complete their degree requirements in a timely and orderly fashion.
- E. Assess the performance of students seeking promotion from probationary status or transfer from the M.Sc. to the Ph.D. program, and recommend discontinuance for students demonstrating unacceptably poor progress..
- F. Conduct departmental graduate scholarship competitions and administer departmental graduate scholarship funds.
- G. Advise and provide necessary administrative support for scholarship competitions external to the department.
- H. Advertise and promote the departmental graduate program.
- I. Periodically review graduate program policy and institute or recommend improvements when appropriate.
- J. Prepare documentation for external review of the graduate program.

The Head of the Department of Anatomy and Cell Biology appoints all members of the Graduate Program Committee, including a Chair, additional regular faculty members, and one graduate student representative. The Chair of the Graduate Program Committee is responsible for the day-to-day administration of the graduate program and reports to the department Head at meetings of the Department of Anatomy and Cell Biology. Ultimate authority for all matters before the Graduate Program Committee rests with the College of Graduate Studies and Research.

Advisory Committee

The Advisory Committee for each graduate student functions to approve the Program of Studies (course work and research program) as well as to ensure that the student satisfies all of the requirements of the Graduate Program in Anatomy and Cell Biology. The Advisory Committee also provides a source of information and counsel for graduate students. In this way, the graduate student will be exposed to a variety of opinions and ideas and can obtain help from individuals with particular expertise required for some aspect of the research project.

The Advisory Committee is composed of the Supervisor (and any Co-Supervisor), a Chair, and other faculty members of this or other departments, chosen by the student and the Supervisor. The minimum number of members of a M.Sc. Advisory Committee is three. The minimum number of members of a Ph.D. Advisory Committee is five, including at least one member from another, cognate department. A Supervisor and a Co-Supervisor count as one member.

The Advisory Committees will meet regularly in May of each year to receive the Annual Progress Report from each graduate students. The Advisory Committee may also meet at any other time at the request of either the graduate student, the Supervisor, the Chair of the Advisory Committee, or the Chair of the Graduate Program Committee.

The specific functions of the Advisory Committee are:

- A. Provide advice and guidance to the graduate student concerning his or her choice of credit course work and other non-credit training requirements.
- B. Approve the Initial Program of Studies provided by the graduate student approximately four weeks following his or her enrollment in the program, approve the Annual Progress Report each May, and approve any major changes of direction in the research program.
- C. Meet with the graduate student to discuss experimental strategy, procedures, experiments conducted, raw data obtained, interpretations, and problems that have been encountered. These meetings should be, in essence, a forum for the exchange of ideas between the student and the committee members.
- D. The Advisory Committee Chair should submit the minutes of meetings, and associated paperwork, which documents approval of the graduate student's program and progress to the departmental Graduate Coordinator.
- E. Approve or deny requests to transfer from the M.Sc. program to the Ph.D. program, and conduct the Qualifying Examination.
- F. Establish the composition of the Comprehensive Examination Committee for Ph.D. students.
- G. Approve the request of the graduate student to begin writing the thesis.

- H. Serve as members of the Examining Committee at the thesis defense.

Supervisor

The major function of the Supervisor is to supervise and direct the graduate student's research on a daily basis. The Supervisor should be actively involved in the student's research program and should be fully aware of the student's progress. The Supervisor is responsible for ensuring that each student under his or her supervision is given the opportunity to fulfill their degree requirements in an orderly and timely fashion.

The specific functions of the Supervisor are:

- A. Insure that the graduate student will be paid a stipend that meets departmental standards.
- B. Provide technical expertise and academic advice to the graduate student during selection and design of the research project.
- C. Provide the graduate student with the facilities, equipment, materials and supplies that are necessary to perform the thesis research.
- D. Invite faculty members, in consultation with the graduate student, to serve on the Advisory Committee.
- E. Serve on the Advisory Committee.
- F. Suggest changes in research direction, if necessary, in a timely fashion.
- G. Assist students in the preparation of research proposals, scholarship applications and the thesis. Provide any documentation necessary to support these activities (e.g. letters of recommendation) in a timely fashion.
- H. Invite faculty from outside the department (M.Sc.) or outside the university (Ph.D.) to serve on the thesis Examination Committee.

