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# 1 Dean©sWelcome

To Graduate Students and Postdoctoral Fellows:

I am extremely pleased to welcome you to McGill University. Our world-class scholarly community includes over 400 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, supervision, and research across the University. GPS also oversees quality assurance in admissions and registration, the disbursement of graduate fellowships, support for postdoctoral fellows, and facilitates graduate degree completion, including the graduation process, and examination of theses. GPS has partnered with Enrolment Services to manage the admission and registration of graduate students and postdoctoral fellows and 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 currently ranked 18$^{th}$ by *QS World University Rankings 2012*. 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 P ostdoctoral Studies

## 2.1 Administrative Officer s

| **Administrative Officers** | |
|---|---|
| Martin Kreiswirth; B.A.(Hamilton), M.A.(Chic.), Ph.D.(Tor.) | **Associate Provost (Graduate Education) and Dean (Graduate and Postdoctoral Studies)** |
| Heather Goad; B.A.(Br. Col.), Ph.D.(USC) | **Associate Dean (Graduate and Postdoctoral Studies)** |
| **Graduate and P**Br | **Associate Dean (Graduate and Postdoctoral Studies)** |

| Degree | | Prerequisites |
|---|---|---|
| Master of Business Administration with integrated Bachelor of Civil Law / Bachelor of Laws | M.B.A. with B.C.L./LL.B. | See *: M.B.A. Program*. |
| Master of Business Administration with Doctor of Medicine / Master of Surgery | M.B.A. with M.D.,C.M. | See *: M.B.A. Program*. |
| 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 *: Law Admission Requirements and Application Procedures*. |
| Master of Library and Information Studies | M.L.I.S. | At least a bachelor's degree from a recognized university. See *: Information Studies Admission Requirements and Application Procedures*. |
| Master of Management | M.M. | See *: Master of Management Programs Admission Requirements and Application Procedures*. |
| Master of Manufacturing Management | M.M.M. | See *: Master of Management Programs Admission Requirements and Application Procedures*. |
| Master of Music | M.Mus. | Bachelor of Music or Bachelor of Arts with concentration in the area selected for graduate study.<br>Applicants to the Performance program are required to pass auditions in their speciality.<br>See *: Schulich School of Music*. |
| Master of Sacred Theology | S.T.M. | B.A. with specialization in religious studies or theology. See *: Religious Studies Admission Requirements and Application Procedures*. |
| 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 *: Social Work Admission Requirements and Application Procedures*. |
| Master of Social Work with Bachelor of Civil Law and Bachelor of Laws | M.S.W. with B.C.L. and LL.B. | See *: Social Work Admission Requirements and Application Procedures*. |
| 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 *: Urban Planning Admission Requirements and Application Procedures*. |

### 4.2.1 Master©s Degree Programs and Specializations

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

| **Master of Arts (M.A.)** | | |
|---|---|---|
| Art History | Thesis | N/A |
| 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 (*Ad Hoc*) | N/A |
| Economics | Thesis, Non-Thesis | Development Studies, Social Statistics (Non-Thesis) |
| Educational Psychology | Thesis | Health Professions Education, Human Development, Learning Sciences, School/Applied Psychology |
| Education and Society | Thesis, Non-Thesis | Gender and Women's Studies, Mathematics and Science Education (Thesis)<br>Gender and Women's Studies, Jewish Education (Non-Thesis) |
| Educational Leadership | Thesis, Non-Thesis (Coursework), Non-Thesis (Project) | Gender and Women's Studies (Thesis)<br>Gender and Women's Studies (Non-Thesis (Project)) |
| English | Thesis, Non-Thesis | N/A |
| French Language and Literature | 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)<br>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 |
| Political Science | Thesis, Non-Thesis | Development Studies, European Studies (Thesis)<br>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 |

| **Master of Arts (M.A.)** | | |
|---|---|---|
| Second Language Education | Thesis, Non-Thesis | Gender and Women's Studies (Thesis)<br><br>Dev |

## Master of Sacred Theology (S.T.M.)

A program leading to the degree of *Sanctae Theologiae Magister* (S.T.M.) is given in the Faculty of Religious Studies. This degree is primarily for those who intend to enter the ministry of the Christian Church or another religious institution, or to proceed to teaching in schools.

