



**Faculty of Medicine (Graduate)**  
**Programs, Courses and University Regulations**  
**2012-2013**



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## 1 Dean's Welcome

To Graduate Students and Postdoctoral Fellows:

I am extremely pleased to welcome you to McGill University. Our world-class scholarly community includes over 250 doctoral and master's degree programs, and is recognized for excellence across the full range of academic disciplines and professions. Graduate and Postdoctoral Studies (GPS) collaborates with the Faculties and other administrative and academic units to provide strategic leadership and vision for graduate teaching and research across the University. GPS also oversees the admission and registration of graduate students, disbursing graduate fellowships, supporting postdoctoral fellows, and facilitating the graduation process, including the examination of theses. GPS has partnered with Enrolment Services to offer streamlined services in a one-stop location at [Service Point](#).

McGill is a student-centred research institution that places singular importance upon the quality of graduate education and postdoctoral training. As Associate Provost (Graduate Education), as well as Dean of Graduate and Postdoctoral Studies, I work closely with the faculties, central administration, graduate students, professors, researchers, and postdoctoral fellows to provide a supportive, stimulating, and enriching academic environment for all graduate students and postdoctoral fellows.

McGill is ranked as one of Canada's most intensive research universities and among the world's top 25. We recognize that these successes come not only from our outstanding faculty members, but also from the quality of our graduate students and postdoctoral fellows—a community into which we are very happy to welcome you.

I invite you to join us in advancing this heritage of excellence at McGill.

*Martin Kreiswirth, Ph.D.*

*Associate Provost (Graduate Education)*

*Dean, Graduate and Postdoctoral Studies*

## 2 Graduate and Postdoctoral Studies

### 2.1 Administrative Officers

#### Administrative Officers

Martin Kreiswirth; B.A.(Hamilton), M.A.(Chic.), Ph.D.(Tor.)

**Associate Provost (Graduate Education) and Dean (Graduate and Postdoctoral Studies)**

Shari Baum; B.A.(C'nell), M.Sc.(Vermont), Ph.D.(Brown)

**Associate Dean (Graduate and Postdoctoral Studies)**

Laura Nilson; B.A.(Colgate), Ph.D.(Yale)

**Associate Dean (Graduate and Postdoctoral Studies)**

Lisa deMena Travis; B.A.(Yale), Ph.D.(MIT)

**Associate Dean (Graduate and Postdoctoral Studies)**

Charlotte E. Légaré; B.Sc.(Montr.), M.Sc.(Sher.), M.B.A.(McG.)

**Senior Adviser to the Associate Provost / Dean (Graduate and Postdoctoral Studies) (on leave)**

Lissa B. Matyas; B.F.A., M.Sc.(C'dia)

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**Note:** For inquiries regarding specific graduate programs, please contact the appropriate department.

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### **2.3 General Statement Concerning Higher Degrees**

Graduate and Postdoctoral Studies (GPS) oversees all programs leading to graduate diplomas, certificates, and higher degrees, with the exception of some programs in the School of Continuing Studies. It is responsible for admission policies, the supervision of graduate students' work, and for recommending to Senate those who may receive the degrees, diplomas, and certificates.

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## **3 Important Dates 2012–2013**

F

**Faculty of Arts**

**Degrees Available**

M.A.

<b>Faculty of Medicine</b>	<b>Degrees Available</b>
<i>section 11.5: Communication Sciences and Disorders</i>	M.Sc., M.Sc.A., Ph.D.
<i>section 11.6: Epidemiology and Biostatistics</i>	M.Sc., Ph.D., Graduate Diploma
<i>section 11.9: Human Genetics</i>	M.Sc., Ph.D.
<i>section 11.10: Medical Physics</i>	M.Sc.
<i>section 11.11: Medicine, Experimental</i>	M.Sc., Ph.D., Graduate Diploma
<i>section 11.12: Medicine, Family (Option)</i>	N/A
<i>section 11.13: Microbiology and Immunology</i>	M.Sc., Ph.D.
<i>section 11.14: Neuroscience (Integrated Program in)</i>	M.Sc., Ph.D.
<i>section 11.15: Occupational Health</i>	M.Sc.A., Ph.D.
<i>section 11.16: Otolaryngology – Head and Neck Surgery</i>	M.Sc.
<i>section 11.17: Pathology</i>	M.Sc., Ph.D.
<i>section 11.18: Pharmacology and Therapeutics</i>	M.Sc., Ph.D.
<i>section 11.19: Physiology</i>	M.Sc., Ph.D.
<i>section 11.20: Psychiatry</i>	M.Sc.
<i>section 11.21: Surgery, Experimental (Division of Surgical Research)</i>	M.Sc., Ph.D., Graduate Diploma
<b>School of Nursing</b>	<b>Degrees Available</b>
<i>: Nursing</i>	M.Sc.A., Ph.D., Graduate Certificate, Graduate Diploma
<b>School of Physical and Occupational Therapy</b>	<b>Degrees Available</b>
<i>: Physical and Occupational Therapy</i>	M.Sc., M.Sc.A., Ph.D., Graduate Certificate
<b>Faculty of Religious Studies</b>	<b>Degrees Available</b>
<i>: Religious Studies</i>	M.A., S.T.M., Ph.D.
<b>Schulich School of Music</b>	<b>Degrees Available</b>
<i>: Schulich School of Music</i>	M.A., M.Mus., D.Mus., Ph.D., Graduate Diploma
<b>Faculty of Science</b>	<b>Degrees Available</b>
<i>: Atmospheric and Oceanic Sciences</i>	M.Sc., Ph.D.
<i>: Biology</i>	M.Sc., Ph.D.
<i>: Chemistry</i>	M.Sc., M.Sc.A., Ph.D.
<i>: Computer Science</i>	M.Sc., Ph.D.
<i>: Earth and Planetary Sciences</i>	M.Sc., Ph.D.
<i>: Geography</i>	M.Sc., Ph.D.
<i>: Mathematics and Statistics</i>	M.Sc., Ph.D.
<i>: Physics</i>	M.Sc., Ph.D.
<i>: Psychology</i>	M.Sc., Ph.D.

## 4.2 Master's Degrees and Prerequisites

The following list shows all of the master's degrees available at McGill, along with their prerequisites. See [section 4.3: Master's Degree Programs and Specializations](#) for more information on specific programs and options.



Degree		Prerequisites
Master of Arts	M.A.	Bachelor of Arts in the subject selected for graduate work. See appropriate unit.
Master of Architecture	M.Arch.	Professional degree – McGill B.Sc.(Arch.) degree, or equivalent. Post-professional degree – an M.Arch. (professional degree) or equivalent professional degree.
Master of Business Administration	M.B.A.	An undergraduate degree from an approved university. See : <a href="#">M.B.A. Program</a> .
Master of Business Administration with integrated Bachelor of Civil Law / Bachelor of Laws	M.B.A. with B.C.L./LL.B.	See : <a href="#">M.B.A. Program</a> .
Master of Business Administration with Doctor of Medicine / Master of Surgery	M.B.A. with M.D.,C.M.	See : <a href="#">M.B.A. Program</a> .
Master of Education	M.Ed.	Bachelor's degree with specialization related to the subject chosen for graduate work, plus a Permanent Quebec Teaching Diploma or its equivalent for some of the above degrees. See appropriate department.
Master of Engineering	M.Eng.	Bachelor of Engineering or equivalent, with specialization appropriate for the subject selected for graduate study. See appropriate department.
Master of Laws	LL.M.	An acceptable degree in Law or equivalent qualifications. See : <a href="#">Law Admission Requirements and Application Procedures</a> .
Master of Library and Information Studies	M.L.I.S.	At least a bachelor's degree from a recognized university. See : <a href="#">Information Studies Admission Requirements and Application Procedures</a> .
Master of Management	M.M.	See : <a href="#">Master of Management Programs Admission Requirements and Application Procedures</a> .
Master of Manufacturing Management	M.M.M.	See : <a href="#">Master of Management Programs Admission Requirements and Application Procedures</a> .
Master of Music	M.Mus.	Bachelor of Music or Bachelor of Arts with concentration in the area selected for graduate study. Applicants to the Performance program are required to pass auditions in their speciality. See : <a href="#">Schulich School of Music</a> .
Master of Sacred Theology	S.T.M.	B.A. with specialization in religious studies or theology. See : <a href="#">Religious Studies Admission Requirements and Application Procedures</a> .
Master of Science	M.Sc.	Bachelor of Science in the subject selected for graduate work. See appropriate unit.
Master of Science, Applied	M.Sc.A.	A bachelor's degree in the subject selected for graduate work. See appropriate unit.
Master of Social Work	M.S.W.	Bachelor's degree in Social Work including courses in statistics and social science research methods. See : <a href="#">Social Work Admission Requirements and Application Procedures</a> .
Master of Social Work with Bachelor of Civil Law and Bachelor of Laws	M.S.W. with B.C.L. and LL.B.	See : <a href="#">Social Work Admission Requirements and Application Procedures</a> .
Master of Urban Planning	M.U.P.	Bachelor's degree in any one of the following: Anthropology, Architecture, Economics, Civil Engineering, Geography, Law, Management, Political Science, Social Work, Sociology, or Urban Planning, with adequate knowledge of quantitative techniques. See : <a href="#">Urban Planning Admission Requirements and Application Procedures</a> .

### 4.3 Master's Degree Programs and Specializations

The following list shows all of the programs and options available for each degree at McGill.

#### Master of Architecture (M.Arch.)

Program	Thesis/Non-Thesis	Options
Professional	Non-Thesis	Design Studio, Design Studio – Directed Research
Post-professional	Non-Thesis	Architectural History and Theory, Cultural Mediations and Technology, Urban Design and Housing

**Master of Arts (M.A.)**

Programs leading to the degree of Master of Arts are offered in the following areas:

Program Areas	Thesis/Non-Thesis	Options
Anthropology	Thesis, Non-Thesis	Development Studies, Environment, Gender and Women's Studies (Thesis)
Art History	Non-Thesis	Gender and Women's Studies (Non-Thesis)
Classics	Thesis, Non-Thesis	N/A
Communication Studies	Thesis, Non-Thesis	Gender and Women's Studies (Thesis)
Counselling Psychology	Non-Thesis (Professional Internship), Non-Thesis (Project)	N/A
East Asian Studies	Thesis ( <i>Ad Hoc</i> )	N/A
Economics	Thesis, Non-Thesis	Development Studies, Social Statistics (Non-Thesis)
Educational Psychology	Thesis	N/A
Education and Society	Thesis, Non-Thesis	Gender and Women's Studies (Thesis) Gender and Women's Studies, Jewish Education (Non-Thesis)
Educational Leadership	Thesis, Non-Thesis (Coursework), Non-Thesis (Project)	Gender and Women's Studies (Thesis) Gender and Women's Studies (Non-Thesis (Project))
English	Thesis, Non-Thesis	N/A
French	Thesis, Non-Thesis	Gender and Women's Studies (Thesis)
Geography	Thesis	Development Studies, Environment, Gender and Women's Studies, Neotropical Environment, Social Statistics (Thesis)
German	Thesis, Non-Thesis	N/A
Hispanic Studies	Thesis, Non-Thesis	N/A
History	Thesis, Non-Thesis	Development Studies, European Studies, Gender and Women's Studies (Thesis) Development Studies, European Studies, Gender and Women's Studies (Non-Thesis)
History of Medicine	Non-Thesis	N/A
Islamic Studies	Thesis	Gender and Women's Studies (Thesis)
Italian	Thesis, Non-Thesis	N/A
Jewish Studies	Thesis, Non-Thesis	N/A
Kinesiology and Physical Education	Thesis, Non-Thesis	N/A
Linguistics	Non-Thesis	N/A
Mathematics and Statistics	Thesis, Non-Thesis	N/A
Medical Anthropology	Thesis	N/A
Music – Music Education	Thesis, Non-Thesis	N/A
Music – Music Technology	Thesis, Non-Thesis	N/A
Music – Musicology	Thesis, Non-Thesis	Gender and Women's Studies (Thesis)
Music – Theory	Thesis, Non-Thesis	Gender and Women's Studies (Thesis)
Philosophy	Thesis	Bioethics

Program Areas	Thesis/Non-Thesis	Options
Political Science	Thesis, Non-Thesis	Development Studies, European Studies (Thesis) Development Studies, European Studies, Gender and Women's Studies, Social Statistics (Non-Thesis)
Psychology	Thesis	N/A
Religious Studies	Thesis, Non-Thesis	Bioethics, Gender and Women's Studies (Thesis)
Russian	Thesis	N/A
Second Language Education	Thesis, Non-Thesis	Gender and Women's Studies (Thesis)
Sociology	Thesis, Non-Thesis	Development Studies, Environment, Gender and Women's Studies, Medical Sociology, Neotropical Environment (Thesis) Development Studies, Gender and Women's Studies, Medical Sociology, Social Statistics (Non-Thesis)
Teaching and Learning	Non-Thesis	English or French Second Language, English Language Arts, Mathematics, Science and Technology, Social Sciences

### Master of Business Administration and Management Degrees (M.B.A., M.M., M.M.M.)

A program leading to the degree of Master of Business Administration (M.B.A.) is offered in the following concentrations:

Program	Thesis/Non-Thesis	Options
M.B.A.	Non-Thesis	Finance, General Management, Global Strategy and Leadership, Marketing, Technology and Innovation (Non-Thesis)
M.B.A. with B.C.L. and LL.B.	Non-Thesis	Finance, General Management, Global Strategy and Leadership, Marketing, Technology and Innovation (Non-Thesis)
M.D./M.B.A.	Non-Thesis	N/A
M.B.A./Japan	Non-Thesis	Finance, General Management, Global Strategy and Leadership, Marketing, Technology and Innovation (Non-Thesis)
E.M.B.A.	Non-Thesis	N/A
M.M.M.	Non-Thesis	N/A
M.M./IMPM	Non-Thesis	N/A
M.M./IMPMHL	Non-Thesis	N/A

### Master of Education (M.Ed.)

Program	Thesis/Non-Thesis	Options
Educational Psychology	Non-Thesis	N/A

### Master of Engineering (M.Eng.)

Program	Thesis/Non-Thesis	Options
Aerospace Engineering	Non-Thesis	N/A
Biomedical Engineering	Thesis, Non-Thesis	Bioinformatics (Thesis)
Chemical Engineering	Non-Thesis	Environmental Engineering (Non-Thesis)
Civil Engineering	Thesis, Non-Thesis	Environmental Engineering (Non-Thesis)
Electrical Engineering	Thesis, Non-Thesis	Computational Science and Engineering (Thesis)
Mechanical Engineering	Thesis, Non-Thesis	Computational Science and Engineering (Thesis)
Mining and Materials Engineering	Thesis, Non-Thesis	Environmental Engineering (Non-Thesis)

### Master of Laws (LL.M.)

Program	Thesis/Non-Thesis	Options
Law	Thesis, Non-Thesis	Bioethics, European Studies (Thesis) Air and Space Law, Environment, Comparative Law (Thesis and Non-Thesis)

**Master of Library and Information Studies (M.L.I.S.)**

The Graduate School of Library and Information Studies offers a postgraduate professional program in librarianship. Two years of full-time study or the equivalent are required.

Program	Thesis/Non-Thesis	Options
Information Studies	Non-Thesis	N/A

**Master of Music (M.Mus.)**

Program	Thesis/Non-Thesis	Options
Music – Composition	Non-Thesis	N/A Vocal Pedagogy

Program Areas	Thesis/Non-Thesis	Options
Food Science and Agricultural Chemistry	Thesis, Non-Thesis	Food Safety (Non-Thesis)
Genetic Counselling	Non-Thesis	N/A
Geography	Thesis	Environment, Neotropical Environment
Human Genetics	Thesis	Bioethics, Bioinformatics
Human Nutrition	Thesis	N/A
Kinesiology and Physical Education	Thesis, Non-Thesis	N/A
Mathematics and Statistics	Thesis, Non-Thesis	Bioinformatics, Computational Science and Engineering
Mechanical Engineering	Thesis	N/A
Medical Radiation Physics	Thesis	N/A
Microbiology	Thesis	Environment
Microbiology and Immunology	Thesis	N/A
Mining and Materials Engineering	Thesis	N/A
Neuroscience	Thesis	N/A
Otolaryngology	Thesis	N/A
Parasitology	Thesis	Bioinformatics, Environment
Pathology	Thesis	N/A
Pharmacology	Thesis	Chemical Biology
Physics	Thesis	N/A
Physiology	Thesis	Bioinformatics
Plant Science	Thesis	Bioinformatics, Environment, Neotropical Environment
Psychiatry	Thesis	N/A
Psychology	Thesis	N/A
Public Health	Non-Thesis	Environment
Rehabilitation Sciences	Thesis, Non-Thesis	N/A
Renewable Resources	Thesis, Non-Thesis	Environment, Neotropical Environment (Thesis) Environmental Assessment (Non-Thesis)

### Master of Science, Applied (M.Sc.A.)

This degree was designed to provide postgraduate training of a professional and vocational character, with less emphasis on theoretical knowledge and research than in Master of Science programs, but with no lower standards either for admission or completion of requirements. Two years of full-time study or equivalent are normally required with an emphasis on coursework.

Program	Thesis/Non-Thesis	Options
Animal Science	Non-Thesis	N/A
Bioresource Engineering	Non-Thesis	Environment, Environmental Engineering, Neotropical Environment
Biotechnology	Non-Thesis	N/A
Chemistry	Non-Thesis	N/A
Communication Sciences and Disorders	Non-Thesis	Speech-Language Pathology
Human Nutrition	Non-Thesis (Project), Non-Thesis (Practicum)	N/A
Nursing	Non-Thesis	N/A
Occupational Health	Non-Thesis (Resident), Non-Thesis (Distance)	N/A

Program	Thesis/Non-Thesis	Options
Occupational Therapy	Non-Thesis	N/A
Physical Therapy	Non-Thesis	N/A
Plant Science	Non-Thesis	N/A

#### Master of Social Work (M.S.W.)

The M.S.W. degree represents a second level of professional study in which students build competence in a chosen field of practice.

Program	Thesis/Non-Thesis	Options
Social Work	Thesis, Non-Thesis	N/A
Joint Master of Social Work with B.C.L. and LL.B.	Non-Thesis	N/A

#### Master of Urban Planning

The program requires a minimum of two years residence and a three-month internship with a member of a recognized planning association.

Program	Thesis/Non-Thesis	Options
Urban Planning	Thesis, Non-Thesis	Transportation Planning, Urban Design (Non-Thesis)

## 4.4 Doctoral Degrees

The following section lists the doctoral degrees available at McGill, along with their prerequisites. See [section 4.4.1: Doctoral Degree Programs and Specializations](#) for specific programs and options for doctoral degrees.

Degree		Prerequisites
Doctor of Civil Law	D.C.L.	B.C.L. or LL.B. and usually LL.M. See Law.
Doctor of Music	D.Mus.	M.A. in Composition (D.Mus. in Composition) or a master's degree in Performance, and professional and teaching experience (D.Mus. in Performance). See Music.
Doctor of Philosophy	Ph.D.	An undergraduate degree relevant to the subject chosen for graduate work. Some departments require all Ph.D. candidates to hold a master's degree in the same subject. Departments may recommend that candidates of undoubted promise should be allowed to proceed directly to the Ph.D. degree without being required to submit a master's thesis.

### 4.4.1 Doctoral Degree Programs and Specializations

#### Doctor of Civil Law (D.C.L.)

Doctoral programs are offered in Air and Space Law and Law (Comparative Law). Both are predominantly research degrees awarded on the basis of a thesis that represents an original contribution to the development of legal science.

Program	Options	Offered by Faculty/School
Law	Air and Space Law, Comparative Law	Faculty of Law

#### Doctor of Music (D.Mus.)

The Doctor of Music degree is offered in Composition. The Doctoral thesis consists of a musical composition of major dimensions together with a written analysis of the work. The composition is presented by the candidate in concert. The regulations set forth for the Ph.D. generally apply also to the D.Mus.

The Doctor of Music degree is also of

Programs leading to the degree of Doctor of Philosoph

Program	Options	Offered by Faculty/School
Islamic Studies	Gender and Women's Studies	Faculty of Arts
Linguistics	Language Acquisition	Faculty of Arts
Management	N/A	Desautels Faculty of Management
Mathematics and Statistics	Bioinformatics	Faculty of Arts, Faculty of Science
Mechanical Engineering	N/A	Faculty of Engineering
Microbiology	N/A	Faculty of Agricultural and Environmental Sciences
Microbiology and Immunology	Bioinformatics, Environment	Faculty of Medicine
Mining and Materials Engineering	N/A	Faculty of Engineering
Music	(Composition, Music Education, Musicology, Music Technology, Sound Recording, Theory), Gender and Women's Studies	Schulich School of Music
Neuroscience	N/A	Faculty of Medicine
Nursing	Psychosocial Oncology	School of Nursing
Occupational Health	N/A	Faculty of Medicine
Parasitology	Bioinformatics, Environment	Faculty of Agricultural and Environmental Sciences
Pathology	N/A	Faculty of Medicine
Pharmacology	Chemical Biology	Faculty of Medicine
Philosophy	Environment, Gender and Women's Studies	Faculty of Arts
Physics	N/A	Faculty of Science
Physiology	Bioinformatics	Faculty of Medicine
Plant Science	Bioinformatics, Environment, Neotropical Environment	Faculty of Agricultural and Environmental Sciences
Political Science	Gender and Women's Studies	Faculty of Arts
Psychology	Language Acquisition, Psychosocial Oncology	Faculty of Arts, Faculty of Science
Rehabilitation Science	N/A	School of Physical and Occupational Therapy
Religious Studies	Gender and Women's Studies	Faculty of Religious Studies
Renewable Resources	Environment, Neotropical Environment	Faculty of Agricultural and Environmental Sciences
Russian	N/A	Faculty of Arts
School/Applied Child Psychology	N/A	Faculty of Education
Social Work	N/A	Faculty of Arts
Sociology	Environment, Gender and Women's Studies	Faculty of Arts

#### Joint Doctor of Philosophy Degrees

The following joint Ph.D. programs are offered:

- Nursing (McGill / Université de Montréal)
- Management (McGill / Concordia / H.E.C. / UQAM)
- Social Work (McGill / Université de Montréal)

#### Ad Hoc Doctor of Philosophy Degrees (Ph.D. (Ad Hoc))

Several departments offer the possibility of directly entering a Ph.D. program on an *ad hoc* basis, or, with the permission of the supervisor and the approval of the Graduate Program Director, exceptional students may transfer from the master's program to the *ad hoc* Ph.D. program.