VI. Financing Graduate Studies

Supervisors are responsible for insuring that each graduate student receives a stipend which meets a minimum departmental standard. Current departmental standards are \$15,000 per year for M.Sc. students and \$18,000 per year for Ph.D. students. In the absence of any other funding, this stipend will usually come from research grants held by the Supervisor. However, it is beneficial for both the student and the Supervisor if some or all of the support for the student is derived from scholarship or assistantship funds. Support from extramural sources generally provides a higher stipend than support from intramural (University of Saskatchewan) sources.

Financial assistance available from the Department of Anatomy and Cell Biology

- A. The department holds a yearly scholarship competition in March, adjudicated by the Graduate Program Committee. These scholarships are supported by devolved University Graduate Scholarship funds, devolved College of Medicine Graduate Scholarship funds, and departmental funds.
- B. Graduate Teaching Appointments are available in limited number for students to lecture or demonstrate in class laboratories. These positions are assigned by the Head of the Department.

Financial assistance available from the College of Medicine

- A. A limited number of Graduate Teaching Fellowships and Graduate Teaching Assistantships are awarded by the College of Medicine. Applications are submitted through the departmental Graduate Program Committee.
- B. A limited number of Graduate Research Fellowships are awarded by the College of Medicine. Applications are submitted through the departmental Graduate Program Committee.
- C. The James Reagan Cardiology Scholarship for Ph.D. students is available through the College of Medicine. Applications are submitted through the departmental Graduate Program Committee.
- D. The Arthur Smyth Memorial Scholarship is available through the College of Medicine. These awards are intended for especially meritorious students who are nearing the end of a Ph.D. program. Applications are submitted through the departmental Graduate Program Committee.

Financial assistance available from the College of Graduate Studies and Research

- A. The College of Graduate Studies and Research offers the Dean's Scholarship for especially meritorious students. Preference is given to students entering the first year of a Ph.D. program, although entering M.Sc. students are also eligible. Several application deadlines occur in the first few months of each calendar year. Applications are submitted through the departmental Graduate Program Committee.
- B. From time to time, the College of Graduate Studies announces the availability of Graduate Service Fellowships, which involve payment for various tasks or service within the University of Saskatchewan. Students who are receiving major support from other sources are ineligible, so it is unlikely that our graduate students will be able to take advantage of this program.
- C. The Saskatchewan Innovation and Opportunity Graduate Scholarship is offered for graduate students conducting research in specific priority areas. Eligible current students will be invited to apply online. The department will also be invited to nominate a restricted number of external applicants each year.

Financial assistance available from extramural sources

- A. National Science and Engineering Research Council (NSERC). Students may apply for M.Sc. or Ph.D. level awards to support their study in the Department of Anatomy and Cell Biology. Generally, students must be working in a NSERC-funded laboratory to be eligible for these awards. Application guidelines, materials and instructions are available at:
http://www.nserc-crsng.gc.ca/Students-Etudiants/index_eng.asp
- B. Canadian Institutes for Health Research (CIHR). Students may apply for M.Sc. or Ph.D. level awards to support their study in the Department of Anatomy and Cell Biology. Generally, students must be working in a CIHR-funded laboratory to be eligible for these awards. Application guidelines, materials and instructions are available at (click 'funding opportunities'):
<http://www.cihr-irsc.gc.ca/e/37788.html>
- C. A wide variety of additional intramural and extramural awards are available, most of which are directed towards particular areas of study or particular categories of applicant. Students are strongly encouraged to explore the opportunities available. A comprehensive list of additional scholarship opportunities is maintained by College of Graduate Studies and Research at:

<http://grad.usask.ca/awards/index.html>

Students are not permitted to apply to both NSERC and CIHR in the same academic year.

Travel funds

- A. From time to time, the College of Medicine and the College of Graduate Studies and Research announce that travel funds are available to enable graduate students to attend scientific meetings or conferences.
- B. Graduate students and their Supervisors should also be aware that travel awards are often offered by the sponsors of scientific meetings and conferences, on a competitive basis. Students are encouraged to apply for these prestigious awards when available, once they have identified a conference that they would like to attend.