| **Master of Science (M.Sc.)** | | |
|---|---|---|
| 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)<br>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. | | |
| Animal Science | Non-Thesis | N/A |
| Bioresource Engineering | Non-Thesis | Environment, Environmental Engineering, Integrated Food and Bioprocessing, Neotropical Environment |
| Biotechnology | Non-Thesis | N/A |
| Communication Sciences and Trs Sciences and | PsychoP 1462746436 Non-Thesis | Speech-Language Pathology |

| Degree | | Prerequisites |
|---|---|---|
| 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 *: Schulich School of 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. |
| Joint Doctor of Philosophy | Ph.D. | Joint Ph.D.s are offered in co-operation with other universities. |
| *Ad Hoc* Doctor of Philosophy | 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. |

### 4.3.1 Doctoral Degree Pr ograms and Specializations

| Program | Options | Offered by Faculty/School |
|---|---|---|
| **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. | | |
| 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.<br>The Doctor of Music degree is also offered in Performance. It is offered to professional musicians who wish to teach at the university level and to develop a specialization in a particular repertoire, approach, or discipline (musicology, music theory, music education and pedagogy, or music technology). | | |
| Music | Composition, Performance Studies | Schulich School of Music |
| **Doctor of Philosophy (Ph.D.)** | | |
| Animal Science | Bioinformatics | Faculty of Agricultural and Environmental Sciences |
| Anthropology | Neotropical Environment | Faculty of Arts |
| Architecture | N/A | Faculty of Engineering |
| Art History | Gender and Women's Studies | Faculty of Arts |
| Atmospheric and Oceanic Sciences | N/A | Faculty of Science |
| Biochemistry | Bioinformatics, Chemical Biology | Faculty of Medicine |
| Biology | Bioinformatics, Developmental Biology, Environment, Neotropical Environment | Faculty of Science |
| Biomedical Engineering | Bioinformatics | Faculty of Medicine |
| Bioresource Engineering | Environment, Neotropical Environment | Faculty of Agricultural and Environmental Sciences |
| Biostatistics | N/A | Faculty of Medicine |
| Cell Biology | N/A | Faculty of Medicine |
| Chemical Engineering | N/A | Faculty of Engineering |
| Chemistry | Chemical Biology | Faculty of Science |
| Civil Engineering | N/A | Faculty of Engineering |
| Classics | N/A | Faculty of Arts |
| Communication Sciences and Disorders | Language Acquisition | Faculty of Medicine |

| **Doctor of Philosophy (Ph.D.)** | | |
|---|---|---|
| Communication Studies | Gender and Women's Studies | Faculty of Arts |
| Computer Science | Bioinformatics | Faculty of Science |
| Counselling Psychology | N/A | Faculty of Education |
| Earth and Planetary Sciences | Environment | Faculty of Science |
| Economics | N/A | Faculty of Arts |
| Educational Psychology | Human Development, Learning Sciences | Faculty of Education |
| | | Faculty of Education |

| Graduate Certificates | |
|---|---|
| Assessing Driving Capabilities | Educational Leadership 1 |
| Air and Space Law | Educational Leadership 2 |
| Bioinformatics | Library and Information Studies |
| Bioresource Engineering (Integrated Water Resources Management) | Post-M.B.A. |
| Biotechnology | Teaching English as a Second Language |
| Chronic Pain Management | Theory in Primary Care |
| Comparative Law | Theory in Neonatology |

All graduate regulations apply to graduate diploma and graduate certificate candidates.

**Note:** The School of Continuing Studies offers graduate diplomas and graduate certificates that are not under the academic supervision of Graduate and Postdoctoral Studies. To see a list of the programs offered, refer to the School of Continuing Studies eCalendar available at *www.mcgill.ca/study*.

# 5 Program Requirements

## 5.1 Master©s Degrees

**Residence Requirements – Master's Degrees**

Refers to the number 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.

- 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*.

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*, 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.

**Thesis – Doctoral**

The thesis for the Ph.D. degree must display original scholarship expressed in good literate style and must be a distinct contribution to knowledge. **Formal notice of a thesis title and names of examiners must be submitted to the Thesis section of GPS on the *Nomination of Examiners* form in accordance**

diplomas, letters of reference, and test scores, become the property of McGill University and will not be returned to the applicant or issuing institution under any circumstance.

A **non-refundable** fee of $102.60 paid by credit card in Canadian funds **must** accompany the online application. The fee of $102.60 covers up to two program choices per term. Candidates for Special, Visiting, and Qualifying status must also apply online and pay the application fee. Please note that application fees are subject to change.

It is recommended that applicants submit a list of the course titles in the major subject, since transcripts often give code numbers only. **Transcripts written in a language other than English or French must be accompanied by a translation prepared by a licensed translator.** An explanation of the grading system used by the applicant's university is essential. The applicant should also indicate the major subject area in which further study is desired.