Program	Options	Offered by Faculty/School
East Asian Studies	N/A	Faculty of Arts
Italian Studies	N/A	Faculty of Arts
Kinesiology and Physical Education	N/A	Faculty of Education



Program	Options	Offered by Faculty/School
Psychiatry	N/A	Faculty of Medicine
Urban Planning	N/A	Faculty of Engineering

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#### 4.5 Postdoctoral Research

See [section 8: Postdoctoral Research](#) for information about postdoctoral research at McGill University.

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#### Gra52 598.f Engineering

- The following master's programs have a minimum residence requirement of **three full-time terms**: M.Arch, M.A., M.Eng., LL.M., M.Mus. (**except** M.Mus. in Sound Recording), M.Sc., M.S.W., M.Sc.A. (**except** M.Sc.A. in Communication Sciences and Disorders).
- The following master's programs have a **minimum** residence requirement of **four full-time terms**: M.L.I.S.; M.Mus. in Sound Recording; M.U.P.; M.A. (60 credits – Counselling Psychology – thesis; 78 credits – Educational Psychology); M.A. Teaching and Learning – Non-Thesis; M.Sc.A. in Communication Sciences and Disorders; S.T.M., Religious Studies.
- The residence requirement for the master's program in Education (M.Ed.); Library and Information Studies (M.L.I.S.); Management (M.B.A.); Religious Studies (S.T.M.); M.A. Counselling Psychology – Non-Thesis; M.A. Teaching and Learning – Non-Thesis; M.Sc. in Public Health – Non-Thesis; M.Sc.A. Nursing; M.Sc.A. Occupational Therapy; M.Sc.A. Physical Therapy; and students in part-time programs is determined on a per course basis. Residence requirements are fulfilled when students complete all course requirements in their respective programs.
- For master's programs structured as Course, Project or Non-Thesis options where the program is pursued on a part-time basis, residence requirements are normally fulfilled when students complete all course requirements in their respective programs (minimum 45 credits or a minimum of three full-time terms) and pay the fees accordingly.

These designated periods of residence represent minimum time requirements. There is no guarantee that the work for the degree can be completed in this time. Students must register for such additional terms as are needed to complete the program.

### Coursework – Master's Degrees

Program requirements are outlined in the relevant departmental sections of the Graduate and Postdoctoral Studies *Programs, Courses and University Regulations* publication, available at [www.mcgill.ca/study](http://www.mcgill.ca/study).

The department concerned will examine the student's previous training and then decide which of the available courses in the area of specialization or related fields are required to bring the candidate to the proper level for the master's degree. Due account will be taken of relevant courses passed at any recognized university.

As a rule, no more than one-third of the McGill program formal coursework (not thesis, project, stage, or internship) can be credited with courses from another university.

Non-thesis degrees normally specify the course program which the candidate must follow.

The candidate is required to pass, with a grade of B- or better, all those courses that have been designated by the department as forming a part of the program, including additional requirements.

Students taking courses at another university must obtain a minimum grade of B- (65%) if the course is to be credited toward their McGill degree. In the cases where only a letter grade is used, a B- is the minimum passing grade and no equivalent percentage will be considered. In the cases where only a percentage grade is used, 65% is the minimum passing grade.

If courses were not used for a degree, they could be **credited** toward a McGill degree, keeping in mind that a maximum of one-third of the coursework (not thesis, project, stage, internship, and practicum) can be credited. If an **exemption** is granted, it must be replaced by another graduate course at McGill toward the degree. No double counting is ever allowed. This regulation also applies to doctoral programs.

### Research and Thesis – Master's Degrees

All candidates for a research degree must present a thesis based on their own research. The total number of credits allotted to the thesis in any master's program must not be less than 24. The title of the thesis and names of examiners must be forwarded on a *Nomination of Examiners* form, in accordance with the dates on [www.mcgill.ca/importantdates](http://www.mcgill.ca/importantdates), through the chair of the department concerned at the same time as the thesis is submitted to Graduate and Postdoctoral Studies. A thesis for the master's degree, while not necessarily requiring an exhaustive review of work in the particular field of study, or a great deal of original scholarship, must show familiarity with previous work in the field and must demonstrate the ability to carry out research and to organize results, all of which must be presented in good literate style. The thesis will not normally exceed 100 pages; in some disciplines, shorter texts are preferred. Guidelines and deadlines are available at [www.mcgill.ca/gps/students/thesis/guidelines](http://www.mcgill.ca/gps/students/thesis/guidelines).

### Language Requirements – Master's Degrees

Most master's degree programs do not include language requirements, but candidates who intend to proceed to a doctoral degree should take note of any language requirements and are strongly advised to take the examinations in at least one language while working for the master's degree.

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## 5.2 Doctoral Degrees

### Residence Requirements – Doctoral

Refers to the numbers of terms (or years) students must be registered on a full-time basis to complete their program. Students are not permitted to graduate until they have fulfilled the residence requirement (or paid the corresponding fees) in their program.

Candidates entering Ph.D. 1 must follow a program of at least three years' residency at the University; this is a minimum requirement, and there is no guarantee that the work of the degree can be completed in this time, but students are expected to complete within the maximum specified period. Only exceptional candidates holding a bachelor's degree will be considered for direct admission to Ph.D. 1 level.

It is required that candidates spend the greater part of each summer working on their theses, and those who do not do so are unlikely to complete a satisfactory thesis in the prescribed minimum time (see [section 8.3: Vacation Policy for Graduate Students and Postdocs](#)).

A student who has obtained a master's degree at McGill University or at an approved institution, in a relevant subject and is proceeding to a Ph.D. degree will, on the recommendation of the department, be admitted to Ph.D. 2; in this case, the residency requirement for the program is two years.

In the doctoral program, students must be registered on a full-time basis for one more year after completion of the residency (i.e., Ph.D. 4 year) before continuing as Additional Session students until completion of the program.



**Note:** The master's degree must have been awarded before initial registration in the doctoral program; otherwise, the admission level will be at Ph.D. 1 and residency will be extended to three years. Once the level of admission is approved, it will not be changed after obtaining the master's degree if the date falls after registration in the program. If a previous awarded degree is a condition of admission, it must be fulfilled before registration in another program.

As a rule, no more than one-third of the McGill program formal coursework can be credited with courses from another university.

#### **Comprehensive Examinations – Doctoral**

A comprehensive examination or its equivalent is usually held near the end of Ph.D. 2. The results of this examination determine whether or not students will be permitted to continue in their programs. The methods adopted for examination and evaluation and the areas to be examined are specified by departmental regulations approved by the Dean of Graduate and Postdoctoral Studies. It is the responsibility of students to inform themselves of these details at the commencement of their programs. For more information, see *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > Guidelines and Policies > : Ph.D. Comprehensives Policy*.

#### **Language Requirements – Doctoral**

Most graduate departments in the Faculties of Agricultural and Environmental Sciences, Education, Engineering, Management, Medicine, and Science do not require a language examination. Students should inquire in their departments if there are any such requirements or whether any other requirements have

English and French language courses offered by the French Language Centre (Faculty of Arts) or the School of Continuing Studies may not be taken for coursework credits toward a graduate program.

All substitutions for coursework in graduate programs, diplomas, and certificates must be approved by GPS.

Courses taken at other institutions to be part of the requirements of a program of studies must be approved by GPS before registration. Double counting is not permitted.

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## 6 General Admission for Graduate Studies

Website: [www.mcgill.ca/gradapplicants](http://www.mcgill.ca/gradapplicants)

Email: [servicepoint@mcgill.ca](mailto:servicepoint@mcgill.ca)

**Deadline: Admission to graduate studies operates on a rolling basis; complete applications and their supporting documentation must reach departmental offices on or before the Date for Guaranteed Consideration specified by the department. To be considered for entrance fellowships, where available, applicants must verify the deadlines with individual departments. Meeting minimum admission standards does not guarantee admission.**

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### 6.1 Application for Admission

Application information and the online application form are available at [www.mcgill.ca/gradapplicants/apply](http://www.mcgill.ca/gradapplicants/apply). Applicants (with some exceptions) are required to ask two instructors familiar with their work to send letters of recommendation.

## 6.3 Admission Tests

### Graduate Record Examination (GRE)

The Graduate Record Examination (GRE) (Educational Testing Service, Princeton, NJ 08540) consists of a relatively advanced test in the candidates' specialty, and a general test of their attainments in several basic fields of knowledge for which no special preparation is required or recommended. It is offered at many centres, including Montreal, several times a year; the entire examination takes about eight hours, and there is a registration fee. Refer to [www.ets.org/gre](http://www.ets.org/gre) for further information. Only some departments require applicants to write the GRE examination, but all applicants who have written either the general aptitude or the advanced test are advised to submit the scores along with their other admission material.

This credential is of special importance in the case of applicants whose education has been interrupted, or has not led directly toward graduate study in the subject selected. In such cases the department has the right to insist on a report from the Graduate Record Examination or some similar test. High Standing in this examination will not by itself guarantee admission. The Miller Analogies Test may be used similarly. Some departments of the Faculty of Education also require the taking of various tests.

### Graduate Management Admissions Test (GMAT)

Applicants to graduate programs in Management must submit scores from the Graduate Management Admissions Test (GMAT). The test is a standardized assessment offered by the Graduate Management Admission Council to help business schools assess candidates for admission. For further information, see [www.mba.com/the-gmat](http://www.mba.com/the-gmat).

## 6.4 Competency in English

Applicants to graduate studies must demonstrate an adequate level of proficiency in English **prior to admission**, regardless of citizenship status or country of origin.

Normally, applicants meeting any one of the following conditions are NOT required to submit proof of proficiency in English:

1. Mother tongue (language first learned and still used on a daily basis) is English.
2. Has obtained (or is about to obtain) an undergraduate or graduate degree from a recognized foreign institution where English is the language of instruction.
3. Has obtained (or is about to obtain) an undergraduate or graduate degree from a recognized institution in Canada or the United States of America (anglophone or francophone).
4. Has lived and attended university, or been employed, for at least four consecutive years, in a country where English is the acknowledged primary language.

Applicants who do not meet any of the above-listed conditions must demonstrate proficiency in English using **one** of the following options:

1. TOEFL (Test of English as a Foreign Language): minimum acceptable scores are:

#### Competency in English

iBT (Internet-based test)	PBT (paper-based test)	CBT (computer-based test)*
86 overall (no less than 20 in each of the four component scores)	550	* The CBT is no longer being offered and CBT results are no longer considered valid, or being reported by ETS.

N.B. an institutional version of the TOEFL is not acceptable.

2. IELTS (International English Language Testing System): a band score of 6.5 or greater.
3. MELAB (Michigan English Language Assessment Battery): a grade of 85% or higher.
4. University of Cambridge ESOL Certificate in Advanced English (CAE): a grade of "B" (Good) or higher.
5. University of Cambridge ESOL Certificate of Proficiency in English (CPE): a grade of "C" (Pass) or higher.
6. Edexcel London Test of English – Level 5 – with an overall grade of at least "Pass."
7. McGill Certificate of Proficiency in English or McGill Certificate of Proficiency – English for Professional Communication: Certificate of Proficiency awarded. McGill Certificate of Proficiency in English or McGill Certificate of Proficiency – English for Professional Communication: Certificate of Proficiency awarded.

In each case, applicants must ensure that official test results are sent to McGill directly by the testing service. Applications cannot be considered if test results are not available. These scores are general minima; some departments may set higher requirements.

*Revised – July 2008*

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## **6.5 Admission to a Qualifying Program**

Some applicants whose academic degrees and Standing entitle them to serious consideration for admission to graduate studies, b

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## 6.10 Deferral of Admission

Under exceptional circumstances, an admission for a particular semester can be considered for a deferral. This can be considered only if the student has not registered. If the student has already registered, no deferral can be granted. The student must withdraw from the University and apply for admission to a later term.

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## 7 Fellowships, Awards, and Assistantships

Graduate and Postdoctoral Studies  
(Fellowships and Awards Section)  
James Administration Building, Room 400  
845 Sherbrooke Street West  
Montreal, QC H3A 0G4  
Telephone: 514-398-3990  
Fax: 514-398-2626  
Website: [www.mcgill.ca/gps/students/fellowships](http://www.mcgill.ca/gps/students/fellowships)

The Fellowships and Awards section of Graduate and Postdoctoral Studies provides processing services for many sources of support for Canadian and non-Canadian students, both new to McGill and continuing. Further information on these and other sources of funding can be found in various publications on the Fellowships and Awards web pages. The [Graduate Fellowships and Awards Calendar](#) lists all internal awards as well as numerous external awards.

Entrance Fellowships are awarded on the basis of the application for admission, upon nomination by academic departments. Mostl Studies pro

Postdocs of policies, procedures, and privileges (e.g., orientation sessions, handbooks, etc.), as well as mechanisms for addressing complaints. Academic units should ensure that their policies, procedures and privileges are consistent with these guidelines and the Charter of Students' Rights. For their part, Postdocs are responsible for informing themselves of policies, procedures, and privileges.

**1. Definition and Status**

i. Postdoctoral status will be recognized by the University in accordance with Quebec provincial regulations. Persons may only be registered with postdoctoral status for a period of up to five years from the date they were awarded a Ph.D. or equivalent degree. Time allocated to parental or health leave is added to this period of time. Leaves for other reasons, including vacation leave, do not extend the term. Postdocs must do research under the supervision of a McGill professor, including Adjunct Professors, who is a member of McGill's academic staff qualified in the discipline in which training is being provided and with the abilities to fulfil responsibilities as a supervisor of the research and as a mentor for career development. They are expected to be engaged primarily in research with minimal teaching or other responsibilities.

**2. Registration**

i. Postdocs must be registered annually with the Unil responsibilite in ef(Tj/F1 8.1 Tf(l responsibilatus)Tjb371.448 677.82nd t35o5 Tm7g



- i. Postdocs are subject to the responsibilities outlined in the *Handbook on Student Rights and Responsibilities* (“Green Book”), available at [www.mcgill.ca/secretariat/policies/students](http://www.mcgill.ca/secretariat/policies/students).
- ii. Each academic unit hosting Postdocs should clearly identify Postdocs’ needs and the means by which they will be met by the unit.
- iii. Each academic unit should assess the availability of research supervision facilities, office space, and research funding before recruiting Postdocs.
- iv. Some examples of responsibilities of the department are:
  - to verify the Postdoc’s eligibility period for registration;
  - to provide Postdocs with departmental policy and procedures that pertain to them;
  - to oversee the registration and appointment of Postdocs;
  - to assign departmental personnel (e.g., Postdoc coordinator and Graduate Program Director) the responsibility for Postdocs;
  - to oversee and sign off on the Letter of Agreement for Postdoctoral Education;
  - to ensure that each Postdoc has a supervisor, lab and/or office space, access to research operating costs and necessary equipment;
  - to include Postdocs in departmental career and placement opportunities;
  - to refer Postdocs to the appropriate University policies and personnel for the resolution of conflict that may arise between a Postdoc and a supervisor.
- v. Some examples of responsibilities of the supervisor are:
  - to uphold and transmit to their Postdocs the highest professional standards of research and/or scholarship;
  - to provide research guidance;
  - to meet regularly with their Postdocs;
  - to provide feedback on research submitted by the Postdocs;
  - to clarify expectations regarding intellectual property rights in accordance with the University’s policy;
  - to provide mentorship for career development;
  - to prepare, sign, and adhere to a Letter of Agreement for Postdoctoral Education.
- vi. Some examples of responsibilities of Postdocs are:
  - to inform themselves of and adhere to the University’s policies and/or regulations for Postdocs for leaves, for research, and for student conduct as outlined in the *Handbook on Student Rights and Responsibilities* and the Graduate and Postdoctoral Studies *University Regulations and Resources*;
  - to submit a complete file for registration to Enrolment Services;
  - to sign and adhere to their Letter of Agreement for Postdoctoral Education;
  - to communicate regularly with their supervisor;
  - to inform their supervisor of their absences.
- vii. Some examples of the responsibilities of the University are:
  - to register Postdocs;
  - to provide an appeal mechanism in cases of conflict;
  - to provide documented policies and procedures to Postdocs;
  - to provide Postdocs with the necessary information on McGill University student services.

*Approved by Senate, April 2000*

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### 8.3 Vacation Policy for Graduate Students and Postdocs

Graduate students and Postdocs should normally be entitled to vacation leave equivalent to university holidays and an additional total of fifteen (15) working days in the year. Funded students and Postdocs with fellowships and research grant stipends taking additional vacation leave may have their funding reduced accordingly.

*Council of FGSR April 23, 1999*

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### 8.4 Leave of Absence for Health and Parental/Familial Reasons

A leave of absence may be granted for maternity or parental reasons or for health reasons (see *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > Health and Parental/Familial Leave of Absence Policy*).

Such a leave must be requested on a term-by-term basis and may be granted for a period of up to 52 weeks. Students and Postdocs must make a request for such a leave in writing to their department and submit a medical certificate. The department shall forward the request to Enrolment Services. See procedure

under *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > : Health and Parental/Familial Leave of Absence Policy*. Students who have been granted such a leave will have to register for the term(s) in question and their registration will show as “leave of absence” on their record. No tuition fees will be charged for the duration of the authorized leave. Research supervisors are not obligated to remunerate students and Postdocs on leave. GPS has prepared a summary table of various leave policies (paid or unpaid) for students and Postdocs paid from the Federal and Quebec Councils through fellowships or research grants. The document is available at [www.mcgill.ca/gps/postdocs/becoming/leave](http://www.mcgill.ca/gps/postdocs/becoming/leave) under “Information on the Funding Council Leave Policies for Graduate Students and Postdoctoral Fellows.”

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## 8.5 Postdoctoral Research Trainees

### Eligibility

If your situation does not conform to the *Quebec Ministère de l'Éducation, du Loisir et du Sport* (MELS) definition of Postdoctoral Fellow, you may be eligible to attend McGill as a Postdoctoral Research Trainee. While at McGill, you can perform research only (you may not register for courses or engage in clinical practice). Medical specialists who will have clinical exposure and require a training card must register through Postgraduate Medical Education of the Faculty of Medicine—not Graduate and Postdoctoral Studies.

The category of Postdoctoral Research Trainee is for:

**Category 1:** An individual who has completed requirements for the Doctoral degree or medical specialty, but the degree/certification has not yet been awarded. The individual will subsequently be eligible for registration as a Postdoctoral Fellow.

**Category 2:** An individual who is not eligible for Postdoctoral Registration according to the MELS definition, but is a recipient of an external postdoctoral award from a recognized Canadian funding agency.

**Category 3:** An individual who holds a professional degree (or equivalent) in a regulated health profession (as defined under CIHR-eligible health profession) and is enrolled in a program of postgraduate medical education at another institution. The individual wishes to conduct the research stage or elective component of his/her program of study at McGill University under the supervision of a McGill professor. The individual will be engaged in full-time research with well-defined objectives, responsibilities, and methods of reporting. The application must be accompanied by a letter of permission from the home institution (signed by the Department Chair, Dean or equivalent) confirming registration in their program and stating the expected duration of the research stage. Individuals who are e



- biogenesis and function of lysosomes
- cell turnover in various tissues
- control of cell growth and proliferation
- molecular biology of extracellular matrix
- structure, composition, and function of basement membranes and connective tissue microfibrils
- cell and microfibrils
- cell and molecular biology of spermatogenesis
- genetic expression of proteins in the formation of c

- freeze-fracture replication
- computer reconstruction and quantitation
- chromatography
- subcellular fractionation
- recombinant DNA technology
- in situ hybridization
- tissue grafting
- cell and tissue culture
- mutant and transgenic mice
- hybridomas
- monoclonal antibodies

The Department has one of the largest and best-equipped electron microscope facilities in the world. Currently in use are four modern electron microscopes, including a Tecnai F20 and a Titan Krios. Combined with some of these microscopes are computer-aided analytical equipment capable of elemental microanalysis, histomorphometry, reconstruction, and quantitation. The high-voltage microscope is particularly useful for certain analytical electron optical procedures such as electron diffraction, lattice imaging, and three-dimensional electron microscopy.

#### ***section 11.1.5: Master of Science (M.Sc.); Cell Biology (Thesis) (45 credits)***

Graduate research activities leading to the presentation of the M.Sc. thesis involve original experimental work in one of the areas being actively investigated by the Department's research supervisors. Our graduate program offers training in a personal, unique, and multidisciplinary environment in the top Canadian university with worldwide recognition. The thesis-based master training is intended for students with a B.Sc. or B.A. degree in life sciences from a university of recognized reputation. Candidates with an M.D., D.D.S., or D.V.M. degree are also welcome. The students are trained in how to address biological problems with an integrative understanding of cell biology by conducting hypothesis-driven projects. The training provides all the tools required for a competitive career, in academic settings as well as in industry or other fields.

#### ***section 11.1.6: Doctor of Philosophy (Ph.D.); Cell Biology***

Graduate research activities leading to the presentation of the Ph.D. thesis involve original experimental work in one of the areas being actively investigated by the Department's research supervisors. Our graduate program offers training in a personal, unique, and multidisciplinary environment in the top Canadian university with worldwide recognition. The thesis-based Ph.D. training is intended for students with a B.Sc., B.A., or M.Sc. degree in life sciences from a university of recognized reputation. Candidates with an M.D., D.D.S., or D.V.M. degree are also welcome. The students are trained in how to address biological problems with an integrative understanding of cell biology by conducting hypothesis-driven projects. The training provides all the tools required for a competitive career, in academic settings as well as in industry or other fields.

### **11.1.3 Anatomy and Cell Biology Admission Requirements and Application Procedures**

#### **11.1.3.1 Admission Requirements**

##### **M.Sc. and Ph.D. Programs**

1. A B.Sc. degree in life sciences or any of M.D., D.D.S., or D.V.M. degrees from a university of recognized reputation.
2. Evidence of a high academic achievement with a minimum cumulative grade point average (CGPA) of 3.0 on 4.0 as indicated in the general guidelines set up by GPS at McGill.
3. Students must follow the guidelines for English Language Proficiency at [www.mcgill.ca/gradapplicants/apply/prepare/requirements/proficiency](http://www.mcgill.ca/gradapplicants/apply/prepare/requirements/proficiency).
4. M.Sc. and Ph.D. students are supported financially, at a minimum of \$15,000 and \$17,000 respectively, per year.

Graduate students are also expected to apply for the various internal and external fellowships. Detailed information is available at [www.mcgill.ca/anatomy/graduate/fellowships](http://www.mcgill.ca/anatomy/graduate/fellowships). Graduate students are responsible for the payment of tuition fees to McGill University. Detailed information about these can be found at [www.mcgill.ca/student-accounts/tuition-charges/fallwinter-term-tuition-and-fees/graduate-fees](http://www.mcgill.ca/student-accounts/tuition-charges/fallwinter-term-tuition-and-fees/graduate-fees). F

1. Two official copies of complete university-level academic records to date; this also applies to McGill University transcripts. It may be desirable to submit a list of the titles of the courses tak

## Professors

Wayne Sossin; S.B.(MIT), Ph.D.(Stan.) (*joint appt. with Neurology & Neurosurgery*)

Stefano Stifani; Ph.D.(Rome), Ph.D.(Alta.) (*joint appt. with Neurology & Neurosurgery*)

Dominique Walker; B.Sc., Ph.D.(Geneva) (*joint appt. with Psychiatry*)

## Associate Professors

Orest W. Blaschuk; B.Sc.(Winn.), M.Sc.(Manit.), Ph.D.(Tor.) (*joint appt. with Surgery*)

Eugene Daniels; M.Sc., Ph.D.(Manit.)

Elaine Davis; B.Sc., M.Sc.(W. Ont.), Ph.D.(McG.)

M.F. Lalli; B.Sc., M.Sc.(Bowling Green), Ph.D.(McG.)

Craig Mandato; B.Sc., Ph.D.(Wat.)

John F. Presley; B.A., Ph.D.(Texas)

Hojatollah V

**Adjunct Professors**

Michel Cayouette; Ph.D.(Laval)  
 Frédéric Charron; B.Sc.(Montr.), Ph.D.(McG.)  
 Mirosław Cygler; M.Sc., Ph.D.(Lodz, Poland)  
 Daniel Cyr; B.Sc., M.Sc.(C'odia), Ph.D.(Manit.)  
 Michel Desjardins; M.Sc., Ph.D.(Montr.)  
 Jacques Drouin; B.Sc., D.Sc.(Laval)  
 David Hipfner; B.Sc., Ph.D.(Qu.)  
 Artur Kania; Ph.D.(Baylor)  
 André Nantel; B.Sc., M.Sc.(Laval), Ph.D.(Chapel Hill)  
 Alexei Pshezhetsky; Ph.D.(Russia)  
 Joseph Schrag; M.Sc., Ph.D.(Ill.)  
 Atilla Sik; M.Sc., Ph.D.(Hungary)  
 Pierre Thibault; Ph.D.(Montr.)

**Faculty Lecturers**

Ayman Behiery; M.B., Ch.B.(Cairo)  
 Geoffroy P. Noël; Ph.D.(Br. Col.)

**11.1.5 Master of Science (M.Sc.); Cell Biology (Thesis) (45 credits)****Thesis Course (24 credits)**

ANAT 698	(24)	M.Sc. Thesis Research 1
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**Required Course (12 credits)**

ANAT 601	(3)	MSc Seminar Examination
ANAT 695	(3)	Seminars in Cell Biology 1
ANAT 696	(3)	Seminars in Cell Biology 2
ANAT 697	(3)	Seminars in Cell Biology 3

**Complementary Courses (9 credits)**

6 credits from one of two streams: Cell Developmental Biology Stream or Human Systems Biology Stream

**Cell Developmental Biology Stream**

ANAT 663D1	(4.5)	Histology
ANAT 663D2	(4.5)	Histology
ANAT 690D1	(3)	Cell and Developmental Biology
ANAT 690D2	(3)	Cell and Developmental Biology

**Human Systems Biology Stream**

6 credits required:

ANAT 690D1	(3)	Cell and Developmental Biology
ANAT 690D2	(3)	Cell and Developmental Biology



3 credits selected from:

BMDE 502	(3)	BME Modelling and Identification
BMDE 519	(3)	Biomedical Signals and Systems
BTEC 501	(3)	Bioinformatics
COMP 564	(3)	Computational Gene Regulation
COMP 680	(4)	Mining Biological Sequences
EXMD 602	(3)	Techniques in Molecular Genetics
MIMM 613	(3)	Current Topics 1
MIMM 614	(3)	Current Topics 2
MIMM 615	(3)	Current Topics 3

Upon consultation with the supervisor, students may select a 3-credit course outside of this list from Biomedical Science courses at the 500-600 level.

### 11.1.6 Doctor of Philosophy (Ph.D.); Cell Biology

#### Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

#### Required Courses

ANAT 690D1	(3)	Cell and Developmental Biology
ANAT 690D2	(3)	Cell and Developmental Biology
ANAT 695	(3)	Seminars in Cell Biology 1
ANAT 696	(3)	Seminars in Cell Biology 2
ANAT 697	(3)	Seminars in Cell Biology 3
ANAT 701	(0)	Ph.D. Comprehensive Examination

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## 11.2 Biochemistry

### 11.2.1 Location

Department of Biochemistry  
 McIntyre Medical Sciences Building  
 3655 Promenade Sir-William-Osler  
 Montreal, QC H3G 1Y6  
 Canada

Christine Laberge: Student Affairs Administrator  
 Telephone: 514-398-2423  
 Fax: 514-398-7384

Email: [admissions.biochemistry@mcgill.ca](mailto:admissions.biochemistry@mcgill.ca)

Website: [www.mcgill.ca/biochemistry](http://www.mcgill.ca/biochemistry)

Website: [www.mcgill.ca/biochemistry/chemicalbiology](http://www.mcgill.ca/biochemistry/chemicalbiology)

Website: [www.mcgill.ca/biochemistry/bioinformatics](http://www.mcgill.ca/biochemistry/bioinformatics)

## **11.2.2 About Biochemistry**

The Department of Biochemistry offers M.Sc. and Ph.D. programs, which emphasize laboratory research. Our research interests include molecular and cell biology, the regulation of gene and protein expression, signal transduction, protein structure and function, membrane biology, cell death and differentiation, embryonic development, neurobiology, bioinformatics, and man

***section 11.2.8: Doctor of Philosophy (Ph.D.); Biochemistry***

groups. Graduates of the Ph.D. program are outstandingly prepared for leadership careers in the basic health sciences in industry, the public sector, or academia.

***section 11.2.9: Doctor of Philosophy (Ph.D.); Biochemistry — Chemical Biology***

The Chemical Biology Thematic Group is engaged in a diverse range of research topics which span structural biology, enzymology, nucleic acid research, signalling pathways, single molecule biophysics, and biophysical chemistry of living tissues. Among the themes which unite the research being performed in this group is trying to learn new chemistry and physics from biological systems. We have projects relating to pharmaceutically relevant enzymes such as those involved in drug metabolism and antibiotic resistance; development of therapeutic agents in the control of inflammation, cancer and viral infections; the chemical biology of NO; quantification of bioenergetic markers of metabolism; self-assembly mechanisms of the HIV-1 virion capsid; liposome microarray systems to address membrane protein dynamics and recognition; studies on reactive oxygen species translocation across the aqueous/lipid membrane interface; RN

GRE: Subject

## Professors

Philip E. Branton; B.Sc., M.Sc., Ph.D.(Tor.), F.R.S.C. (*Gilman Cheney Professor of Bioc*

BIOC 697	(9)	Thesis Research 1
BIOC 698	(12)	Thesis Research 2
BIOC 699	(15)	Thesis Research 3

**Required Course (3 credits)**

BIOC 696	(3)	Seminars in Biochemistry
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**Complementary Courses\* (6 credits)**

At least 3 credits must be chosen from the following:

BIOC 570	(3)	Biochemistry of Lipoproteins Advanced State
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CHEM 502

(3)

Advanced Bio-Organic Chemistry  
Drug Design and Dev

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar

**Complementary Courses\* (9 credits)**

3 credits to be chosen from the following courses:

BIOC 570	(3)	Biochemistry of Lipoproteins
BIOC 600	(3)	Advanced Strategies in Genetics and Genomics
BIOC 603	(3)	Genomics and Gene Expression
BIOC 604	(3)	Macromolecular Structure
BIOC 605	(3)	Structural Biology and Proteomics
EXMD 615	(3)	Essentials of Glycobiology



At least 3 credits selected from:

BIOC 570	(3)	Biochemistry of Lipoproteins
BIOC 600	(3)	Advanced Strategies in Genetics and Genomics
BIOC 603	(3)	Genomics and Gene Expression
BIOC 604	(3)	Macromolecular Structure
BIOC 605	(3)	Structural Biology and Proteomics
EXMD 615	(3)	Essentials of Glycobiology
EXMD 635D1	(3)	Experimental/Clinical Oncology
EXMD 635D2	(3)	Experimental/Clinical Oncology

Plus additional credits to a minimum of 6 total complementary course credits of 500- or higher-level courses in the biomedical and allied sciences.

\*\*\* Complementary courses are chosen in consultation with the Research Director.

The Graduate Advisory Committee may stipulate additional course work depending on the background of the candidate. BIOC 450 (Protein Structure and Function) and BIOC 454 (Nucleic Acids) are additional requirements for those who have not previously completed equivalent courses in their prior training.

### **11.2.9 Doctor of Philosophy (Ph.D.); Biochemistry — Chemical Biology**

#### **Thesis**

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show f

At least 3 credits from the following:

BIOC 570	(3)	Biochemistry of Lipoproteins
BIOC 600	(3)	Advanced Strategies in Genetics and Genomics
BIOC 603	(3)	Genomics and Gene Expression
BIOC 604	(3)	Macromolecular Structure
BIOC 605	(3)	Structural Biology and Proteomics
EXMD 615	(3)	Essentials of Glycobiology
EXMD 635D1	(3)	Experimental/Clinical Oncology
EXMD 635D2	(3)	Experimental/Clinical Oncology

Plus additional credits to a total of at least 9 complementary course credits from the following list:

CHEM 504	(3)	Drug Design and Development 2
CHEM 522	(3)	Stereochemistry
CHEM 582	(3)	Supramolecular Chemistry
CHEM 591	(3)	Bioinorganic Chemistry
CHEM 621	(5)	Reaction Mechanisms in Organic Chemistry
CHEM 629	(5)	Organic Synthesis
CHEM 655	(4)	Advanced NMR Spectroscopy
EXMD 510	(3)	Bioanalytical Separation Methods
EXMD 602	(3)	Techniques in Molecular Genetics
PHAR 504	(3)	Drug Discovery and Development 2
PHAR 562	(3)	General Pharmacology 1
PHAR 563	(3)	General Pharmacology 2
PHAR 707	(3)	Topics in Pharmacology 6

\*\*\* Complementary courses are chosen in consultation with the Research Director.

The Graduate Advisory Committee may stipulate additional coursework depending on the background of the candidate. BIOC 450 (Protein Structure and Function) and BIOC 454 (Nucleic Acids) are additional requirements for those who have not previously completed equivalent courses in their prior training.

### 11.2.10 Doctor of Philosophy (Ph.D.); Biochemistry — Bioinformatics

#### Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

#### Required Courses (6 credits)

BIOC 696*	(3)	Seminars in Biochemistry
BIOC 701**	(0)	Research Seminar 1
BIOC 702**	(0)	Ph.D. Thesis Proposal
BIOC 703**	(0)	Research Seminar 2
COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar

\* Students promoted directly from the M.Sc. to the Ph.D. program, and who registered for and passed BIOC 696 at the M.Sc. level, do not register for BIOC 696 at the Ph.D. level.

\*\* NOTE: Students DO NOT register for these courses until notified by the Student Affairs Officer.

Students must complete BIOC 701 in the third term after admission to the program, BIOC 702 in the fifth or sixth term, and BIOC 703 approximately six months prior to submission of the Ph.D. thesis.

**Complementary Courses\*\*\* (9 credits)**

3 credits from the following:

BIOC 570	(3)	Biochemistry of Lipoproteins
BIOC 600	(3)	Advanced Strategies in Genetics and Genomics
BIOC 603	(3)	Genomics and Gene Expression
BIOC 604	(3)	Macromolecular Structure
BIOC 605	(3)	Structural Biology and Proteomics
EXMD 615	(3)	Essentials of Glycobiology

in biomedical ethics for selected master's students in the Division of Experimental Medicine, Genetics Department, Philosophy Department, Faculty of Religious Studies, and Faculty of Law.

**Master's Specialization in Bioethics**

The Master's Specialization in Bioethics is sponsored by the:

- Faculty of Medicine, Division of Experimental Medicine;
- Faculty of Law;
- Faculty of Religious Studies; and
- Faculty of Arts, Department of Philosophy.

Students receive an M.A., LL.M., or M.Sc. degree in the discipline chosen with a specialization in Bioethics.

Students pursuing the master's degree specialization normally take two semesters of courses before beginning their master's thesis. Courses offered include Bioethics Theory, Public Health Ethics and Policy, Research Ethics, and a Practicum that includes placement in a clinical or research setting. Research and writing the thesis normally takes one year. Students must also comply with the course and thesis requirements of their home disciplines.

**11.3.3 Bioethics Admission Requirements and Application Procedures**

**11.3.3.1 Admission Requirements**

M.D., bachelor's-level professional training in a health science, or bachelor's degree in law, philosophy, or religious studies. Other students may be considered on an individual basis.

Enrolment is limited to 12 students.

**11.3.3.2 Application Procedures**

Applications for the Master's Specialization in Bioethics are made initially through the Faculties of Law, Medicine (Division of Experimental Medicine), Religious Studies, and the Department of Philosophy. McGill's online application form for graduate program candidates is available at [www.mcgill.ca/gradapplicants/apply](http://www.mcgill.ca/gradapplicants/apply).

Applicants must satisfy the admission criteria for their chosen discipline and those of the Bioethics Unit, which administers the program and teaches the core courses. [www.mcgill.ca/biomedicaethicsunit/masters/apply](http://www.mcgill.ca/biomedicaethicsunit/masters/apply). Please submit all supporting documents to your base department. Once you have completed your online application, send an email to [heike.farber@mcgill.ca](mailto:heike.farber@mcgill.ca) at the Bioethics Unit stating your chosen base discipline.

Applicants must be accepted by the appropriate Faculty, the Bioethics Graduate Studies Advisory Committee, and Graduate and Postdoctoral Studies.

**11.3.3.3 Dates for Guaranteed Consideration**

Canadian	International	Special/Exchange/Visiting
Fall: Jan. 15	Fall: Jan. 15	Fall: Jan. 15
Winter: N/A	Winter: N/A	Winter: N/A
Summer: N/A	Summer: N/A	Summer: N/A

**11.3.4 Bioethics Faculty**

Faculty
E. Bereza; B.A., M.D.,C.M.(McG.), C.C.FP.(C)
A. Campbell; B.A., LL.B., B.C.L.(McG.), LL.M.(Harv.)
C. Ells; R.R.T.(VGH), B.A.(St. Mary's), M.A., Ph.D.(Tenn.)
J.R. Fishman; B.A.(Calif., Berk.), Ph.D.(Calif., SF)
K.C. Glass; A.M.(Chic.), LL.B., B.C.L., D.C.L.(McG.)
J. Kimmelman; B.S.(Duke), Ph.D.(Yale)
N.B. King; B.A.(Penn.), M.A., Ph.D.(Harv.)

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## 11.4 Biomedical Engineering

### 11.4.1 Location

Department of Biomedical Engineering  
Duff Medical Building  
3775 University Street, Room 316  
Montreal, QC H3A 2B4  
Canada

Telephone: 514-398-6736

Fax: 514-398-7461

Website: [www.mcgill.ca/bme](http://www.mcgill.ca/bme)

### 11.4.2 About Biomedical Engineering

The Department offers graduate training programs leading to master's (M.Eng.) and Ph.D. degrees in Biomedical Engineering.

We provide instruction and opportunities for interdisciplinary research in the application of engineering, mathematics, and the physical sciences to problems in medicine and the life sciences. Courses are offered for graduate students in the life sciences, engineering, and the physical sciences.

Excellent laboratory facilities for basic and applied research are av

*section 11.4.7: Doctor of Philosophy (Ph.D.); Biomedical Engineering*

environment, taking advantage of research collaborations between staff in the Faculties of Medicine, Science, and Engineering. BME offers only thesis-based graduate degrees (Ph.D.) spanning broad themes in biomodelling, biosignal processing, medical imaging, nanotechnology, artificial cells and organs, probiotics, bioinformatics, bioengineering, biomaterials, and orthopaedics. For details, please refer to the BME website: [www.mcgill.ca/bme](http://www.mcgill.ca/bme). The best preparation is with a bachelor's degree in engineering, science, or medicine and a master's degree in biomedical engineering, bioengineering, biotechnology, electrical engineering, physiology, chemical engineering, biomaterial, system engineering, imaging, or other related areas. BME graduates have secured positions in academia, biomedical, and other industries, and government or regulatory sectors. To our kno



BMDE 508	(3)	Introduction to Micro and Nano-Bioengineering
BMDE 519	(3)	Biomedical Signals and Systems
BMDE 650	(3)	Advanced Medical Imaging
BMDE 651	(3)	Orthopaedic Engineering
BMDE 652	(3)	Bioinformatics: Proteomics
COMP 526	(3)	Probabilistic Reasoning and AI
COMP 558	(3)	Fundamentals of Computer Vision
COMP 646	(4)	Computational Perception
COMP 761	(4)	Advanced Topics Theory 2
ECSE 523	(3)	Speech Communications
ECSE 526	(3)	Artificial Intelligence
ECSE 529	(3)	Computer and Biological Vision
ECSE 626	(4)	Statistical Computer Vision
ECSE 681	(4)	Colloquium in Electrical Engineering
EXMD 610	(3)	Biomedical Methods in Medical Research
MDPH 607	(3)	Introduction to Medical Imaging
MDPH 611	(2)	Medical Electronics
MDPH 612	(2)	Computers in Medical Imaging
MECH 500	(3)	Selected Topics in Mechanical Engineering
MECH 561	(3)	Biomechanics of Musculoskeletal Systems
PHGY 517	(3)	Artificial Internal Organs
PHGY 518	(3)	Artificial Cells

or, with the approval of the student's Graduate Advisory Committee and the Graduate Program Chair, other graduate-level courses with content of interest to biomedical engineering students.

9 credits selected from the courses listed above, or with approval of the Graduate Chair and Supervisor.

#### 11.4.6 Master of Engineering (M.Eng.); Biomedical Engineering (Thesis) — Bioinformatics (45 credits)

##### Thesis Courses (24 credits)

BMDE 693	(6)	Thesis Research 4
BMDE 694	(6)	Thesis Research 5
BMDE 695	(12)	Thesis Submission

##### Required Courses (3 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar

##### Complementary Courses (18 credits)

12 credits of courses which have both biomedical content and content from the physical sciences, engineering, or computer science selected from the following:

BIOT 505	(3)	Selected Topics in Biotechnology
BMDE 500D1	(1.5)	Seminars in Biomedical Engineering



BMDE 500D2	(1.5)	Seminars in Biomedical Engineering
BMDE 501	(3)	Selected Topics in Biomedical Engineering
BMDE 502	(3)	BME Modelling and Identification
BMDE 503	(3)	Biomedical Instrumentation
BMDE 504	(3)	Biomaterials and Bioperformance
BMDE 505	(3)	Cell and Tissue Engineering
BMDE 506	(3)	Molecular Biology Techniques
BMDE 508	(3)	Introduction to Micro and Nano-Bioengineering
BMDE 519	(3)	Biomedical Signals and Systems
BMDE 650	(3)	Advanced Medical Imaging
BMDE 651	(3)	Orthopaedic Engineering
COMP 526	(3)	Probabilistic Reasoning and AI
COMP 558	(3)	Fundamentals of Computer Vision
COMP 646	(4)	Computational Perception
COMP 761	(4)	Advanced Topics Theory 2
ECSE 523	(3)	Speech Communications
ECSE 526	(3)	Artificial Intelligence
ECSE 529	(3)	Computer and Biological Vision
ECSE 626	(4)	Statistical Computer Vision
ECSE 681	(4)	Colloquium in Electrical Engineering
EXMD 610	(3)	Biomedical Methods in Medical Research
MDPH 607	(3)	Introduction to Medical Imaging
MDPH 611	(2)	Medical Electronics
MDPH 612	(2)	Computers in Medical Imaging
MECH 500	(3)	Selected Topics in Mechanical Engineering
MECH 561	(3)	Biomechanics of Musculoskeletal Systems
		Artificial Internal Or3)

The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

**Required Course**

BMDE 700                      (0)                      Ph.D. Comprehensive

Students must be registered in the course at the time of the Thesis Proposal and Comprehensive Exam Meeting.

**11.4.8 Doctor of Philosophy (Ph.D.); Biomedical Engineering — Bioinformatics**

**Thesis**

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

**Required Courses (3 credits)**

Ph.D. Comprehensive

leading researchers and scholars, who will go on to train future investigators in the field of communication sciences and disorders and who, through their research, will advance our understanding of the processes of human communication and its breakdown. Interdisciplinary interactions are at the core of our research training approach, which includes preparation to conduct both fundamental and clinically applied investigations. Our professors have collaborative ties with many departments and institutes of McGill (psychology, linguistics, neuroscience, otolaryngology, biomedical engineering, Montreal Neurological Institute and Hospital) as well as other Montreal universities, and they maintain national and international collaborations. Students can access this rich collaborative netw

### *section 11.5.7: Doctor of Philosophy (Ph.D.); Communication Sciences and Disorders*

of a SCSD professor(s) with relevant expertise to mentor the student in this process. Ph.D. students have the opportunity to pursue an interdisciplinary specialization in language acquisition through the McGill Language Acquisition Program, which intersects with McGill departments of Linguistics, Psychology, and Education. Our Ph.D. graduates typically pursue academic careers in universities or research institutes, but some work in settings that combine research and professional activities.

### *section 11.5.8: Doctor of Philosophy (Ph.D.); Communication Sciences and Disorders — Language Acquisition*

Information about this option is available from the School and at [www.psych.mcgill.ca/lap.html](http://www.psych.mcgill.ca/lap.html). This unique interdisciplinary Ph.D. program is available for doctoral students across four departments at McGill including SCSD, Linguistics, Psychology, and Integrated Studies in Education. The program is designed to provide enriched training focused on the scientific exploration of language acquisition by different kinds of learners in diverse contexts. Students in the Language Acquisition Program are introduced to theoretical and methodological issues on language acquisition from the perspectives of cognitive neuroscience, theoretical linguistics, psycholinguistics, education, communication sciences and disorders, and neuropsychology. In addition to the SCSD Ph.D. requirements, students in this program must complete 6 credits of coursework in language acquisition (including at least one course that is not in their home department), and four interdisciplinary seminars (2 credits each) and must include a faculty member in the Language Acquisition Program on their thesis committee.