Applications and uploaded supporting documents must be submitted according to individual department specifications and deadlines; see *www.mcgill.ca/gradapplicants/programs*. International students are advised to apply well in advance of the application deadlines as immigration procedures may be lengthy. Admission to graduate studies at McGill is highly competitive; accordingly, late and/or incomplete applications are considered only as time and space permits.

The admission decision is based on the recommendation of the graduate department, verification by the Graduate Admissions Unit in Enrolment Services, as well as final approval from Graduate and Postdoctoral Studies. In some cases, the Graduate Admissions Committee may also contribute to the final admission decision. Official letters of admission are sent to applicants electronically by Enrolment Services.

## 6.2 Admission Requirements (Minimum Requirements to be Considered for Admission)

**Note:** The following admission requirements denote the minimum standard for applicants. Some graduate departments may require additional qualifications or a higher minimum CGPA; applicants are strongly urged to consult the department concerned regarding specific requirements.

Applicants should be graduates of a recognized university and hold a recognized bachelor's degree or its equivalent, as determined by McGill, in a subject closely related to the one selected for graduate work.

The applicant must present evidence of academic achievement: a minimum standing equivalent to a cumulative grade point average (CGPA) of 3.0 out of a possible 4.0 or a CGPA of 3.2/4.0 for the last two full-time academic years. High grades are expected in courses considered by the department to be preparatory to the graduate program. Some departments impose additional or higher requirements.

See *www.mcgill.ca/gradapplicants/apply/prepare/international/equivalency* for information on grade equivalencies and de

**GRE:** Graduate Records Examination (see *section 6.4: Admission Tests*)

**Interview:** a conversation between the applicant and a McGill representative, using a structured, standardized approach to allow for comparison and analysis of responses from all applicants interviewed; in person, via telephone, *Skype*, etc.

**Personal Statement:** an essay in which the applicant describes their reasons for applying to graduate studies and indicating qualifications, qualities, or circumstances the applicant feels to be significant; usually provides information about educational and professional goals and discusses the applicant's interest in the desired field of study.

**Portfolio:** a collection of the applicant's best work to date, selected by them, and intended to show their mastery of a given style or variety of styles; different samples of their artistic work.

**Recording:** an unedited recording (audio or video) of the applicant performing at least two contrasting pieces; minimum 20 minutes.

**Research Proposal:** a detailed description of the proposed program of research, including proposed Thesis Supervisor(s); describes the research background, significance, methodology, and references; may include expected results; may include a detailed curriculum vitae.

**TOEFL:** Test of English as a Foreign Language (see *section 6.5: Competency in English*)

**Writing Sample:** a recent sample of the applicant's written work, on any topic (not necessarily within the desired field of graduate study) and not necessarily previously submitted for evaluation or publication.

**Written Work:** a sample of the applicant's written work, drawn from essays, papers or other work previously submitted for academic evaluation or publication, and falling within the desired field of graduate study.

## 6.4 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* 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 ensure that official test results are sent to McGill directly by the testing service.

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 ensure that official results are released to McGill by the Graduate Management Admission Council (GMAC). The test is a standardized assessment offered by the GMAC to help business schools assess candidates for admission. For further information, see *www.mba.com/the-gmat*.

## 6.5 Competenc y 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. |

**Competency in English**

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.

# 8 Postdoctoral Research

Students must inform themselves of University rules and regulations and keep abreast of any changes that may occur. The *Postdoctoral Research* section of this publication contains important details required by postdoctoral scholars during their studies at McGill and should be periodically consulted, along with other sections and related publications.

## 8.1 Postdocs

i. Postdocs have the same pertinent rights as the ones granted to McGill students in the *Handbook on Student Rights and Responsibilities* (“Green Book”), available at *www.mcgill.ca/secretariat/policies/students*.

ii. Postdocs have full graduate student borrowing privileges in McGill libraries through their identity card.

iii. As a rule, Postdocs who are Canadian citizens or who have Permanent Resident status may take courses for credit. Admission to such courses should be sought by submitting application documents directly to the appropriate program by the Postdoc. They must be admitted by the department offering the courses as Special Students. These Postdocs may only be enrolled as part-time students in non-degree granting programs. They will be charged fees for these courses.

iv. Postdocs may be listed in the McGill directory. The Computing Centre will grant Postdocs email privileges on the same basis as graduate students upon presentation of a valid identity card.

v. The Department of Athletics will grant Postdocs access to sports facilities upon presentation of their identity card. A fee will be charged on an annual or term basis.