## **11.5.3 Communication Sciences and Disorders Admission Requirements and Applications Procedures**

### **11.5.3.1 Admission Requirements**

#### **M.Sc. (Applied)**

An applicant must hold an undergraduate degree with a minimum B average (3.0 on a 4.0-point scale) or better in areas relevant to the selected field of specialization. Specific requirements are 6 credits in statistics, a total of 18 credits across the disciplines of psychology and linguistics (with a minimum of 6 credits in each discipline). Knowledge of physiology is also desirable.

#### **M.Sc. in Communication Sciences and Disorders**

### 11.5.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: Jan. 15	Fall: Jan. 15	Fall: Jan. 15
Winter: Sept. 15	Winter: Sept. 15	Winter: Sept. 15
Summer: N/A	Summer: N/A	Summer: N/A

### 11.5.4 Communication Sciences and Disorders Faculty

#### Director and Associate Dean

Marc Pell

#### Research Director

Linda Polka

#### Emeritus Professor

Donald Doehring; B.A.(Buff.), M.A.(N.M.), Ph.D.(Ind.)

#### Professors

Shari Baum; B.A.(C'nell), M.S.(Vermont), M.A., Ph.D.(Brown)

Athanasios Katsarkas; M.D.(Thess.), M.Sc.(McG.), F.R.C.P.(C).



SCSD 644	(3)	Applied Neurolinguistics
SCSD 646	(2)	Introductory Clinical Practicum
SCSD 669	(3)	ASD and Neurodevelopmental Disorders
SCSD 679	(2)	Advanced Clinical Practicum
SCSD 680	(3)	Deglutition and Dysphagia
SCSD 681	(1)	Practicum and Seminar 1
SCSD 682	(1)	Practicum and Seminar 2
SCSD 683	(1)	Practicum and Seminar 3
SCSD 684	(1)	Practicum and Seminar 4
SCSD 689	(1)	Management Cranio-Facial Disorders

**Complementary Courses (6 credits)**

Two of the following:

SCSD 634	(3)	Research and Measurement Methods 2
SCSD 664	(3)	Communication Sciences and Disorders 1
SCSD 666	(3)	Communication Sciences and Disorders 3
SCSD 667	(3)	Communication Sciences and Disorders 4
SCSD 670	(3)	Communication Sciences and Disorders 2
SCSD 678	(3)	Special Topics 4

**11.5.6 Master of Science (M.Sc.); Communication Sciences and Disorders (Thesis) (45 credits)**

**Thesis Cour**

The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

**Required Courses (12 credits)**

SCSD 652	(3)	Advanced Research Seminar 1
SCSD 653	(3)	Advanced Research Seminar 2
SCSD 685	(3)	Research Project 1
SCSD 686	(3)	Research Project 2
SCSD 701	(0)	Doctoral Comprehensive

**Complementary Courses (6 credits)**

Minimum of 6 credits of graduate-level statistics from courses such as:

EDPE 676	(3)	Intermediate Statistics
EDPE 682	(3)	Univariate/Multivariate Analysis
EDPE 684	(3)	Applied Multivariate Statistics
EPIB 621	(4)	Data Analysis in Health Sciences
EPIB 622	(3)	Scientific Communication
PSYC 650	(3)	Advanced Statistics 1
PSYC 651	(3)	Advanced Statistics 2

Any other course requirements specified for the student's individual program of study.

**11.5.8 Doctor of Philosophy (Ph.D.); Communication Sciences and Disorders — Language Acquisition**

Students must satisfy all program requirements for the Ph.D. in their home department. The Ph.D. thesis must be on a topic relating to language acquisition, approved by the LAP committee.

**Thesis**

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

**Required Courses (14 credits)**

EDSL 711	(2)	Language Acquisition Issues 3
LING 710	(2)	Language Acquisition Issues 2
PSYC 709	(2)	Language Acquisition Issues 1
SCSD 652	(3)	Advanced Research Seminar 1
SCSD 653	(3)	Advanced Research Seminar 2
SCSD 701	(0)	Doctoral Comprehensive
SCSD 712	(2)	Language Acquisition Issues 4

**Complementary Courses (9 credits)**

3 credits of graduate-level statistics from courses such as:

EDPE 676	(3)	Intermediate Statistics
EDPE 682	(3)	Univariate/Multivariate Analysis
PSYC 650	(3)	Advanced Statistics 1
PSYC 651	(3)	Advanced Statistics 2



Students who have taken an equivalent course in statistics, or are currently taking an equivalent course as part of their Ph.D. program requirements, will be deemed to have satisfied this requirement for the Language Acquisition Option.

At least two courses, selected from the following list.

One of these two courses must be from outside Communication Sciences and Disorders.

EDSL 620	(3)	Critical Issues in Second Language Education
EDSL 623	(3)	Second Language Learning
EDSL 624	(3)	Educational Sociolinguistics
EDSL 627	(3)	Classroom-Centred Second Language Research
EDSL 629	(3)	Second Language Assessment
EDSL 632	(3)	Second Language Literacy Development
EDSL 664	(3)	Second Language Research Methods
LING 555	(3)	Language Acquisition 2
LING 590	(3)	Language Acquisition and Breakdown
LING 651	(3)	Topics in Acquisition of Phonology
LING 655	(3)	Theory of L2 Acquisition
PSYC 561	(3)	Methods: Developmental Psycholinguistics
PSYC 734	(3)	Developmental Psychology and Language
PSYC 735	(3)	Developmental Psychology and Language
PSYC 736	(3)	Developmental Psychology and Language
PSYC 737	(3)	Developmental Psychology and Language
SCSD 619	(3)	Phonological Development
SCSD 632	(3)	Phonological Disorders: Children
SCSD 633	(3)	Language Development
SCSD 637	(3)	Developmental Language Disorders 1
SCSD 643	(3)	Developmental Language Disorders 2

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## 11.6 Epidemiology and Biostatistics

### 11.6.1 Location

Department of Epidemiology, Biostatistics and Occupational Health  
1020 Pine Avenue West  
Montreal, QC H3A 1A2  
Canada

Telephone: 514-398-6258

Email: [graduate.eboh@mcgill.ca](mailto:graduate.eboh@mcgill.ca)

Website: [www.mcgill.ca/epi-biostat-occh](http://www.mcgill.ca/epi-biostat-occh)

### 11.6.2 About Epidemiology and Biostatistics

The Department offers master's and doctoral programs in both Epidemiology and Biostatistics, as well as a Master's of Science in Public Health. The methods learned in these fields are used not only in the study of diseases, but also in the study of public health. The methods01.a1989

their research grants. We provide rich research environments at five university-affiliated hospitals, public health agencies, and university research centres. Graduates pursue careers in academia, clinical settings, government agencies, and industry.

### 11.6.3 Epidemiology and Biostatistics Faculty

#### Chair

R. Fuhrer

#### Emeritus Professors

M.R. Becklake; M.B.B.Ch., M.D.(Witw.), F.R.C.P.

A. Lippman; B.A.(C'nell), Ph.D.(McG.)

J.C. McDonald; M.B.B.S., M.D.(Lond.), M.Sc.(Harv.), M.R.C.P.(Lond.), F.R.C.P.(C)

I.B. Pless; B.A., M.D.(W. Ont.)

S.H. Shapiro; B.S.(Bucknell), M.S., Ph.D.(Stan.)

G. Thériault; M.D.(Laval), M.I.H., Dr.P.H.(Harv.)

S. Wood-Dauphinee; B.Sc.(Phys.Ther.), Dip.Ed., M.Sc.(A.), Ph.D.(McG.)

#### Professors Post-Retirement

A. Lippman; B.A.(C'nell), Ph.D.(McG.)

I.B. Pless; B.A., M.D.(W. Ont.)

S.H. Shapiro; B.S.(Bucknell), M.S., Ph.D.(Stan.)

G. Thériault; M.D.(Laval), M.I.H., Dr.P.H.(Harv.)

S. Wood-Dauphinee; B.Sc.(Phys.Ther.), Dip.Ed., M.Sc.(A.), Ph.D.(McG.)

#### Professors

M. Abrahamowicz; Ph.D.(Cracow) (



## Adjunct Professors

*Asociación Civil Selva Amazónica Peru:* M. Casapia

*Caro Research:* J. Caro

*Direction régionale de la santé publique:* R. Allard, M. Baillargeon, R. Lessard, S. Palmieri, S. Perron, E. Robinson

*Harvard Univ.:* J. Brownstein

*Hôpital Sacré-Coeur:* D. Gauthrin

*Independent:* I. Arnold, M.A. Lavoie, J. Lemke, M. Schweigert, L. Scott

*INSPQ:* F. Richer, P. Robillard, S. Stock

*Montreal Chest Hospital Centre:* P. Rohan

*Mount Sinai:* M. Baltzan

*Stabilis:* P. Simon

*Univ. de Montréal:* F. Ducharme, R. Massé, J. Siemiatycki

*Univ. of S. Australia:* J. Lynch

### 11.6.4 Epidemiology

The Department offers master's and doctoral programs in both Epidemiology and Biostatistics, as well as a Master's of Science in Public Health. The methods learned in these fields are used not only in the study of diseases, but also in health services research, program planning and evaluation, and policy development. Our faculty members are at the forefront of their research domains and include epidemiologists, biostatisticians, clinician scientists, medical informatics specialists, health economists, medical sociologists, and health geographers. Research in the Department spans all clinical specialties, pharmacoepidemiology, social epidemiology, infectious diseases, population and public health, environmental and occupational health, clinical and public health informatics, biostatistics, health care delivery and organization, and many cross-disciplinary activities. Faculty members may have funding available for students through their research grants. We provide rich research environments at five university-affiliated hospitals, public health agencies, and university research centres. Graduates pursue careers in academia, clinical settings, government agencies, and industry.

#### *section 11.6.4.2: Master of Science (M.Sc.); Epidemiology (Thesis) (48 credits)*

Applicants to the M.Sc. program should hold a bachelor's degree in the natural and quantitative sciences (e.g., microbiology, computer science, statistics, economics, geography) or social sciences (e.g., sociology, psychology, anthropology), or hold a degree in one of the health professional sciences (e.g., medicine, nursing, social work, nutrition). Applicants must have an interest in health research, along with strong conceptual, analytic, and quantitative skills (differential and integral calculus) at the undergraduate level.

The program leading to a master's degree is designed to provide training in both theory and practice in the selected discipline. Courses require intellectual and academic rigour, and the program provides students with an opportunity to synthesize the training in the form of a thesis. Students will study the foundations and principles of epidemiology and applied biostatistics, in order to design, conduct, and analyze clinical, population-based, environmental, pharmaco-epidemiological, policy, and methodological health-related research. Graduates of the program often go on to do doctoral work or become research associates in public, priv

***section 11.6.4.4: Master of Science (M.Sc.); Public Health (Non-Thesis) — Environment (60 credits)***

and networking. Students who have been admitted through their home department or faculty may apply for admission to the option. Option requirements are consistent across academic units. The option is coordinated by the MSE, in partnership with participating academic units.

***section 11.6.4.5: Doctor of Philosophy (Ph.D.); Epidemiology***

This program may be of interest to students from the natural and quantitative sciences (e.g., microbiology, computer science, statistics, economics, geography), social sciences (e.g., sociology, psychology, anthropology), or the health professions (e.g., medicine, nursing, social work, nutrition). Applicants must have an interest in health research, along with strong conceptual, analytic, and quantitative skills (differential and integral calculus) at the undergraduate level.

The Ph.D. program prepares students with the advanced epidemiological research skills needed to undertake original contributions to new knowledge related to the determinants of health and disease, prevention, prognosis, treatment, and outcomes. The program is generally completed in four to five

EPIB 690 (24) M.Sc. Thesis

**Required Courses (22 credits)**

Students exempted from any of the courses listed below must replace them with additional complementary course credits.

EPIB 601	(4)	Fundamentals of Epidemiology
EPIB 602	(3)	Foundations of Population Health
EPIB 603	(4)	Intermediate Epidemiology
EPIB 605	(1)	Critical Appraisal in Epidemiology
EPIB 607	(4)	Inferential Statistics
EPIB 613	(1)	Introduction to Statistical Software
EPIB 614	(1)	Basics of Measurement in Epidemiology
EPIB 621	(4)	Data Analysis in Health Sciences

**Complementary Course (2 credits)**

2 credits of coursework, at the 500 level or higher, chosen in consultation with the student's academic adviser or supervisor.

**11.6.4.3 Master of Science (M.Sc.); Public Health (Non-Thesis) (60 credits)**

Students will study the foundations and principles of epidemiology and biostatistics as applied to public health research and practice, in order to design, conduct, and analyze clinical, population-based, environmental, policy, and methodological public health-related research. The program will include a three-month practicum after the first year.

**Research Project (14 credits)**

EPIB 630 (14) Public Health Project

**Required Courses (25 credits)**

Students exempted from any of the courses listed below must replace them with additional complementary course credits.

EPIB 601	(4)	Fundamentals of Epidemiology
EPIB 602	(3)	Foundations of Population Health
EPIB 603	(4)	Intermediate Epidemiology
EPIB 605	(1)	Critical Appraisal in Epidemiology
EPIB 607	(4)	Inferential Statistics
EPIB 612	(3)	Principles of Public Health Practice
EPIB 613	(1)	Introduction to Statistical Software
EPIB 614	(1)	Basics of Measurement in Epidemiology
EPIB 621	(4)	Data Analysis in Health Sciences

**Complementary Courses (21 credits)**

13 credits of coursework at the 500 level or higher, with a minimum of 2 credits chosen from each of the following fields:

Environmental health sciences;

Health services research policy and management;

Population and public health interventions (social and behavioural science);

Epidemiology in practice or field epidemiology.

8 credits of coursework, at the 500 level or higher.

Courses must be approved by the program's academic adviser.

#### 11.6.4.4 Master of Science (M.Sc.); Public Health (Non-Thesis) — Environment (60 credits)

Students will study the foundations and principles of epidemiology and biostatistics as applied to public health research and practice, in order to design, conduct, and analyze clinical, population-based, environmental, policy, and methodological public health-related research.

The program will include a three-month practicum after the first year.

#### Research Project (14 credits)

EPIB 630 (14) Public Health Project

#### Required Courses (31 credits)

Students exempted from any of the courses listed below must replace them with additional complementary course credits.

ENVR 610 (3) Foundations of Environmental Policy

ENVR 650 (1) Environmental Seminar 1

ENVR 651 (1) Environmental Seminar 2

ENVR 652 (1) Environmental Seminar 3

EPIB 600 (3) Foundations of Epidemiology

EPIB 602 (3) Foundations of Population Health

EPIB 603 (4) Intermediate Epidemiology

EPIB 605 (1) Critical Appraisal in Epidemiology

EPIB 607 (4) Inferential Statistics

EPIB 612 (3) Principles of Public Health Practice

EPIB 613 (1) Introduction to Statistical Software

Bas2 Tm(EPIB 629 461.822 Tm(App8328.2 Tm((1D9gB1 292.036 6974.s4 0 1 221.949 Tj1 0 0 1 1ons 5ePs98.99cc0.5

2 credits of coursework, at the 500 level or higher, chosen in consultation with the student's academic adviser or supervisor.

**11.6.4.5 Doctor of Philosophy (Ph.D.); Epidemiology**



EPIB 601	(4)	Fundamentals of Epidemiology 1
EPIB 607	(4)	Inferential Statistics
EPIB 650	(9)	Diploma Dissertation

Note: Students exempted from either EPIB 601 and/or EPIB 607 must replace them with additional complementary course credits.

### **Complementary Courses**

13 credits of coursework, at the 500, 600, or 700 level, chosen in consultation with the student's academic adviser.

### **11.6.5 Biostatistics**

Biostatistics involves the development and application of statistical methods to scientific research in areas such as medicine, epidemiology, environmental health, genetics, and ecology. Biostatisticians play key roles in designing studies—from helping to formulate the questions that can be answered by data collection to the decisions on how best to collect the data—and in analyzing the resulting data. They also develop new statistical methods for such data. Students will take courses, and may do research, on topics such as mathematical statistics, statistical methods for epidemiology, generalized linear models, survival analysis, longitudinal data, and clinical trials. The Department of Epidemiology, Biostatistics, and Occupational Health has one of the largest concentrations of Ph.D.-level statisticians in any Canadian Faculty of Medicine.

*section 11.6.5.2: Master of Science (M.Sc.); Biostatistics (Thesis) (48 credits)*

11.6.5.1.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: Dec. 15	Fall: Dec. 15	Fall: April 30
Winter: N/A	Winter: N/A	Winter: Sept. 15
Summer: N/A	Summer: N/A	Summer: Feb. 15

**11.6.5.2 Master of Science (M.Sc.); Biostatistics (Thesis) (48 credits)**

Training in statistical theory and methods, applied data analysis, scientific collaboration, communication, and report writing by coursework and thesis.

**Thesis Courses (24 credits)**

BIOS 690	(24)	M.Sc. Thesis
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**Required Courses (24 credits)**

Students exempted from any of the courses listed below must replace them with complementary course credits, at the 500 level or higher, ~~chosen in consultation~~ with the student's academic adviser or supervisor.

BIOS 601	(4)	Epidemiology: Introduction and statistical models
BIOS 602	(4)	Epidemiology: Regression Models
MATH 523	(4)	Generalized Linear Models
MATH 533	(4)	Regression and Analysis of Variance
<del>MATH 556</del>	(4)	Mathematical Statistics 1
MATH 557	(4)	Mathematical Statistics 2

**11.6.5.3 Master of Science (M.Sc.); Biostatistics (Non-Thesis) (48 credits)**



Fax: 514-398-2430

Email: [grad.hg@mcgill.ca](mailto:grad.hg@mcgill.ca)

Website: [www.mcgill.ca/humangenetics](http://www.mcgill.ca/humangenetics)

## **11.9.2 About Human Genetics**

### **M.Sc. and Ph.D. Degrees in Human Genetics**

The Department of Human Genetics of

### *section 11.9.9: Doctor of Philosophy (Ph.D.); Human Genetics*

The Department of Human Genetics provides a unified curriculum of study in genetics. Areas of specialization include: biochemical genetics, genetics of development, animal models of human diseases, cancer genetics, molecular pathology, gene therapy, genetic dissection of complex traits, genetics of infectious and inflammatory diseases, non-mendelian genetics, bioinformatics, behavioural genetics, neurogenetics, bioethics, and genomics. Many of our faculty hold cross-appointments in various departments (including: biochemistry, biology, cardiology, medicine, microbiology, immunology, neurology, pathology, paediatrics, pharmacology, psychiatry) within the Faculties of Science and Medicine. This enables numerous opportunities for interdisciplinary research and collaboration. The Department conducts research on all sites of the McGill University Health Centre (MUHC), the Montreal Neurological Institute and Hospital, the McGill Life Sciences Complex, the McGill University-Genome Quebec Innovation Centre, the Biomedical Ethics Unit, and the Centre for Genomics and Policy.

### *section 11.9.10: Doctor of Philosophy (Ph.D.); Human Genetics — Bioinformatics*

Students successfully completing the Bioinformatics option at the Ph.D. level will be fluent in the concepts, language, approaches, and limitations of the field and have the capability of developing an independent Bioinformatics research program. Bioinformatics research lies at the intersection of biological/medical sciences and mathematics/computer science/engineering. The intention of the Bioinformatics option is to train students to become researchers in this interdisciplinary field. This includes the development of strategies for experimental design, the construction of tools to analyze datasets, the application of modelling techniques, the creation of tools for manipulating bioinformatics data, the integration of biological databases, and the use of algorithms and statistics.

**Enrolment in the Bioinformatics option can only be approved after a student has been admitted into the Department. There is an agreement for the option that must be signed by the student, supervisor, and Department, and enrolment in the option is subject to space availability and other constraints that the Department cannot assess at the time of admission. For more information, please contact the Graduate Program Coordinator.**

## **11.9.3 Human Genetics Admission Requirements and Application Procedures**

### **11.9.3.1 Admission Requirements**

#### **M.Sc. in Genetic Counselling**

**Prerequisites:** Bachelor's degree – 3.0/4.0 or 3.2/4.0 for the last two full-time academic years. Recent (five years or less) university-level courses in the Basic Sciences (basic biology, cell and molecular

Application materials should be sent to Thomas Leslie at the departmental address.

## **Emeritus Professors**

F.C. Fraser; B.Sc.(Acad.) M.Sc., Ph.D., M.D.,C.M., D.Sc.(McG), O.C., F.R.S.C.

K. Glass; M.A.(Barat), B.C.L., D.C.L.(McG.)

B. Mukherjee; B.Sc.(Calc.), M.S.(Brig. Young), Ph.D.(Utah)

L. Pinsky; M.D.(McG.)

C. Scriver; B.A., M.D.,C.M.(McG.)

H. Tenenhouse; M.Sc., Ph.D.(McG.)

## Assistant Professors

L. Beitel; Ph.D.(McG.) (*Biochemistry*)

L. Cartier; B.Sc., M.Sc.(McG.)

G. Chong; Ph.D.(Kansas)

C. Crist; B.Sc.(Br. Col.), M.Sc., Ph.D.(Tokyo)

M. Fujiwara; M.Sc.(Alta.) (*Quantitative Genetics*)

Y. Joly; Ph.D.(McG.) (*Centre of Genomics and Policy*)

P. Moffatt; Ph.D.(Montr.) (*Pharmacology*)

T. Pastinen; M.D., Ph.D.(Helsinki)

Y. Riaz



HGEN 692	(3)	Human Genetics
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**Complementary Courses (6 credits)**

6 credits chosen from the departmental offerings below or from 500-, 600-, or 700-level courses offered in the Faculties of Medicine or Science:

HGEN 660	(3)	Genetics and Bioethics
HGEN 661	(3)	Population Genetics
HGEN 663	(3)	Beyond the Human Genome
HGEN 670	(3)	Advances in Human Genetics 1
HGEN 671	(3)	Advances in Human Genetics 2
HGEN 672	(3)	Advances in Human Genetics 3
HGEN 690	(3)	Inherited Cancer Syndromes
HGEN 691	(3)	Host Responses to Pathogens
HGEN 693	(3)	Using Bioinformatics Resources
HGEN 694	(3)	Microarray Statistical Analysis
HGEN 695	(3)	Psychiatric Genetics
HGEN 696	(3)	Advanced Readings in Genetics 1
HGEN 697	(3)	Advanced Readings in Genetics 2
HGEN 698	(3)	Advanced Readings in Genetics 3
HGEN 699	(3)	Advanced Readings in Genetics 4

Note: The Graduate Advisory Committee may stipulate additional coursework at the 500, 600, or 700 level depending on the background of the candidate.

**11.9.6 Master of Science (M.Sc.); Human Genetics (Thesis) — Bioinformatics (45 credits)****Thesis Courses (33 credits)**

HGEN 680	(9)	M.Sc. Thesis Research 1
HGEN 681	(12)	M.Sc. Thesis Research 2
HGEN 682	(12)	M.Sc. Thesis Research 3

**Required Courses (6 credits)**

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
HGEN 692	(3)	Human Genetics

**Complementary Courses (6 credits)**

6 credits from the following courses:

BINF 621	(3)	Bioinformatics: Molecular Biology
BMDE 652	(3)	Bioinformatics: Proteomics
BTEC 555	(3)	Structural Bioinformatics
COMP 618	(3)	Bioinformatics: Functional Genomics
PHGY 603	(3)	Systems Biology and Biophysics

Note: The Graduate Advisory Committee may stipulate additional coursework at the 500, 600, or 700 level depending on the background of the candidate.

**11.9.7 Master of Science (M.Sc.); Human Genetics (Thesis) — Bioethics (45 credits)****Thesis Courses (30 credits)**

30 credits selected as follows:

HGEN 681	(12)	M.Sc. Thesis Research 2
HGEN 682	(12)	M.Sc. Thesis Research 3
HGEN 683	(6)	M.Sc. Thesis Research 4

**Required Courses (12 credits)**

12 credits from:

BIOE 680	(3)	Bioethical Theory
BIOE 681	(3)	Bioethics Practicum
HGEN 662	(3)	Laboratory Research Techniques
HGEN 692	(3)	Human Genetics

**Complementary Courses (3 credits)**

3 credits from the following:

BIOE 682	(3)	Medical Basis of Bioethics
CMPL 642	(3)	Law and Health Care
PHIL 543	(3)	Seminar: Medical Ethics
RELG 571	(3)	Religion and Medicine

**11.9.8 Master of Science (M.Sc.); Genetic Counselling (Non-Thesis) (48 credits)****Required Courses - Phase I (24 credits)**

HGEN 600D1	(3)	Genetic Counselling Practicum
HGEN 600D2	(3)	Genetic Counselling Practicum
HGEN 601	(3)	Genetic Counselling Principles
HGEN 620D1	(4.5)	Introductory Field Work Rotations
HGEN 620D2	(4.5)	Introductory Field Work Rotations
HGEN 660	(3)	Genetics and Bioethics
PATH 653	(3)	Reading and Conference

**Required Courses - Phase II (24 credits)**

HGEN 610	(3)	Genetic Counselling: Independent Studies 1
HGEN 611	(3)	Genetic Counselling: Independent Studies 2
HGEN 630D1	(6)	Advanced Field Work Rotations
HGEN 630D2	(6)	Advanced Field Work Rotations
HGEN 640	(3)	Clinical Genetics 1
HGEN 641	(3)	Clinical Genetics 2

### **11.9.9 Doctor of Philosophy (Ph.D.); Human Genetics**

Candidates entering Ph.D. 1 must complete at least three years of full-time resident study (six terms). The normal and expected duration of the Ph.D. program is four to five years. A student who has obtained a master's degree at McGill in a related field, or at an appro

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
HGEN 692	(3)	Human Genetics
HGEN 701	(0)	Ph.D. Comprehensive Examination

### Complementary Courses (6 credits)

\* Two courses from the following:

BINF 621	(3)	Bioinformatics: Molecular Biology
BMDE 652	(3)	Bioinformatics: Proteomics
BTEC 555	(3)	Structural Bioinformatics
COMP 618	(3)	Bioinformatics: Functional Genomics
PHGY 603	(3)	Systems Biology and Biophysics

\* Note: Students who enter in Ph.D. 1 will need to take an additional 6 credits of complementary courses chosen from the departmental offerings listed for the Ph.D. in Human Genetics and/or from among 500-, 600-, or 700-level courses in the Faculties of Medicine or Science.

## 11.10 Medical Physics

### 11.10.1 Location

Medical Physics Unit  
 Montreal General Hospital  
 Livingston Hall, Room L5-113  
 1650 Cedar Avenue  
 Montreal, QC H3G 1A4  
 Canada

Telephone: 514-934-1934 ext. 44158

Fax: 514-934-8229

Email: [mak@medphys.mcgill.ca](mailto:mak@medphys.mcgill.ca)

Website: [www.medphys.mcgill.ca](http://www.medphys.mcgill.ca)

### 11.10.2 About Medical Physics

The Medical Physics Unit offers an M.Sc. in Medical Radiation Physics. Facilities are available for students to undertake a Ph.D. in Medical Physics through the Department of Physics.

The Unit is a teaching and research unit concerned with the application of physics and related sciences in medicine, especially (but not exclusively) in radiation medicine; i.e., radiation oncology, medical imaging, and nuclear medicine.

The research interests of members of the Unit include various aspects of medical imaging, including 3D imaging, the development of new imaging modalities, and applications of imaging in radiation therapy; radiation dosimetry, solid state, electret, and NMR systems; nuclear cardiology; and applications of radiation biology to therapy.

The M.Sc. and Ph.D. programs in Medical Physics are accredited by the Commission on Accreditation of Medical Physics Education Programs, Inc., sponsored by the American Association of Physicists in Medicine (AAPM), the American College of Medical Physics (ACMP), the American College of Radiology (ACR), and the Canadian College of Physicists in Medicine (CCPM).

#### ***section 11.10.5: Master of Science (M.Sc.); Medical Radiation Physics (Thesis) (60 credits)***

This two-year program provides a comprehensive introduction to the academic, research, and practical aspects of physics applied to radiation medicine. Students may go on to careers in clinical service as medical physicists in research-oriented hospital settings after clinical residency training; may consider development careers in industry in radiation therapy, diagnostic radiology, or nuclear medicine or nuclear energy; in governmental organizations as radiation safety experts, etc.; or pursue academic careers in university, industry, or government organizations. Our graduate programs are accredited by CAMPEP (Commission for Accreditation of Medical Ph



## **Professors**

S.M. Lehnert; B.Sc.(Nott.), M.Sc., Ph.D.(Lond.)

G.B. Pike; B.Eng.(St. John's), M.Eng., Ph.D.(McG.)

J.P.F. Seuntjens; M.Sc., Ph.D.(Ghent), F.C.C.P.M., F.A.A.P.M

## **Associate Professor**

I. El Naqa; B.Sc., M.S.(Jordan), Ph.D.(Chic.), M.A.(W

Canada

Telephone: 514-398-3466

Fax: 514-398-3425

Email: [experimental.medicine@mcgill.ca](mailto:experimental.medicine@mcgill.ca)

Website: [www.medicine.mcgill.ca/e](http://www.medicine.mcgill.ca/e)

### *section 11.11.11: Graduate Diploma in Clinical Research (30 credits)*

Six 1-credit workshops will be provided by experts in the academic, industrial, and government sectors, and cover wide-ranging issues pertinent to the conduct of clinical research. The training provided qualifies students to manage and design clinical research studies in both academic and industrial settings.

## **11.11.3 Medicine, Experimental Admission Requirements and Application Procedures**

### **11.11.3.1 Admission Requirements**

#### **M.Sc. or Ph.D. in Experimental Medicine**

Admission to graduate studies and research in Experimental Medicine is no longer solely restricted to students who wish to register for the Ph.D. degree. Candidates who hold only an undergraduate degree in the medical and allied sciences (B.Sc. degree or an M.D. degree), must apply to the M.Sc. program, unless they have an undergraduate CGPA of 3.5 or more out of a possible 4.0, in which case they may apply for direct entry into the Ph.D. if they so desire. Candidates who already hold an M.Sc. apply directly to the Ph.D. program.

Admission is based on an evaluation by the Admissions Committee, which looks for evidence of high academic achievement, and on acceptance by a research director. It is the policy of the Division that all students must be financially supported either by their supervisor or through studentships or fellowships.

In addition to the documentation currently required by Graduate and Postdoctoral Studies, a letter from the candidate's research director outlining the M.Sc. or Ph.D. project is necessary.

#### **M.Sc. (Bioethics Option)**

Admission to the master's program in Bioethics, from the base discipline Medicine, shall be limited to students having degrees in Medicine, Nursing, or Physical and Occupational Therapy, as well as any other professional health training degree. Students who do not fit these criteria may be considered for admission on an individual basis.

For those who apply to the M.Sc. (Bioethics Option), the requirements, as well as the application Dates for Guaranteed Consideration, are different. For further information regarding this program, please refer to the Bioethics entry or visit their website at [www.mcgill.ca/biomedicalethicsunit/masters](http://www.mcgill.ca/biomedicalethicsunit/masters).

#### **M.Sc. (Environment Option)**

For those applicants wishing to apply to the Master's program (Environment Option), it should be noted that, although the requirements and application Dates for Guaranteed Consideration remain the same, the student must remit additional documents that constitute their application to NOT ONLY the Division of Experimental Medicine, but ALSO to the McGill School of Environment. All the relevant information can be found on the School of Environment website at [www.mcgill.ca/mse/programs/envroption](http://www.mcgill.ca/mse/programs/envroption).

The option of in-course addition of the Environment Option is also available to students in Experimental Medicine. For further information, students should refer to the departmental website or contact the Student Affairs Office.

#### **M.Sc. (Family Medicine Option)**

Ideal candidates for the M.Sc. (Family Medicine Option) are practising family physicians or family medicine residents interested in conducting research in family medicine. **Exceptionally**, candidates from different backgrounds may be considered (i.e., allied health professionals and undergraduate students with relevant research backgrounds). This program is the first of its kind in Canada because it teaches rigorous research skills for becoming successful researchers in the discipline of family medicine. It differs from the other programs in that it focuses on improving primary care delivery. All students are expected to complete a thesis to graduate. Graduates from this program may undertake careers in clinical or primary care research.

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### 11.11.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: June 30	Fall: April 30	Fall: Same as Canadian/International
Winter: Oct. 15	Winter: Aug. 31	Winter: Same as Canadian/International
Summer: N/A	Summer: N/A	Summer: N/A

### 11.11.4 Medicine, Experimental Faculty

#### Chair, Department of Medicine

D. Eidelman

#### Director, Division of Experimental Medicine

H. Bennett

#### Emeritus Professors

T.M.S. Chang; B.Sc., M.D.,C.M., Ph.D.(McG.), F.R.C.P.(C)

B.E.P. Murphy; B.A., M.D.(Tor.), M.Sc., Ph.D.(McG.), F.A.C.P.(C)

#### Professors

M. Alaoui-Jamali; D.V.M.(Rabat, Morocco), Ph.D.(René-Descartes, Paris)

C. Autexier; B.Sc.(C'odia), Ph.D.(McG.)

A. Bateman; B.Sc., Ph.D.(Lond.)

G. Batist; B.Sc.(Col.), M.D.,C.M.(McG.), F.R.C.P.(C)

N. Beauchemin; B.A., B.Sc., M.Sc., Ph.D.(Montr.)

H. Bennett; B.A.(York, UK), Ph.D.(Brun.)

R. Blostein; M.Sc., Ph.D.(McG.)

A.E. Clarke; M.D.(Nfld.), M.S.(Stan.), F.R.C.P.(C)

M. Cosio; B.Sc.(Oviedo), M.D.(Madrid)

A. Cybulsky; M.D.(Tor.), F.R.C.P.(C)

D. Eidelman; M.D.,C.M.(McG.), F.R.C.P.(C)

A. Fuks; B.Sc., M.D.,C.M.(McG.)

J. Genest Jr

## Professors

L. Kleiman; B.Sc.(Ill.), Ph.D.(Johns Hop.)

R. Kremer; M.D., Ph.D.(Paris)

S. Lehnert; B.Sc.(Nottingham), M.Sc., Ph.D.(Lond.)

M. Levy; B.Sc., M.D.,C.M.(McG.), F.R.C.P.(C)

M.S. Ludwig; M.D.(Manit.), F.R.C.P.(C)

**Professors**

X.-J. Yang; B.Sc.(Zhejiang), Ph.D.(Shanghai)

M. Zannis-Hadjopoulos; B.Sc., M.Sc., Ph.D.(McG.)

H. Zingg; M.D.(Basel), Ph.D.(McG.)

**Associate Professors**

S. Ali; B.Sc.(C'dia), Ph.D.(McG.)

D. Baran; M.D.,C.M.(McG.), F.R.C.P.(C)

M. Behr; B.Sc.(Tor.), M.D.(Qu.), M.Sc.(McG.)

N. Bernard; B.Sc.(McG.), Ph.D.(Duke)

V. Blank; B.Sc., M.Sc.(Konstanz, Germany), Ph.D.(Inst. Pasteur)

M. Blostein; M.D.,C.M.(McG.)

L. Chalifour; B.Sc., Ph.D.(Manit.), M.A.(Harv.)

S.R. Cohen; B.Sc., M.Sc., Ph.D.(McG.)

D. Courmoyer; M.D.(Sher.), F.R.C.P.(C)

M. Culty; B.Sc., M.Sc.(Lyon), Ph.D.(Grenoble)

G. Di Battista; B.Sc.(C'dia), M.Sc., Ph.D.(Montr.)

F. Doualla-Bell; B.Sc., M.S., Ph.D.(Paris XI)

J.C. Engert; B.A.(Colby), Ph.D.(Boston)

E. Fixman; B.Sc.(Col.), Ph.D.(Johns Hop.)

B. Gagnon; M.D.(Laval), M.Sc.(McG.), F.R.C.P.(C)

R. Gagnon; B.Sc.(Montr.), M.D.(Laval), D.Phil.(Oxf.)

A. Gatignol; M.Sc., Ph.D.(Paul Sabatier)

S.B. Gottfried; M.D.(Penn.)

J. Henderson; B.Sc., Ph.D.(McG.)

B. Jean-Claude; B.Sc., M.Sc.(Moncton), Ph.D.(McG.)

P. Laneuville; B.Sc.(McM.), M.D.(Ott.), F.R.C.P.(C)

S. Laporte; B.Sc., M.Sc., Ph.D.(Sher.)

L. Larose; B.Sc., Ph.D.(Montr.)

M. Laughrea; B.Sc.(Laval), M.Sc., M.Phil., Ph.D.(Yale)

A.-M. Lauzon; B.Sc., M.Sc., Ph.D.(McG.)

J.-J. Lebrun; B.Sc., M.Sc., Ph.D.(Rennes, France)

L. Lecanu; M.Sc., Ph.D.(Paris)

S. Lemay; M.D.(Montr.), F.R.C.P.(C)

R. Lin; B.Sc., M.Sc.(PRC), Ph.D.(C'dia)

M. Lipman; M.D.,C.M.(McG.), F.R.C.P.(C)

J.-L. Liu; B.Sc., M.Sc.(Beijing), Ph.D.(McG.)

J.A. Morais; M.D.(Montr.), F.R.C.P.(C)

A. Mouland; B.A., B.Sc., Ph.D.(McG.)

M. Newkirk; B.Sc., M.Sc.(Qu.), Ph.D.(Tor.)

S. Qureshi; B.Sc., M.D.(Alta.), F.R.C.P.(C)

J. Rauch; B.Sc., Ph.D.(McG.)

J.-P. Routy; B.Sc., M.D., Ph.D.(France)

### Associate Professors

G. Spurrll; B.Sc.(Med.), M.D.(Manit.)  
T. Takano; M.D., Ph.D.(Tokyo)  
P. Tonin; B.Sc., M.Sc., Ph.D.(Tor.)  
B. Turcotte; B.Sc., Ph.D.(Laval)  
B.J. Ward; M.D.,C.M.(McG.), M.Sc.(Oxf.), F.R.C.P.(C)

### Assistant Professors

R. Aloyz; B.A., M.Sc., Ph.D.(Argentina)  
A. Baass; B.Sc.(McG.), M.D., M.Sc.(Montr.), F.R.C.P.(C)  
C. Baglole; B.Sc., M.Sc.(PEI), Ph.D.(Calg.)  
M. Chevrette; B.Sc., M.Sc., Ph.D.(Laval)  
I. Colmegna; M.Sc.(Argentina)  
S. Daskalopoulou; M.D.(Athens)  
M. Divangahi; B.Sc.(McM.), Ph.D.(McG.)  
B. Gilfix; B.Sc.(Manit.), Ph.D.(W. Ont.), M.D.,C.M.(McG.), F.R.C.P.(C)  
C. Haston; B.Sc.(W. Ont.), M.Sc.(Tor.), Ph.D.(Texas)  
N. Johnson; B.Sc.(C'dia), M.D.(Ott.), Ph.D.(Br. Col.), F.R.C.P.(C)  
M. Kokoeva; B.Sc., Ph.D.(Russia)  
L. Koski; B.Sc.(Tor.), Ph.D.(McG.)  
A. Kristof; B.Sc., M.D.,C.M.(McG.), F.R.C.P.(C)  
S. Lehoux; B.Sc.(Bishop's), Ph.D.(Sher.)  
C. Liang; B.Sc., Ph.D.(Nankai)  
B. Mazer; B.Sc.(Col.), M.D.,C.M.(McG.), F.R.C.P.(C)  
M. Murshed; M.Sc.(Brussels), Ph.D.(Cologne)  
E. Nashi; B.Sc., M.D.(Alta.), M.Sc.(McG.), Ph.D.(Northshore Medical Ctr.), F.R.C.P.(C)  
D. Nguyen; M.D.,C.M.(McG.), F.R.C.P.(C)  
M. Paliouras; B.Sc.(Tor.), M.Sc.(Flor.), Ph.D.(McG.)  
R. Rajan; B.Sc., M.D.(Manit.), M.Sc.(McM.)  
C. Rocheleau; B.A.(Assumption Coll.), Ph.D.(Mass.)  
S. Rousseau; B.Sc., M.Sc., Ph.D.(Laval)  
M. Saleh; B.Sc., M.Sc.(Beirut), Ph.D.(McG.)  
M. Sebag; B.Sc., Ph.D.(McG.), M.D.(Tor.), F.R.C.P.(C)  
C. Seguin; B.Sc.(McG.), M.D.(Montr.), F.R.C.P.(C)  
P. Siegel; B.Sc., Ph.D.(McM.)  
R. Sladek; B.Sc., M.D.(Tor.), F.R.C.P.(C)  
E. Torban; B.Sc., M.Sc.(Russia), Ph.D.(McG.)

### Associate Members, McGill

B. Abdulkarim, A. Andermann, G. Bartlett, M. Basik, E. Bereza, J.D. Bobyn, D. Boivin, M. Bouchard, J. Bourbeau, P. Brodt, K. Brown, D.H. Burns, S. Chevalier, R.-C. Chian, H. Clarke, T. Coderre, T

**Associate Members, Université de Montréal**

J. Archambault, R. Butterworth, M. Cayouette, F. Charron, E. Cohen, J.-F. Côté, V. Dave, J. Davignon, C. Deal, A. Deng, C.F. Deschepper, C. Desrosiers, J.M. Di Noia, J. Drouin, J. Estall, H. Gu, J. Gutkowska, P. Hamet, Z. Hanna, P. Jolicoeur, A. Kania, M. Kmita, C. Lazure, E. Lecuyer, S. Mader, T. Moroy, M. Oeffinger

**11.11.7 Master of Science (M.Sc.); Experimental Medicine (Thesis) — Environment (45 credits)****Thesis Courses (24 credits)**

EXMD 690	(3)	Master's Thesis Research 1
EXMD 692	(9)	Master's Thesis Research 3
EXMD 693	(12)	Master's Thesis Research 4

**Required Courses (6 credits)**

ENVR 610	(3)	Foundations of Environmental Policy
ENVR 650	(1)	Environmental Seminar 1
ENVR 651	(1)	Environmental Seminar 2
ENVR 652	(1)	Environmental Seminar 3

**Complementary Courses (15 credits)**

3 credits from one of the following courses\*:

ENVR 519	(3)	Global Environmental Politics
ENVR 544	(3)	Environmental Measurement and Modelling
ENVR 580	(3)	Topics in Environment 3
ENVR 611	(3)	The Economy of Nature
ENVR 620	(3)	Environment and Health of Species
ENVR 622	(3)	Sustainable Landscapes
ENVR 630	(3)	Civilization and Environment
ENVR 680	(3)	Topics in Environment 4

\* or another course at the 500, 600, or 700 level recommended by the advisory committee and approved by the Environment Option Committee.

12 credits of courses at the 500, 600, or 700 level chosen in consultation with the student's academic supervisor.

**11.11.8 Master of Science (M.Sc.); Experimental Medicine (Thesis) — Family Medicine (45 credits)****Thesis Courses (24 credits)**

EXMD 693	(12)	Master's Thesis Research 4
EXMD 694	(12)	Master's Thesis Research 5

**Required Courses (18 credits)**

DENT 672	(3)	Applied Mixed Methods in Health Research
EPIB 507	(3)	Biostatistics for Health Professionals
EPIB 600	(3)	Clinical Epidemiology
FMED 500	(1)	Introduction to Research
FMED 600	(1)	Mixed Studies Reviews
FMED 601	(3)	Advanced Topics in Family Medicine Research
FMED 603	(1)	Introduction to Participatory Research in Health
PSYT 625	(3)	Qualitative Research in Health Care

**Elective Courses (3 credits)**

Three (3) credits, at the 500 lev





- Develop CME programs to address changes in the health care system
- Conduct health services research to assess the impact of reform on population health

### 11.12.3 Medicine, Family (Option) Admission Requirements and Application Procedures

#### 11.12.3.1 Admission Requirements

The Family Medicine Option program is open to family physicians practising in Quebec interested in conducting research in family medicine. Exceptionally, we may consider candidates with a different background, such as allied health professionals, and undergraduate students across disciplines wanting to undertake research relevant to family medicine. In this case, you may be considered for admission on an individual basis and should contact the [Program Coordinator](#) to discuss eligibility.

#### What do we look for?

**High academic achievement:** A cumulative grade point average (CGPA) of 3.4 is required out of a possible maximum CGPA of 4.0 or a GPA of 3.6 is required in the last two years of full-time studies.

**Proof of competency in oral and written English:** TOEFL: International students who have not received their instruction in English or whose mother tongue is not English must pass the Test of English as a Foreign Language (TOEFL) with a minimum score of 567 (paper-based test) or 86, with each component score not less than 20 (Internet-based test). The TOEFL institution code for McGill University is 0935. Alternatively, students may submit International English Language Testing System (IELTS) scores with a minimum overall band score of 6.5. Original score reports must be submitted (photocopies will not be accepted). For further information, please refer to the [TOEFL](#) website.

For overseas graduates, an attempt is made to situate the applicant's academic grades among the standards of their universities. Grades are, however, converted to their McGill equivalent. Conversion charts, as well as required admission documentation for each country, are provided by Graduate and Postdoctoral Studies ([GPS](#)) and prospectiv

**Note:** Official transcripts are not required for any studies conducted at McGill University (students may submit a MINERVA copy of their McGill transcript with their application).

### **11.12.3.3 Dates for Guaranteed Consideration**

Fax: 514-398-7052

Email: [grad.microimm@mcgill.ca](mailto:grad.microimm@mcgill.ca)

Website: [www.mcgill.ca/microimm](http://www.mcgill.ca/microimm)

### **11.13.2 About Microbiology and Immunology**

The Department offers graduate programs leading to the degrees of M.Sc. and Ph.D. Each program is tailored to fit the needs and backgrounds of individual students. The graduate program is designed to offer students state-of-the-art training, concentrating on four key areas of research: cellular and molecular immunology, microbial physiology and genetics, molecular biology of viruses, and medical microbiology. Basic research discoveries in microbiology may lead to improved drug design and v

2. two official transcripts;
3. two letters of reference;
4. letter from a prospective supervisor;
5. \$100 application fee;
6. TOEFL test (GRE not required but recommended).

All information is to be submitted directly to the Student Affairs Coordinator in the Department of Microbiology and Immunology.

All applicants are encouraged to approach academic staff members during or before the application process since no applicants are accepted without a supervisor.

McGill's online application form for graduate program candidates is available at [www.mcgill.ca/gradapplicants/apply](http://www.mcgill.ca/gradapplicants/apply).

### 11.13.3.3 Dates for Guaranteed Consideration

All applications and documents must be submitted by the Dates for Guaranteed Consideration.

Canadian	International	Special/Exchange/Visiting
Fall: June 1	Fall: March 15	Fall: Same as Canadian/International
Winter: Sept. 15	Winter: Sept. 15	Winter: Sept. 15
Summer: Jan. 15	Summer: Jan. 15	Summer: Jan. 15

## 11.13.4 Microbiology and Immunology Faculty

### Chair

J. Madrenas

### Emeritus Professor

R.A. MacLeod

### Professors

A. Berghuis; M.Sc.(The Netherl.), Ph.D.(Br. Col.)

J.W. Coulton; B.Sc.(Tor.), M.Sc.(Calg.), Ph.D.(W. Ont.)

J. Madrenas; M.D.(Barcelona), M.Sc., Ph.D.(Alta.)

G.J. Matlashewski; B.Sc.(C'dia), Ph.D.(Ohio)

R.A. Murgita; B.Sc.(Maine), M.S.(Vermont), Ph.D.(McG.)

M. Olivier; B.Sc.(Montr.), Ph.D.(McG.)

M.A. Wainberg; B.Sc.(McG.), Ph.D.(Col.)

### Associate Professors

D.J. Briedis; B.A., M.D.(Johns Hop.)

B. Cousineau; B.Sc., M.Sc., Ph.D.(Montr.)

S. Fournier; Ph.D.(Montr.)

M. Gotte; Ph.D.(Max Planck)

H. Le Moual; Ph.D.(Montr.)

G. T. Marczynski; B.Sc., Ph.D.(Ill.)

C. Piccirillo; B.Sc., Ph.D.(McG.)

D.Tm B.A., M.D.(Johns Hop.)

**Assistant Professors**

J. Fritz; Ph.D.(Vienna)

S. Gruenheid; B.Sc.(Br. Col.), Ph.D.(McG.)

C. Krawczyk; Ph.D.(Tor.)

**Associate Members***Human Genetics:* P. Gros*Institute of Parasitology:* F. Dziarsinski, A. Jardim, M. Ndao, P. Ribeiro, P. Rohrbach, J. Zhang*Medicine:* M. Behr, I. Colmegna, A. Finzi, S. Hussain, A. Kristof, C. Liang, V. Loo, A. Manges, M.A. Miller, J. Nadeau, M. Newkirk, K. Pantopoulos, J.E. Rauch, M. Reed, M. Saleh, M. Tremblay, C. Tsoukas, B. Turcotte, B.J. Ward*Microbiology and Immunology:* L. Kleiman*Neuroimmunology:* A. Bar-Or*Neurology and Neurosurgery:* J. Antel*Oncology:* A. Gagnon, A.E. Koromilas, A. Moulard, S. Richard*Ophthalmology:* M. Burnier*Surgery:* N.V. Christou**Adjunct Professors**

J. Archambault

A. Descoteaux

T.D. Jones

G. Kukulj

P. Lau

B. Lee

S-L. Liu

A. Makrigiannis

A.M. Matte

C. Rioux

W.-K. Suh

D. Ziberstein

**11.13.5 Master of Science (M.Sc.); Microbiology and Immunology (Thesis) (45 credits)****Thesis Courses (24 credits)**

MIMM 697	(8)	Master's Research 1
MIMM 698	(8)	Master's Research 2
MIMM 699	(8)	Master's Research 3

**Required Courses (15 credits)**

MIMM 611	(3)	Graduate Seminars 1
MIMM 612	(3)	Graduate Seminars 2
MIMM 613	(3)	Current Topics 1
MIMM 614	(3)	Current Topics 2
MIMM 615	(3)	Current Topics 3

### **Complementary Courses (6 credits)**

6 credits, two of the following courses:

MIMM 616	(3)	Reading and Conference 1
MIMM 617	(3)	Reading and Conference 2
MIMM 618	(3)	Reading and Conference 3
MIMM 619	(3)	Reading and Conference 4

Other courses may be required to strengthen the student's background.

### **11.13.6 Doctor of Philosophy (Ph.D.); Microbiology and Immunology**

#### **Thesis**

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

#### **Required Courses (18 credits)**

MIMM 611	(3)	Graduate Seminars 1
MIMM 612	(3)	Graduate Seminars 2
MIMM 613	(3)	Current Topics 1
MIMM 614	(3)	Current Topics 2
MIMM 615	(3)	Current Topics 3
MIMM 701	(0)	Comprehensive Examination-Ph.D. Candidate
MIMM 713	(3)	Graduate Seminars 3

#### **Complementary Courses (12 credits)**

(Minimum of 12 credits)

Three courses from List A and a minimum of three consecutive courses from List B.

#### **List A64aut60Te consecutiv**

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## 11.14 Neuroscience (Integrated Program in)

### 11.14.1 Location

Montreal Neurological Institute, Room 141  
3801 University Street  
Montreal, QC H3A 2B4  
Canada

Telephone: 514-398-1229 / 514-398-6243 / 514-398-1905

Fax: 514-398-4621

Email: [ipn@mcgill.ca](mailto:ipn@mcgill.ca) or [ipn.admissions@mcgill.ca](mailto:ipn.admissions@mcgill.ca)

Website: [www.mcgill.ca/ipn](http://www.mcgill.ca/ipn)

### 11.14.2 About the Integrated Program in Neuroscience

Montreal is home to the largest concentration of neuroscientists in North America. Neuroscience research at McGill University is internationally renowned, and its Integrated Program in Neuroscience (IPN) provides graduate training in this outstanding research environment. With approximately 340 M.Sc. and Ph.D. students and more than 160 supervisors, the IPN is the largest graduate program in the Faculty of Medicine and one of the largest neuroscience graduate programs in North







## Professors

- J. Gotman; M.Eng.(Dart.), Ph.D.(McG.), Dept. of Neurology and Neurosurgery
- A. Gratton; Ph.D.(C'dia), Dept. of Psychiatry
- J. Grodzinsky; Ph.D.(Brandeis), Dept. of Linguistics
- D. Guitton; Dipl. IVK(Univ. Libre de Brux.), B.Eng., M.Eng., Ph.D.(Eng.), Ph.D.(Physiol.)(McG.), Dept. of Neurology and Neurosurgery
- D. Haegert; M.D.(Br. Col.), F.R.C.P.(C), Dept. of Pathology
- E. Hamel; B.Sc.(Sher.), Ph.D.(Montr.), Dept. of Neurology and Neurosurgery
- K. Hastings; B.Sc., Ph.D.(McG.), Dept. of Neurology and Neurosurgery
- R. Hess; Ph.D.(Melb.), D.Sc.(Aston, UK), Dept. of Ophthalmology
- P.C. Holland; B.A.(Lanc.), Ph.D.(Newcastle, UK), Dept. of Neurology and Neurosurgery
- B. Jones; B.A., M.A., Ph.D.(Delaware), Dept. of Neurology and Neurosurgery
- M. Jones-Gotman; B.A.(Calif.), M.A., Ph.D.(McG.), Dept. of Neurology and Neurosurgery
- T. Kennedy; B.Sc.(McM.), Ph.D.(Col.), Dept. of Neurology and Neurosurgery
- F. Kingdom; Ph.D.(Reading), Dept. of Ophthalmology
- P. Lachapelle; Ph.D.(Montr.), Dept. of Ophthalmology
- N. Lamarche; Ph.D.(Montr.), Dept. of Anatomy and Cell Biology
- A. LeBlanc; M.Sc.(Moncton), Ph.D.(Dal.), Dept. of Neurology and Neurosurgery
- M.F. Levin; Ph.D.(P.T.)(McG.), School of Physical and Occupational Therapy
- D. Maysinger; M.Sc., Ph.D.(Calif.-LA), Dept. of Pharmacology and Therapeutics
- P. McPherson; M.Sc.(Manit.), Ph.D.(Iowa) (*William Dawson Scholar*), Dept. of Neurology and Neurosurgery
- M.J. Meaney; B.A.(Loyola), M.A., Ph.D.(C'dia), Dept. of Psychiatry
- B. Milner; B.A., Sc.D.(Cant.), Ph.D.(McG.), Dept. of Neurology and Neurosurgery
- T.E. Milner; B.Sc., M.Sc., Ph.D.(Alta.), Dept. of Kinesiology and Physical Education
- J. Mogil; Ph.D.(Calif.-LA), Dept. of Psychology
- K. Mullen; Ph.D.(Camb.), Dept. of Ophthalmology
- A. Olivier; M.D.(Montr.), Ph.D.(Laval), F.R.C.S.(C), Dept. of Neurology and Neurosurgery
- D.J. Ostry; B.A.Sc., M.A.Sc., Ph.D.(Tor.), Dept. of Psychology
- O. Overbury; Ph.D.(C'dia), Dept. of Ophthalmology
- C. Palmer; B.Sc., M.Sc., Ph.D.(C'nell), Dept. of Psychology
- M. Pell; B.A.(Ott.), M.Sc.(Nepal), School of Communication Sciences and Disorders
- M. Petrides; B.Sc., M.Sc.(Lond.), Ph.D.(Cant.) (*James McGill Professor*), Dept. of Neurology and Neurosurgery
- B. Pike; B.Eng.(Memp.), M.Eng., Ph.D.(McG.) (*William Dawson Scholar*), Dept. of Neurology and Neurosurgery
- G. Plourdes; M.D.(Laval), M.Sc.(Ott.), Dept. of Anaesthesia
- J. Poirier; Ph.D.(Montr.), Dept. of Psychiatry and Medicine
- A. Ptito; Ph.D.(Montr.), Dept. of Neurology and Neurosurgery
- R. Quirion; B.Sc., M.Sc., Ph.D.(Sher.), Dept. of Psychiatry
- M. Rasminsky; B.A.(Tor.), M.D.(Harv.), Ph.D.(Lond.), F.R.C.P.(C), Dept. of Neurology and Neurosurgery
- A. Ribeiro-da-Silva; M.D.(Porto), Ph.D.(Porto), Dept. of Pharmacology and Therapeutics
- R.J. Riopelle; M.D.(Ott.), F.R.C.P.(C), Dept. of Neurology and Neurosurgery
- A. Sadikot; M.D.,C.M.(McG.), Ph.D.(Laval), F.R.C.S.(C), Dept. of Neurology and Neurosurgery
- H.U. Saragovi; Ph.D.(Miami), Dept. of Pharmacology and Therapeutics
- H. Schipper; M.D., Ph.D.(McG.), F.R.C.P.(C), Dept. of Neurology and Neurosurgery
- P. Seguela; Doct. 3e Cycle(Bord.), Ph.D.(Montr.), Dept. of Neurology and Neurosurgery

## Professors

M. Shevell; B.Sc., M.D.(Vanderbilt), Dept. of Neurology and Neurosurgery  
E. Shoubridge; M.Sc., Ph.D.(Br. Col.), Dept. of Neurology and Neurosurgery  
W. Sossin; B.S.(MIT), Ph.D.(Stan.), Dept. of Neurology and Neurosurgery  
L. Srivastava; Ph.D.(New Delhi), Dept. of Psychiatry  
S. Stifani; Ph.D.(Rome), Ph.D.(Alta.), Dept. of Neurology and Neurosurgery  
M. Sullivan; B.A.(McG.), M.A., Ph.D.(C'dia), Dept. of Psychology  
G. Tannenbaum; M.Sc., Ph.D.(McG.), Dept. of Neurology and Neurosurgery  
G. Turecki; M.D.(Brazil), Ph.D.(McG.), Dept. of Psychiatry  
C.-D. Walker; Ph.D.(Geneva), Dept. of Psychiatry  
C. Wolfson; Ph.D.(McG.), Dept. of Epidemiology and Biostatistics  
R.J. Zatorre; A.B.(Boston), M.Sc., Ph.D.(Brown), Dept. of Neurology and Neurosurgery

## Associate Professors

J. Armony; Ph.D.(NYU), Dept. of Psychiatry  
S. Baillet; Ph.D. (Univ. of Paris XI), Dept. of Neurology and Neurosurgery  
A. Bar-Or; M.D.,C.M.(McG.), F.R.C.P(C), D.A.B.N.P., Dept. of Neurology and Neurosurgery  
S. Beaulieu; M.D., Ph.D., F.R.C.P.(C), Dept. of Psychiatry  
D. Bernard; Ph.D.(Johns Hop.), Dept. of Pharmacology  
A. Bernasconi; M.D.(Basel), Dept. of Neurology and Neurosurgery  
V. Bohbot; Ph.D.(Ariz.), Dept. of Psychiatry  
D. Boivin; M.D.(Laval), Ph.D.(Montr.), Dept. of Psychiatry  
D. Bowie; Ph.D.(Lond.), Dept. of Pharmacology and Therapeutics  
A. Brunet; Ph.D.(Montr.), Dept. of Psychiatry  
M. Cayouette; M.Sc., Ph.D.(Laval), Depts. of Anatomy and Cell Biology, Biology, and Experimental Medicine  
N. Cermakian; Ph.D.(Montr.), Dept. of Psychiatry  
F. Charron; B.Sc., Ph.D.(McG.), Institut de Recherches Clinique de Montreal, Dept. of Anatomy and Cell Biology, Dept. of Biology  
J.-F. Cloutier; B.Sc.(C'dia), Ph.D.(Montr.), Dept. of Neurology and Neurosurgery  
T. Coderre; Ph.D.(McG.), Dept. of Anaesthesia  
L. Collins; M.Eng., Ph.D.(McG.), Dept. of Neurology and Neurosurgery  
E. Cook; B.Sc.(Ariz. St.), M.Sc.(Rice), Ph.D.(Baylor), Dept. of Physiology  
A. Dagher; M.Eng.(McG.), M.D.(Tor.), F.R.C.P.(C), Dept. of Neurology and Neurosurgery  
S. Daniel; M.D.,C.M., M.Sc.(McG.), Dept. of Otolaryngology  
B. Debruille; M.D.(Paris XI), Ph.D.(Univ. Pierre et Marie Curie, Paris), Dept. of Psychiatry  
L. Fellows; B.Sc.(McG.), D.Phil.(Oxf.), M.D.,C.M.(McG.), F.R.C.P.(C), Dept. of Neurology and Neurosurgery  
E. Fon; M.D.(Montr.), F.R.C.P.(C), Dept. of Neurology and Neurosurgery  
A. Fournier; B.Sc., Ph.D.(McG.), Dept. of Neurology and Neurosurgery  
G. Gobbi; M.D.(Rome), Ph.D.(Calg.), Dept. of Psychiatry  
I. Gold; Ph.D.(Princ.), Dept. of Psychiatry  
V. Gracco; Ph.D.(Wisc.), School of Communication Sciences and Disorders  
R. Joobar; M.D.(Tunisia), Ph.D.(McG.), Dept. of Psychiatry  
A. Kania; Ph.D.(Baylor), Depts. of Biology, Anatomy and Cell Biology, and Experimental Medicine  
S. King; B.A.(McG.), M.Ed., Ed.S.(James Madison Univ.), Ph.D.(Virginia Tech), Dept. of Psychiatry

## Associate Professors

A. Lamontagne; Ph.D.(Laval), School of Physical and Occupational Therapy

M. Leyton; M.A., Ph.D.(C'rdia), Dept. of Psychiatry

G. Luheshi; Ph.D.(Newcastle, UK), Dept. of Psychiatry

H.M. McBride; Ph.D.(McG.), Dept. of Neurology and Neurosurgery

A. McKinney; Ph.D.(Ulster), Dept. of Pharmacology and Therapeutics

K. Murai; Ph.D.(Calif.), Dept. of Neurology and Neurosurgery

K. Nader; B.Sc., Ph.D.(Tor.), Dept. of Psychology

J. Nalbantoglu; B.Sc., Ph.D.(McG.), Dept. of Neurology and Neurosurgery

H. Paudel; Ph.D.(Okla.), M.Sc.(Nepal), Dept. of Neurology and Neurosurgery

A. Peterson; B.Sc.(Vic., BC), Ph.D.(Br. Col.), Dept. of Neurology and Neurosurgery

J.C. Pruessner; Ph.D.(Trier), Depts. of Psychiatry, Psychology, Neurology, and Neurosurgery

D. Ragsdale; B.S.(Ill.), Ph.D.(Calif.), Dept. of Neurology and Neurosur



**Required Courses (33 credits)**

NEUR 697	(9)	Master's Project Proposal
NEUR 698	(9)	Master's Seminar Presentation
NEUR 699	(12)	Master's Thesis Submission
NEUR 705	(0)	Responsible Research Conduct

and one of the following:

## 11.15 Occupational Health

### 11.15.1 Location

Department of Epidemiology, Biostatistics and Occupational Health  
 Purvis Hall  
 1020 Pine Avenue West  
 Montreal, QC H3A 1A2  
 Canada

Website: [www.mcgill.ca/occh](http://www.mcgill.ca/occh)

M.Sc.(A.) (Resident) and Ph.D. programs:

Telephone: 514-398-6258  
 Email: [graduate.eboh@mcgill.ca](mailto:graduate.eboh@mcgill.ca)

M.Sc.(A.) (Distance Education) program:

Telephone: 514-398-6989  
 Email: [distance.occh@mcgill.ca](mailto:distance.occh@mcgill.ca)  
 Website: [www.mcgill.ca/occh/programs/distance](http://www.mcgill.ca/occh/programs/distance)

### 11.15.2 About Occupational Health

The Department of Occupational Health offers two graduate degree programs: a doctorate (Ph.D.) and master (M.Sc.(A.)) in occupational health sciences. The master's program is available on campus or in distance education format. Special Student status may be granted to students who wish to take only specific courses from our M.Sc. program. There is a maximum of 12 credits overall, with a maximum of 6 credits per semester.

Students are required to have access to a computer and the Internet as some of the course material is most readily available by accessing the web.

#### ***section 11.15.5: Master of Science, Applied (M.Sc.A.); Occupational Health (Resident) (Non-Thesis) (45 credits)***

A one-year program in health and hygiene appropriate for physicians, nurses, and graduates from engineering and basic sciences. Occupational health training allows candidates to evaluate work environments and attenuate work hazards using prevention and control.

#### ***section 11.15.6: Master of Science, Applied (M.Sc.A.); Occupational Health (Distance) (Non-Thesis) (45 credits)***

A three-and-a-half-year program completed mostly over the Internet. This program is not accepting applicants for 2012–2013.

#### ***section 11.15.7: Doctor of Philosophy (Ph.D.); Occupational Health***

The objective of this program is to train independent researchers in the field of work environment and health.

### 11.15.3 Occupational Health Admission Requirements and Application Procedures

#### 11.15.3.1 Admission Requirements

Applicants to graduate studies whose mother tongue is not English, and who have not completed an undergraduate or graduate degree from a recognized foreign institution where English is the language of instruction or from a recognized Canadian institution (anglophone or francophone), must submit documented proof of competency in oral and written English by appropriate exams, e.g., TOEFL (Test of English as a Foreign Language) with a minimum score of 550, or 86 on the Internet-based test with each component score not less than 20.

#### **M.Sc. Applied Program (Resident) (on campus)**

Candidates should have completed, with a standing equivalent to a minimum cumulative grade point average (CGPA) of 3.0 out of 4.0, one of the requisites below:

- a bachelor of science degree or its equivalent, in a discipline relevant to occupational health or hygiene such as: chemistry, engineering, environmental sciences, physics
- an M.D. (medicine)
- a B.Sc. in health sciences or nursing

#### **Distance Education**





### **Emeritus Professors**

S.H. Shapiro; B.S.(Bucknell), M.S., Ph.D.(Stan.)

G. Thériault; M.D.(Laval), M.I.H., Dr.P.H.(Harv.)

S. Wood-Dauphinee; B.Sc.(Phys.Ther.), Dip.Ed., M.Sc.(A.), Ph.D.(McG.)

### **Professors Post-Retirement**

A. Lippman; B.A.(C'nell), Ph.D.(McG.)

I.B. Pless; B.A., M.D.(W. Ont.)

S.H. Shapiro; B.S.(Bucknell), M.S., Ph.D.(Stan.)

G. Thériault; M.D.(Laval), M.I.H., Dr.P.H.(Harv.)

S. Wood-Dauphinee; B.Sc.(Phys.Ther.), Dip.Ed., M.Sc.(A.), Ph.D.(McG.)

### **Professors**

M. Abrahamowicz; Ph.D.(Cracow) (*James McGill Professor*)

J.F. Boivin; M.D.(Laval), S.M., Sc.D.(Harv.)

J. Brophy; B.Eng.(McG.), M.g.(7AbrahamoMcG.)wicz; Ph.D.(Craco)

### Associate Professors

A. Quesnel-Vallee; B.A., M.Sc.(Montr.), M.A., Ph.D.(Duke) (*joint appt. with Sociology*)

M. Rossignol; B.Sc., M.D.(Sher.), M.Sc.(McG.), F.R.C.P.(C)

P. Tousignant; B.A., M.D.(Laval), M.Sc.(McG.), F.R.C.P.(C) (PT)

### Assistant Professors

A. Adrien; M.D., M.Sc.(McG.)

A. Benedetti; B.Sc., M.Sc., Ph.D.(McG.) (*joint appt. with Medicine*)

J. Cox; B.Sc., B.A., M.D.(Dal.), M.Sc.(McG.), C.C.F.P., F.R.C.P.(C) (*joint appt. with Family Medicine*)

S. Harper; B.A.(Westminister), M.S.P.H.(S. Carolina), Ph.D.(Mich.)

A. Labbe; M.Sc.(Montr.), Ph.D.(Wat.) (*joint appt. with Psychiatry*)

S. Martin; M.D.(Tor.), M.Sc.(McG.) (PT)

E.E.M. Moodie; B.A.(Winn.), Ph.D.(Wash.)

A. Nandi; B.S.(College of New Jersey), M.P.H.(Col.), Ph.D.(Johns Hop.) (*joint appt. with Institute for Health & Social Policy*)

L. Patry; B.Sc., M.D.(Laval), F.R.C.P.(C) (PT)

E. Strumpf; B.A.(Smith), Ph.D.(Harv.) (*joint appt. with Economics*)

G. Tan; D.Phil.(Oxf.) (PT)

## Adjunct Professors

*Stabilis*: P. Simon

*Univ. de Montréal*: R. Massé, J. Siemiatycki

*Univ. of S. Australia*: J. Lynch

### 11.15.5 Master of Science, Applied (M.Sc.A.); Occupational Health (Resident) (Non-Thesis) (45 credits)

#### Research Project (15 credits)

OCCH 699 (15) Project Occupational Health and Safety

#### Required Courses (30 credits)

Note: Students must pass the Master's Integrative Examination (OCCH 600) before writing their Project.

OCCH 600	(0)	Master's Integrative Exam
OCCH 602	(3)	Occupational Health Practice
OCCH 603	(3)	Work and Environment Epidemiology 1
OCCH 604	(3)	Monitoring Occupational Environment
OCCH 605	(6)	Physical Health Hazards
OCCH 608	(3)	Biological Hazards
OCCH 612	(3)	Principles of Toxicology
OCCH 614	(3)	Topics in Occupational Health
OCCH 615	(3)	Occupational Safety Practice

O.52 457.543 Tm9ugTj 0 0 1 165.864 410.380.383 Tm(O.Tj1 0 0 1 70.52 410.380.383 Tm(O.55)Tj160 8.6 Tf1 0 0 1 80



### **11.16.3 Otolaryngology Admission Requirements and Application Procedures**

#### **11.16.3.1 Admission Requirements**

Admission to the M.Sc. program requires acceptance by a research supervisor, and the proposed program must be approved by the Departmental Research Committee.

Applicants should be otolaryngologists, or they should be currently enrolled in a residency program leading to certification in Otolaryngology, or they should be physicians with a strong interest in Otolaryngology Research. Under e

**Emeritus Professor**

J.D. Baxter; M.D.,C.M., M.Sc.(McG.), F.R.C.S.(C)

**Professors**

S. Frenkiel; B.Sc., M.D.,C.M.(McG.), F.R.C.S.(C)

A. Katsarkas; M.D.(Thess.), M.Sc.(Otol.)(McG.), F.R.C.S.(C)

M.D. Schloss; M.D.(Br. Col.), F.R.C.S.(C)

T.L. Tewfik; M.D.(Alex.), F.R.C.S.(C)

**Associate Professors**

M.J. Black; M.D.,C.M.(McG.), F.R.C.S.(C)

S. Daniel; M.D.,C.M., M.Sc.(Otol.)(McG.), F.R.C.S.(C)

M. Desrosiers; M.D.(Montr.), F.R.C.S.C.

N. Fanous; M.B., B.CH.(Cairo), F.R.C.S.(C)

M. Hier; M.D.,C.M.(McG.), F.R.C.S.(C)

K. Kost; M.D.,C.M.(McG.), F.R.C.S.(C)

J. Manoukian; M.B., Ch.B.(Alex.), F.R.C.S.(C)

W.H. Novick; M.D.(Qu.), F.R.C.S.(C)

J. Rappaport; M.D.(Dal.), F.R.C.S.(C)

B. Segal; B.Sc., B.Eng., M.Eng., Ph.D.(McG.)

R.S. Shapiro; M.D.,C.M.(McG.), F.R.C.S.(C)

A.G. Zeitouni; M.D.(Sher.), M.Sc.(Otol.)(McG.), F.R.C.S.(C)

**Assistant Professors**

F. Chagnon; M.D.,C.M.(McG.), F.R.C.S.(C)

I. Fried; M.D.(Dal.), F.R.C.S.(C)

Y. Lacroix; M.D.(Laval), F.R.C.S.(C)

R. Lafleur; M.D.(Ott.), F.R.C.S.(C)

A. Mlynarek; M.D.,C.M., M.Sc.(Otol.)(McG.), F.R.C.S.(C)

L. Nguyen; M.D.,C.M.(McG.), F.R.C.S.(C)

R. Payne; M.D.,C.M., M.Sc.(Otol.)(McG.), F.R.C.S.(C)

M. Samaha; M.D.(Qu.), M.Sc.(Otol.)(McG.), F.R.C.S.(C)

G. Sejean; M.D.(Beirut), F.R.C.S.(C)

R. Sweet; M.D.,C.M.(McG.)

L. Tarantino; M.D.(Naples), F.R.C.S.(C)

M. Tewfik; M.D.,C.M., M.Sc.(Otol.)(McG.), F.R.C.S.(C)

**Associate Members**

K. E. Cullen; Ph.D.(McG.)

W.R.J. Funnell; B.Eng., M.Eng., Ph.D.(McG.)

H.L. Galiana; B.Eng., M.Eng., Ph.D.(McG.)

Q. Hamid; M.D.(Iraq), Ph.D.Med.(Lond.)

L. Mongeau; B.Sc., M.Sc.(Montr.), Ph.D.(Penn. St.)

**Lecturers**

R. Caouette, A. Finesilver, J. Rothstein, T.T. Vi Vu, J. Young

**Adjunct Professor**

Véronique Isabelle Forest; M.D., M.Sc.(Exp. Med.)(Laval), F.R.C.S.(C)

**11.16.5 Master of Science (M.Sc.); Otolaryngology (Thesis) (45 credits)****Thesis Courses (30 credits)**

OTOL 690	(3)	M.Sc. Thesis 1
OTOL 691	(3)	M.Sc. Thesis 2
OTOL 692	(6)	M.Sc. Thesis 3
OTOL 693	(6)	M.Sc. Thesis 4
OTOL 694	(12)	M.Sc. Thesis 5

**Required Courses (12 credits)**

When appropriate, courses OTOL 602, OTOL 612, OTOL 603 or OTOL 613 may be replaced by other Basic Science or Clinical (500, 600, or 700 level) courses of relevance to Otolaryngology, as recommended or approved by the Department.

OTOL 602	(3)	Physiology, Histopathology and Clinical Otolaryngology 1
OTOL 603	(3)	Advanced Scientific Principles - Otolaryngology 1
OTOL 612	(3)	Physiology, Histopathology and Clinical Otolaryngology 2
OTOL 613	(3)	Advanced Scientific Principles - Otolaryngology 2

**Complementary Course**

(3-4 credits)

EPIB 607	(4)	Inferential Statistics
----------	-----	------------------------

or equivalent

Students aiming to acquire an interdisciplinary background will be expected to take additional elective courses, at the undergraduate level if necessary.

**11.17 Pathology****11.17.1 Location**

Department of Pathology  
Duff Medical Building  
3775 University Street  
Montreal, QC H3A 2B4  
Canada

Telephone: 514-398-7192 ext. 00481 or 00494

Fax: 514-398-7446

Email: [pathologyteaching.med@mcgill.ca](mailto:pathologyteaching.med@mcgill.ca)

Website: [www.mcgill.ca/pathology](http://www.mcgill.ca/pathology)

## 11.17.2 About Pathology

Pathology is the science of disease, and research in pathology is focused on understanding the cellular and molecular changes that cause disease, generating knowledge that is essential in the development of new methods for prevention and treatment. Pathology is a multidisciplinary science, and laboratory techniques overlap those used in all current fields of biomedical investigation. We offer unique opportunities for graduate students to conduct fundamental biomedical research that is directly linked to patient care, working with teams of highly experienced investigators and clinicians. Our laboratories are located on the main campus and throughout the McGill network of hospitals and research institutes. Our investigators collaborate with basic scientists from a variety of other departments, and undertake collaborative studies with colleagues in academic institutions around the world. Graduate students take part in joint clinical-experimental presentations involving our 48 faculty members, gaining broad exposure to current issues in diagnosis and treatment of disease. This opportunity to combine basic research and potential applications offers very exciting possibilities for a highly rewarding career.

The Pathology Department offers research training in a wide variety of areas such as immunology and transplantation, neoplasia, ophthalmic pathology, cell biology, pulmonary vascular and airways disease, pulmonary edema, neurodegenerative disorders, and smooth muscle pathophysiology.

Modern techniques and equipment include light, fluorescence and electron microscopy (both transmission and scanning), laser capture, DNA analysis, cell culture, advanced immunological, pharmacological, biochemical, and physiological techniques, as well as morphometry and computer-aided analysis.

### *section 11.17.5: Master of Science (M.Sc.); Pathology (Thesis) (45 credits)*

Graduates can directly enter rewarding careers in research, or opt to continue with their studies and obtain a Ph.D. Some combine their research training with subsequent training in medicine, law, or business administration.

### *section 11.17.6: Doctor of Philosophy (Ph.D.); Pathology*

Our graduates enter successful careers in industry, academia, government/international agencies, or clinical medicine, sometimes combining two of these options. They leave McGill with experience in leadership and communication skills in addition to being highly trained in biomedical research, and their career choices include a wide range of administrative and research positions around the world.

## 11.17.3 Pathology Admission Requirements and Application Procedures

### 11.17.3.1 Admission Requirements

Applicants must have a B.Sc. or an equivalent degree with an extensive background in the physical and biological sciences. An academic record equivalent to or better than a CGPA of 3.2 out of 4.0 at McGill is required for at least the two final full-time years of undergraduate training, with a minimum CGPA of 3.0 overall.

Applicants to graduate studies whose mother tongue is not English, and who have not completed an undergraduate or graduate degree from a recognized foreign institution where English is the language of instruction or from a recognized Canadian institution (anglophone or francophone), must submit the GRE and TOEFL examinations in order to be properly evaluated as to their suitability. Students are normally accepted into the M.Sc. program, and those candidates showing exceptional ability may be permitted to transfer into the Ph.D. program after one year of training.

Applicants who already possess an additional degree (M.Sc., M.D.) and have some research experience may be allowed to register in the Ph.D. program directly.

Prospective students apply online at [www.0croperly e](http://www.0croperly e)



Canadian	International	Special/Exchange/Visiting
Winter: Nov. 15	Winter: Sept. 30	Winter: Same as Canadian/International
Summer: March 15	Summer: Feb. 28	Summer: Same as Canadian/International

#### 11.17.4 Pathology Faculty

##### Chair

D. Haegert

##### Director of Graduate Program

E. Zorychta

##### Professors

M.N. Burnier Jr.; M.D., M.Sc., Ph.D.(Brazil)

A.M.V. Duncan; B.Sc.(Qu.), Ph.D.(Edin.)

A. Ferenczy; B.A., B.Sc., M.D.(Montr.)

R. Fraser; B.Sc., M.D.,C.M.(McG.), M.Sc.(Glas.), F.R.C.P.(C)

D. Haegert; M.D.(Br. Col.), F.R.C.P.(C)

Q.A. Hamid; M.D.(Mosul), Ph.D.(Lond.) (*James McGill Professor*) (*joint appt. with Medicine*)

R.P. Michel; B.Sc., M.D.,C.M.(McG.), F.R.C.P.(C)

J.B. Richardson; B.Sc., M.D.,C.M., Ph.D.(McG.), F.R.C.P.(C)

A. Spatz; M.Sc., M.D.(Paris)

##### Associate Professors

L. Alpert; M.D., Ph.D.(Tufts)

J. Arseneau; M.D.(Laval), F.R.C.P.(C)

M. Auger; M.D.,C.M.(McG.), F.R.C.P.(C)

C. Bernard; M.D.(Sher.), F.R.C.P.(C)

M.L. Brisson; B.A.(Paris), B.Sc., M.D.(Montr.)

B. Case; B.Sc., M.D.,C.M., M.Sc.(McG.), Dipl. Occ. Hyg., F.R.C.P.(C)

M.F. Chen; M.B., B.S.(Monash), F.R.C.P.(C)

T. Haliotis41 Tm(iC)Tj1 0 0 1 70.52 261.241 T84T

## Assistant Professors

M. Blumenkrantz; M.D.,C.M.(McG.), F.R.C.P.(C)

G.A. Brandao; M.D.(Brazil)

F. Brimo; M.D.(Damascus), F.R.C.P.(C)

D. Caglar; M.D.(Turkey)

P.J. Chauvin; M.Sc.(W. Ont.), D.D.S.(McG.)

B.F. Fernandes; M.D., Ph.D.(Brazil)

A. Florea; M.D.(Romania)

L. Fu; M.D.,C.M.(McG.), M.Sc.(McG.), F.R.C.P.(C)

A. Gologan; M.D.(Romania)

M.-C. Guiot; B.Sc., M.D.(Bordeaux)

S.-M. Jung; M.D.(Korea)

Y. Kanber; M.D.(Turkey)

J. Lavoie; B.Sc., M.Sc., Ph.D.(Laval)

H.R. Lopez-Valle; M.D.(Mexico)

A.T. Marcus; B.Sc., M.D.,C.M.(McG.), F.R.C.P.(C)

V.A. Marcus; M.D.,C.M.(McG.), F.R.C.P.(C)

A. Nahal; M.D.(Aleppo)

V.-H. Nguyen; M.D.(Montr.), F.R.C.P.(C)

A. Omeroglu; M.D.(Istanbul)

G. Omeroglu-Altinel; M.D.(Istanbul)

M. Pelmus; M.D.(Romania), Ph.D.(Romania)

D. Pilavdzic; M.D.(Zagreb), F.R.C.P.(C)

S. Sandhu; M.B., B.S.(India)

H. Srolovitz; B.Sc.(Pitt.), M.D.(Basel)

J. St. Cyr; M.D.,C.M.(McG.), F.R.C.P.(C)

### 11.17.5 Master of Science (M.Sc.); Pathology (Thesis) (45 credits)

All students must take PATH 300 plus a course in statistics if they have not completed these requirements before admission.

Candidates with insuf

PATH 613	(3)	Research Topics in Pathology 1
PATH 614	(3)	Research Topics in Pathology 2

6 credits, two 500-, 600-, or 700-level courses offered by the Department; subject to approval of the research director and Graduate Students Committee, up to 3 credits of 500-, 600-, or 700-level credits may be taken in another department.

#### **11.17.6 Doctor of Philosophy (Ph.D.); Pathology**

##### **Thesis**

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

##### **Required Cour**

The present 52 full and affiliate members of the Department have research laboratories located in the McIntyre Medical Sciences Building and in a variety of hospitals, institutes, and industry including the Douglas Hospital Research Centre, Allan Memorial Institute, Montreal Children's Hospital, Montreal General Hospital, Royal Victoria Hospital, Montreal Heart Institute, Lady Davis Research Institute, Pfizer Canada, and Merck Frosst Canada Inc. The participation of researchers from both industry and government ensures the relevance of the Department's applications-oriented training programs.

**section 11.18.5: Master of Science (M.Sc.); Pharmacology (Thesis) (45 credits)**

The objective of the M.Sc. (Thesis) and Ph.D. degree training programs is to provide in-depth independent research experience in a specific area of pharmacology.

**section 11.18.6: Master of Science (M.Sc.); Pharmacology (Thesis) — Chemical Biology (47 credits)**

The Chemical Biology Thematic Group is engaged in a diverse range of research topics that span structural biology, enzymology, nucleic acid research, signalling pathways, single molecule biophysics, and biophysical chemistry. Among the themes that unite the research being performed in this group is trying to learn new chemistry and physics from biological systems.

We have a portfolio of projects including: sphingosine signalling in cancer; the chemical biology of NO; quantification of bioenergetic markers of metabolism; self-assembly mechanisms of the HIV-1 virion capsid; liposome microarray systems to address membrane protein dynamics and recognition; studies on reactive oxygen species translocation across the aqueous/lipid membrane interface; RNAi/antisense technologies; dynamic combinatorial chemistry; protein dynamics and function; mechanistic aspects involved in cellular adhesion and transport in membrane and zeolite channels; and cutting-edge microscopes used to examine transport, motility and reactivity in cells.

**section 11.18.7: Doctor of Philosophy (Ph.D.); Pharmacology**

The objective of the Ph.D. degree training program is to provide in-depth independent research experience in a specific area of pharmacology.

### **11.18.3.2 Application Procedures**

Applications will be considered upon receipt of:

- 1.** completed official McGill University application form, available online at [www.mcgill.ca/gr](http://www.mcgill.ca/gr)

**Associate Professors**

D. Bowie; B.Sc., Ph.D.(Lond.)  
 T. Hébert; Ph.D.(Tor.)  
 A. McKinney; Ph.D.(Ulster)  
 S. Nattel; M.D.,C.M.(McG.)  
 A.L. Padjen; M.D., Ph.D.(Zagreb)  
 E. Zorychta; Ph.D.(McG.)

**Assistant Professor**

J. Tanny; Ph.D.(Harv.)

**Associate Members**

M. Alaoui-Jamali; Ph.D.(Sorbonne)  
 G. Batist; M.D.,C.M.(McG.)  
 M. Culty; Ph.D.(Fr.)  
 G. Di Battista; B.Sc., Ph.D.(Montr.)  
 L. Fellows; M.D., C.M.(McG.) Ph.D.(Oxf.)  
 P. Fiset; M.D.(Laval), F.R.C.P.S.(C)  
 S. Gauthier; M.D.(Montr.)  
 T. Geary; Ph.D.(Mich.)  
 B. Jean-Claude; Ph.D.(McG.)  
 S. Kimmins; Ph.D.(Dal.)  
 S. Laporte; Ph.D.(Sher.)  
 C. O'Flaherty; Ph.D.(Buenos Aires)  
 V. Pappadopoulis; Ph.D.(Univ. Pierre & Marie Curie)  
 R. Prichard; Ph.D.(NSW)  
 R. Quirion; Ph.D.(Sher.)  
 S. Rousseau; Ph.D.(Laval)  
 Y. Shir; M.D.(Israel), Ph.D.(Johns Hop.)  
 L. Stone; Ph.D.(Minn.)  
 M. Ware; MBBS(West Indies)  
 T. P. Wong; Ph.D.(McG.)

**Adjunct Professors**

B. Allen, M. Bruno, S. Chemtob, Y. De Koninck, L. Garofalo, J.M.A. Laird, J. Mancini, K. Meerovitch, T. Sanderson

**11.18.5 Master of Science (M.Sc.); Pharmacology (Thesis) (45 credits)****Thesis Courses (24 credits)**

PHAR 696	(3)	Thesis Preparation
PHAR 698	(9)	Thesis Preparation 2
PHAR 699	(12)	Thesis Preparation 3

**Required Courses (9 credits)**

PHAR 601	(6)	Comprehensive
PHAR 712	(3)	Statistics for Pharmacologists

**Complementary Courses (12 credits)**

6 credits, from the following courses:

PHAR 562	(3)	General Pharmacology 1
PHAR 563	(3)	General Pharmacology 2

or, for students who have tak

CHEM 621	(5)	Reaction Mechanisms in Organic Chemistry
CHEM 629	(5)	Organic Synthesis
CHEM 655	(4)	Advanced NMR Spectroscopy
PHAR 504	(3)	Drug Design and Development 2
PHAR 707	(3)	Topics in Pharmacology 6

3 credits, one of the following courses:

PHAR 700	(3)	Seminars in Pharmacology
PHAR 702	(3)	Topics in Pharmacology 1
PHAR 703	(3)	Topics in Pharmacology 2
PHAR 704	(3)	Topics in Pharmacology 3
PHAR 705	(3)	Topics in Pharmacology 4
PHAR 706	(3)	Topics in Pharmacology 5
PHAR 707	(3)	Topics in Pharmacology 6

3 credits, one of the following courses:

CHEM 502	(3)	Advanced Bio-Organic Chemistry
PHAR 503	(3)	Drug Design and Development 1

### 11.18.7 Doctor of Philosophy (Ph.D.); Pharmacology

#### Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Students must successfully complete, or be exempted from, the same courses as for the equivalent M.Sc. in Pharmacology, plus one additional 700-level graduate course (for a total of three).

### 11.18.8 Doctor of Philosophy (Ph.D.); Pharmacology — Chemical Biology

#### Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

#### Required Courses (13 credits)

BIOC 610	(1)	Seminars in Chemical Biology 1
BIOC 611	(1)	Seminars in Chemical Biology 3
BIOC 689	(1)	Seminars in Chemical Biology 2
BIOC 690	(1)	Seminars in Chemical Biology 4
PHAR 601	(6)	Comprehensive
PHAR 712	(3)	Statistics for Pharmacologists



**Complementary Courses (14 credits)**

6 credits, from the following courses:

PHAR 562	(3)	General Pharmacology 1
PHAR 563	(3)	General Pharmacology 2

or, for students who have taken PHAR 562 and PHAR 563 as part of their undergraduate degree, they can replace them with two of the following courses:

BIOC 603	(3)	Genomics and Gene Expression
BIOC 604	(3)	Macromolecular Structure
CHEM 504	(3)	Drug Design and Development 2
CHEM 522	(3)	Stereochemistry
CHEM 591	(3)	Bioinorganic Chemistry
CHEM 621	(5)	Reaction Mechanisms in Organic Chemistry
CHEM 629	(5)	Organic Synthesis
CHEM 655	(4)	Advanced NMR Spectroscopy
PHAR 504	(3)	Drug Discovery and Development 2
PHAR 707	(3)	Topics in Pharmacology 6

two of the following courses:

PHAR 700	(3)	Seminars in Pharmacology
PHAR 702	(3)	Topics in Pharmacology 1
PHAR 703	(3)	Topics in Pharmacology 2
PHAR 704	(3)	Topics in Pharmacology 3
PHAR 705	(3)	Topics in Pharmacology 4
PHAR 706	(3)	Topics in Pharmacology 5
PHAR 707	(3)	Topics in Pharmacology 6

one of the following courses:

CHEM 502	(3)	Advanced Bio-Organic Chemistry
PHAR 503	(3)	Drug Discovery and Development 1

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**11.19 Physiology****11.19.1 Location**

Department of Physiology  
McIntyre Medical Sciences Building  
3655 Promenade Sir-William-Osler  
Montreal, QC H3G 1Y6  
Canada

Telephone: 514-398-4343

Fax: 514-398-7452

Website: [www.medicine.mcgill.ca/physio](http://www.medicine.mcgill.ca/physio)

## 11.19.2 About Physiology

The Physiology Department offers training leading to M.Sc. and Ph.D. degrees. The scope of the ongoing research, and close connections with the McGill teaching hospitals, offer excellent opportunities for collaborations with hospital-based scientists. Research in the Department covers a broad range of topics from systems neuroscience to molecular and cellular biology. Interests include studies of nuclear and membrane receptors, transporters, channels, and signal transduction pathways, to the broader integration of physiological systems (cardiovascular, respiratory, renal, endocrine, immune, and central nervous systems) using an array of molecular and cellular approaches as well as quantitative techniques in data collection, analysis, and mathematical modelling by computational means. All graduate students in Physiology receive financial support. Any faculty member who agrees to supervise a student who does not hold a fellowship is obliged to provide financial support.

### *section 11.19.5: Master of Science (M.Sc.); Physiology (Thesis) (49 credits)*

The M.Sc. program is intended for students from an academic background wishing to pursue careers in academia, industry, or in medicine. The multidisciplinary nature of the Department exposes students to a vast array of research interests and experimental approaches. Thesis work is available in a broad range of disciplines from molecular and cellular to systems physiology covering multiple organ systems. Students wishing to continue to the doctoral program have the option of transferring to the Ph.D., and waiving the M.Sc. thesis submission.

### *section 11.19.6: Master of Science (M.Sc.); Physiology (Thesis) — Bioinformatics (49 credits)*

The intention of the Bioinformatics Option is to train M.Sc. students to become researchers in this interdisciplinary field. This includes the development of strategies for experimental design, the construction of tools to analyze datasets, the application of modelling techniques, the creation of tools for manipulating of bioinformatics data, the integration of biological databases, and the use of algorithms and statistics. Students successfully completing the Bioinformatics Option will be fluent in the concepts, language, approaches, and limitations of the field. The option consists of a number of interdisciplinary courses and a seminar designed to bring students from many backgrounds together and to provide a thorough overview of research in this field.

### *section 11.19.7: Doctor of Philosophy (Ph.D.); Physiology*

The doctoral program is intended for students from a strong academic background wishing to pursue research-intensive careers in academia, industry, or in medicine. The multidisciplinary nature of the Department exposes students to a vast array of research interests and experimental approaches. Thesis work provides in-depth training in a broad range of disciplines from molecular and cellular to systems physiology covering multiple organ systems.

### *section 11.19.8: Doctor of Philosophy (Ph.D.); Physiology — Bioinformatics*

The intention of the Bioinformatics Option is to train Ph.D. students to become researchers in this interdisciplinary field. This includes the development of strategies for experimental design, the construction of tools to analyze datasets, the application of modelling techniques, the creation of tools for manipulating of bioinformatics data, the integration of biological databases, and the use of algorithms and statistics. Students successfully completing the Bioinformatics Option will be fluent in concepts, language, approaches, and limitations of the field. The option consists of a number of interdisciplinary courses and a seminar designed to bring students from many backgrounds together and to provide a thorough overview of research in this field.

## 11.19.3 Physiology Admission Requirements and Application Procedures

### 11.19.3.1 Admission Requirements

Admission to the graduate program is based on an evaluation by the Graduate Student Admissions and Advisory Committee (GSAAC), and on being accepted by a research supervisor. Final acceptance is contingent upon approval of the recommendation of the applicant by Graduate and Postdoctoral Studies, from whom official notification will be received.

Candidates for the M.Sc. degree must hold a B.Sc. degree or its equivalent. Candidates who have completed an M.Sc. may be admitted directly to the Ph.D. program. M.Sc. students interested in a Ph.D. may transfer to the Ph.D. program after 12–18 months, following successful completion of all transfer requirements. The M.Sc. thesis requirement is then waived. Candidates with exceptional academic records may be considered to proceed directly to the Ph.D. degree from the B.Sc. degree.

The GRE General Test is required for anyone who does not have a degree from a North American University. TOEFL: only those whose mother tongue is English, who graduated from a North American institution (anglophone or francophone) or who completed an undergraduate or graduate degree at a foreign institution where English is the language of instruction are exempt from providing proof of competency in English.

A minimum CGPA of 3.2 or a GPA of 3.4 in the last two years is required for an application to be considered.

### 11.19.3.2 Application Procedures

The GSAAC will only consider applications upon receipt of all of the following documentation:

1. online application form;
2. \$100 application fee;
3. personal statement;
4. CV;

5. two letters of reference, not more than six months old, from two professors printed on official letterhead;
6. two official copies of all university transcripts;
7. results of the GRE (Graduate Record Exam) General Test, for applicants whose undergraduate degree is not from a North American university;
8. results of the Test of English as a Foreign Language (TOEFL), minimum score of 600 on paper-based test (or 100 on the Internet-based test with each component score not less than 20); only those whose mother tongue is English, who graduated from a North American institution (anglophone or francophone), or who completed an undergraduate or graduate degree at a foreign institution where English is the language of instruction will be exempt from providing proof of competency in English.

Applications should be submitted to the Graduate Student Affairs Coordinator as early as possible in order to facilitate processing. Howe

**Professors**

Sheldon Magder; M.D.(Tor.) (*joint appt. with Medicine*)  
 Jacapo P. Mortola; M.D.(Milan)  
 John Orłowski; B.Sc.(McG.), M.Sc., Ph.D.(Qu.) (*James McGill Professor*)  
 Premysl Ponka; M.D., Ph.D.(Prague)  
 Alvin Shrier; B.Sc.(C'dia), Ph.D.(Dal.) (*Hosmer Professor of Physiology*)  
 John White; B.Sc., M.Sc.(Car.), Ph.D.(Harv.)

**Associate Professors**

Erik Cook; Ph.D.(Baylor Coll., Tx)  
 Riaz Farookhi; B.Sc., M.Sc.(MIT), Ph.D.(Tufts)  
 Mladen Glavinovic; B.Sc.(Zagreb), M.Sc.(Tor.), Ph.D.(McG.)  
 Michael Guevara; Ph.D.(McG.)  
 Pejmun Haghighi; Ph.D.(McG.)  
 Sheldon Magder; M.D.(Tor.) (*joint appt. with Medicine*)  
 Julio Martinez-Trujillo; Ph.D.(Tubingen)  
 Ursula Stochaj; Ph.D.(Cologne)  
 Teresa Trippenbach; M.D., Ph.D.(Warsaw)  
 Ann Wechsler; B.A.(Tor.), M.Sc., Ph.D.(McG.)

**Associate Professor - Part-Time**

Nicole Bernard; B.Sc.(McG.), Ph.D.(Duke)

**Assistant Professors**

Maurice Chacron; Ph.D.(Ott.)  
 A. Chadra  
 Russell Jones; Ph.D.(Tor.)  
 R. Sharif-Naeini  
 A. Nyzhmyk

**Associate Members**

*Anaesthesia:* Steven Backman, Fernando Cervero  
*Biochemistry:* Imed Gallouzi  
*Biomedical Engineering:* Robert Kearney, Satya Prakash  
*Electrical and Computer Engineering:* Sam Musallam  
*Kinesiology and Physical Education:* Dilson Rassier  
*Medicine:* Albert Aguauo, Volker Blank, Mark Blostein, Andrey Cybulsky, Abraham Fuks, Claude Gagnon, Raymond Gagnon, Harry L. Goldsmith, Geoffrey Hendy, Louise Larose, Anne-Marie Lauzon, James Martin, Shree Mulay, Mariana Newkirk, Barry Posner, Shafaat Rabbani, Mary Stevenson, Simon Wing, Hans Zingg  
*Nephrology:* Serge Lemay, Tomoko Takano  
*Neurology:* David Ragsdale  
*Neurology and Neurosurgery:* Jack Antel, Massimo Avoli, Charles Bourque, Sal Carbonetto, Daniel Guitton, Christopher Pack, Melissa Vollrath  
*Ophthalmology:* Curtis Baker  
*Otolaryngology:* Bernard Segal  
*Pediatrics:* Charles Rohlicek

**Associate Members***Pharmacology:* Terence Hebert*Psychiatry:* Nicolas Cermakian, Bernardo Dubrovsky, Christina Gianoulakis**Adjunct Professors**

Roy Caplan, Pierre Drapeau, John Milton, Malmur Sairam

**11.19.5 Master of Science (M.Sc.); Physiology (Thesis) (49 credits)****Thesis Courses (30 credits)**

PHGY 621	(12)	Thesis 1
PHGY 622	(15)	Thesis 2
PHGY 623	(3)	M.Sc. Seminar

**Required Courses (13 credits)**

PHGY 601	(1)	M.Sc. Proposal Seminar
PHGY 602	(3)	Literature Search and Research Proposal
PHGY 607	(3)	Laboratory Research 1
PHGY 608	(3)	Laboratory Research 2
PHGY 620	(3)	Progress in Research

**Elective Courses (6 credits)**

Students must select 6 approved credits in Physiology or Science at the 500 level or above.

**11.19.6 Master of Science (M.Sc.); Physiology (Thesis) — Bioinformatics (49 credits)****Thesis Courses (30 credits)**

PHGY 621	(12)	Thesis 1
PHGY 622	(15)	Thesis 2
PHGY 623	(3)	M.Sc. Seminar

**Required Courses (16 credits)**

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
PHGY 601	(1)	M.Sc. Proposal Seminar
PHGY 602	(3)	Literature Search and Research Proposal
PHGY 603	(3)	Systems Biology and Biophysics
PHGY 607	(3)	Laboratory Research 1
PHGY 608	(3)	Laboratory Research 2

**Complementary Courses (3 credits)**

3 credits to be chosen from the following:

BINF 621	(3)	Bioinformatics: Molecular Biology
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BMDE 652	(3)	Bioinformatics: Proteomics
BTEC 555	(3)	Structural Bioinformatics
COMP 618	(3)	Bioinformatics: Functional Genomics

### 11.19.7 Doctor of Philosophy (Ph.D.); Physiology

#### Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

#### Required Courses (9 credits)

PHGY 701	(0)	Ph.D. Comprehensive Examination
PHGY 702	(1)	Ph.D. Proposal
PHGY 703	(1)	Ph.D. Thesis Proposal Seminar
PHGY 704	(1)	Ph.D. Thesis Proposal Seminar
PHGY 720	(1)	Ph.D. Seminar Course 1
PHGY 721	(1)	Ph.D. Seminar Course 2
PHGY 722	(1)	Ph.D. Seminar Course 3
PHGY 723	(1)	Ph.D. Seminar Course 4
PHGY 724	(1)	Ph.D. Seminar Course 5
PHGY 725	(1)	Ph.D. Seminar Course 6

#### Elective Courses (9 credits)

Students are required to take an additional three courses of Physiology or Science at the 500 level or above, in consultation with the GSAAC and the candidate's supervisor.

### 11.19.8 Doctor of Philosophy (Ph.D.); Physiology — Bioinformatics

#### Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

#### Required Courses (15 credits)

COMP 616D1	(1.5)	Bioinformatics Seminar
COMP 616D2	(1.5)	Bioinformatics Seminar
PHGY 603	(3)	Systems Biology and Biophysics
PHGY 701	(0)	Ph.D. Comprehensive Examination
PHGY 702	(1)	Ph.D. Proposal
PHGY 703	(1)	Ph.D. Thesis Proposal Seminar
PHGY 704	(1)	Ph.D. Thesis Proposal Seminar
PHGY 720	(1)	Ph.D. Seminar Course 1
PHGY 721	(1)	Ph.D. Seminar Course 2
PHGY 722	(1)	Ph.D. Seminar Course 3

PHGY 723	(1)	Ph.D. Seminar Course 4
PHGY 724	(1)	Ph.D. Seminar Course 5
PHGY 725	(1)	Ph.D. Seminar Course 6

### Complementary Course (3 credits)

One course to be chosen from the following courses:

BINF 621	(3)	Bioinformatics: Molecular Biology
BMDE 652	(3)	Bioinformatics: Proteomics
BTEC 555	(3)	Structural Bioinformatics
COMP 618	(3)	Bioinformatics: Functional Genomics

## 11.20 Psychiatry

### 11.20.1 Location

Department of Psychiatry  
1033 Pine Avenue West  
Montreal, QC H3A 1A1  
Canada

Telephone: 514-398-4176

Fax: 514-398-4370

Email: [graduate.psychiatry@mcgill.ca](mailto:graduate.psychiatry@mcgill.ca)

Website: [www.mcgill.ca/psychiatry](http://www.mcgill.ca/psychiatry)

### 11.20.2 About Psychiatry

McGill University's Department of Psychiatry is one of the most prestigious in the world. In the 1950s and 60s, Heinz Lehmann conducted the first North American clinical trials for antipsychotic and antidepressant medications. Theodore Sourkes identified the core neurobiological features of Parkinson's disease, and Eric Wittkower and Jack Fried brought together scholars from Anthropology and Psychiatry to create Transcultural Psychiatric Studies. Since then, faculty members and graduate students continue outstanding research in addictions; Alzheimer's and childhood disorders; eating, personality, and mood disorders; stress; trauma; and psychosis. The work is conducted in people and animal models, and also benefits from expertise ranging from neuroimaging and epigenetics to mental health services and public policy. Our work remains at the cutting edge of research on health, disease, and recovery.

#### Ph.D. (Ad Hoc)

The Department of Psychiatry also offers the possibility of directly entering a Ph.D. program on an *ad hoc* basis, or, with the permission of the supervisor and the approval of the Graduate Program Director, exceptional students may transfer from the M.Sc. to the *ad hoc* Ph.D. program.

#### *section 11.20.5: Master of Science (M.Sc.); Psychiatry (Thesis) (45 credits)*

The graduate program in Psychiatry is designed to provide advanced research training in the basic, applied, and social sciences relevant to issues in psychiatry. Applicants are admitted from a wide range of backgrounds, including undergraduate degrees in relevant areas (e.g., psychology, neuroscience, sociology, medical anthropology, nursing, and medicine), and those who are pursuing their psychiatry residency at McGill. Most, though not all students, continue to a Ph.D. program. The graduate program does not provide clinical training.

### 11.20.3 Psychiatry Admission Requirements and Application Procedures

#### 11.20.3.1 Admission Requirements

- A B.Sc., B.A., B.N., or M.D. degree.
- A strong background in science and/or social science, as demonstrated by academic achievement equivalent to a GPA of 3.3 (on a 4-point scale) or 3.5 in the last two years.
- A written agreement from the proposed research supervisor, and student's statement of purpose for seeking an M.Sc.
- An outline of the proposed thesis research, to be written by the prospective student in collaboration with an appropriate research supervisor.

- Two letters of reference.
- Application Form (see Department website) and Confirmation check list form (see Department website).

### 11.20.3.2 Application Procedures

Applications will be considered upon delivery of the following to the Graduate Program Coordinator:

1. a completed application form;
2. CAD\$100 application fee;
3. two official transcripts of all university studies;
4. a written Confirmation of Supervision form (see Department [website](#)) from the proposed research supervisor;
5. a written statement of purpose, describing the specific reasons for seeking a Master of Science degree in Psychiatry;
6. an outline of the proposed thesis research, to be written by the prospect.



**Professors**

P. Boksa; B.Sc., Ph.D.(Montr.)  
 S. El Mestikawy; Ph.D.(U. Pierre Marie Curie)  
 E. Fombonne; M.D.(Paris)  
 N. Frasure-Smith; B.A., Ph.D.(Johns Hop.)  
 S. Gauthier; B.A., M.D.(Montr.)  
 B. Giros; M.Sc., Ph.D.(U. Pierre Marie Curie)  
 A. Gratton; Ph.D.(C'dia)  
 L.T. Hechtman; B.Sc., M.D.,C.M.(McG.)  
 L.J. Kirmayer; B.Sc., M.D.,C.M., Dipl.Psych.(McG.) (*James McGill Professor*)  
 M. Leyton; Ph.D.(C'dia) (*William Dawson Scholar*)  
 A. Malla; B.S., M.B.(Panjab)  
 M.J. Meaney; B.A.(Loyola), M.A., Ph.D.(C'dia) (*James McGill Professor*)  
 V.N.P. Nair; M.B., B.S.(Kerala), D.P.M.(Mys.)  
 R. Palmour; B.A., Ph.D.(Texas)  
 J. Paris; M.D.,C.M.(McG.)  
 J.C. Perry; M.D.(Duke)  
 R.O. Pihl; B.A.(Lawrence), Ph.D.(Ariz.) (*Psychology*)  
 J. Poirier; Ph.D.(Montr.)  
 R. Quirion; B.Sc., M.Sc., Ph.D.(Sher.)  
 C. Rousseau; M.Sc.(McG.), M.D.,C.M.(Sher.)  
 L.K. Srivastava; B.Sc., M.Sc.(Allahabad), Ph.D.(J. Nehru)  
 H. Steiger; Ph.D.(McG.)  
 G. Turecki; M.Sc., M.D.,C.M., Ph.D.(McG.) (*William Dawson Scholar*)  
 C.-D. Walker; B.Sc., Ph.D.(Geneva)  
 A. Young; B.A., M.A., Ph.D.(Penn.)  
 S.N. Young; B.A.(Oxf.), M.Sc., Ph.D.(Lond.)

**Associate Professors**

J. Armony; B.Sc.(Buenos Aires), M.Sc., Ph.D.(NYU)  
 S. Beaulieu; M.D./Ph.D.(Laval)  
 V. Bohbot; B.A.(McG.), M.A., Ph.D.(Ariz.)  
 D. Boivin; Ph.D.(Montr.)  
 A. Brunet; Ph.D.(Montr.)  
 J. Caron; B.A., M.A.(Moncton), Ph.D.(UQAM)  
 N. Cermakian; B.Sc.(UQTR), M.Sc., Ph.D.(Montr.)  
 D. Charney; M.D.,C.M.(McG.)  
 A. Crocker; Ph.D.(Montr.) (*William Dawson Scholar*)  
 J.B. Debruille; M.D.(Paris), Ph.D.(U. Pierre et Marie Curie)  
 B.O. Dubrovsky; M.D.(Buenos Aires)  
 M.-J. Fleury; M.A., Ph.D.(Montr.)  
 G. Galbaud du Fort; M.D., Ph.D.(Paris) (*joint appt. with Epidemiology and Biostatistics*)  
 K.G. Gill; B.Sc.(Br. Col.), M.A., Ph.D.(C'dia)

## Associate Professors

G. Gobbi; M.D.(Rome), Ph.D.(Cagliari, Italy)

I. Gold; Ph.D.(Princ.)

B. Greenfield; M.D.(Wash.)

N. Grizenko; M.D.,C.M.(Sher.)

D. Groleau; B.Sc., M.Sc., Ph.D.(Montr.)

J. Guzder; M.D.,C.M.(McG.)

M. Israel; B.Sc., Gr.Dip.Psych.(McG.), M.A.(Qu.), M.D.,C.M.(McG.)

R. Joober; M.D.(France), Ph.D.(Tunisia)

S. King; M.Ed., Ed.S.(James Madison Univ.), Ph.D.(Virginia Poly. Inst.)

E. Latimer; B.A.Sc.(Wat.), M.S., Ph.D.(Carn. Mell)

M. Lepage; B.A.(C'dia), Ph.D.(UQAM)

K. Looper; B.Sc., M.D.(Ott.), M.Sc.(McG.)

G. Luheshi; Ph.D.(Newcastle, UK) (*William Dawson Scholar*)

G. Myhr; M.D.,C.M., M.Sc.(McG.)

D. Pedersen; M.D.(Buenos Aires)

M. Perreault; Ph.D.(Montr.)

J. Pruessner; Ph.D.(Univ. Trier)

M.N. Rajah; B.Sc., M.A., Ph.D.(T

### Assistant Professors

E. Loucks; B.Sc., Ph.D.(Br. Col.)

N.C.P. Low; M.D., M.Sc.(McG.)

T. Measham; B.Sc., M.D.(McG.)

N. Mechawar; B.Sc., M.Sc., Ph.D.(Montr.)

L. Nadeau; M.D.(Montr.)

M. Piat; Ph.D.(Laval)

J. Renaud; M.Sc., M.D.(Montr.)

R. Rodriguez; M.D., MPH(Spain), Ph.D.(Montr.)

K. Storch; M.Sc.(Munich); Ph.D.(Max Planck Inst. Biochem.)

R. Sullivan; Ph.D.(McM.)

A. Wazana; B.A.(McM.), M.Sc.(Col.), M.Sc.(McG.), M.D.(McM.)

R. Whitley; B.S., M.S., Ph.D.(Lond)

T.P. Wong; B.Sc.(HK), Ph.D.(McG.)

### Associate Members

J.L. Derevensky

A. Evans

R.O. Pihl (*McG.*)

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**11.21 Surgery, Experimental (Division of Surgical Research)****11.21.1 Location**

Surgery, Experimental (Division of Surgical Research)  
Montreal General Hospital, Room C9-169  
1650 Cedar A

Admission is usually from the M.Sc. program either upon completion of the M.Sc. degree, or by transfer from the first year of M.Sc. to the second year of Ph.D. studies. Request for such transfer is to be made in writing by the thesis supervisor during the candidate's first year of M.Sc. studies, not later than March 30 for students enrolled in September, or October 15 for those registered in January. The student must then apply for admission to the Ph.D. program in order to effect the transfer. **Transfer is granted on the basis of an examination administered by the student's Resear**



**Assistant Professors**

L. Ferri; M.D.,C.M., M.Sc.(McG.)

EXSU 700

(0)

Comprehensive Examination

**Complementary Course (3 credits)**

One graduate-level course in the student's specialty, selected in consultation with the Research Supervisory Committee.