vi. Postdocs are mandatory members of the Post-Graduate Students’ Society (PGSS) and an annual association fee is automatically charged. PGSS fees are mandatory. Postdocs are permitted membership in the Faculty Club; an annual fee will be charged for this membership.

vii. Postdocs are encouraged to participate in Professional Development Workshops provided by Graduate and Postdoctoral Studies and Teaching and Learning services. These sessions are usually free of charge.

viii. Postdocs have access to the services provided by the Ombudsperson.

ix. Postdocs may enrol as part-time students in the second language written and spoken English/French courses offered by the School of Continuing Studies/French Language Centre. Postdocs will be charged tuition for these courses. International Postdocs may be required to obtain a CAQ and a Study Permit.

x. Access to student services and athletic services are available to the Postdoc on an opt-in basis. Fees are applicable.

**5. Responsibilities**

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*.

ii. Each academic unit hosting Postdocs should clearly identify Postdocs’ needs and the means by whi5deedEify Postdo.tsd81223 447.04 Tm(y will bmeted by thc u

– to re

- the individual must be engaged in full-time research;
- the individual must provide copies of official transcripts/diploma;
- the individual must have the approval of a McGill professor to supervise the research and of the Unit;
- the individual must have adequate proficiency in English, but is not required to provide official proof of English competency to Enrolment Services;
- the individual must comply with regulations and procedures governing research ethics and safety and obtain the necessary training;
- the individual will be provided access to McGill libraries, email, and required training in research ethics and safety. Any other University services must be purchased (e.g., access to athletic facilities);
- the individual must arrange for basic health insurance coverage prior to arrival at McGill and may be required to provide proof of coverage.

## 9 Graduate Studies Guidelines and P olicies

Refer to *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > : Guidelines and Policies* for information on the following:

- Guidelines and Regulations for Academic Units on Graduate Student Advising and Supervision
- Policy on Graduate Student Research Progress Tracking
- Ph.D. Comprehensives Policy
- Graduate Studies Reread Policy
- Failure Policy
- Guideline on Hours of Work

## 10 Inf ormation on Resear ch Policies and Guidelines, Patents, Postdocs, Associates, Trainees

Refer to *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > : Research Policy and Guidelines, Patents, Postdocs, Associates, Trainees* for information on the following:

- Policy on Research Ethics
- Regulations on Research Policy
- Policy on Research Integrity
- Guidelines for Research Involving Human Subjects
- Guidelines for Research with Animal Subjects
- Policy on Intellectual Property
- Regulations Governing Conflicts of Interest
- Safety in Field Work
- Office of Sponsored Research
- Postdocs
- Research Associates

## 11 Academic Pr ograms

The programs and courses in the following sections have been approved for the 2013–2014 session as listed, but the Faculty/School reserves the right to introduce changes as may be deemed necessary or desirable.

## 11.1 Anatom y and Cell Biology

### 11.1.1 Location

Department of Anatomy and Cell Biology
Strathcona Anatomy and Dentistry Building
3640 University Street, Room 1/60
Montreal, QC H3A 0C7
Canada

Telephone: 514-398-6335
Fax: 514-398-5047
Website: *www.mcgill.ca/anatomy*

### 11.1.2 About Anatom y and Cell Biology

In addition to laboratory-specific activities, students will attend weekly seminars presented by nationally and internationally recognized researchers (see *www.mcgill.ca/anatomy/seminar-series*). Students will also present their results once a year to other students in the program in the Research in Progress seminar series.

Current research projects include:

- cell biology of secretion
- cell biology of endocytosis
- signal transduction of cell receptors for growth factors and hormones
- synthesis and migration of glycoproteins
- subcomponents of the Golgi apparatus and their function
- 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 cytoskeletal components of spermatozoa
- role of endocytosis and secretion by epididymal cells in sperm maturation
- molecular biology of Sertoli cell secretions and their interaction with germ cells
- synchronization of sperm production
- transferrin, transferrin receptors, and iron in germinal cells
- dif

- cryo-electron microscopy

The

**Emeritus Professors**

Hershey Warshawsky; B.Sc.(Sir G. Wms.), M.Sc., Ph.D.(McG.)

**Professors**

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

Philip Barker; B.Sc.(S. Fraser), Ph.D.(Alta.) (*joint appt. with Neurology and Neurosurgery*)

James R. Brawer; B.S.(Tufts), Ph.D.(Harv.)

Miguel Burnier; M.D., M.Sc., Ph.D.(Brazil) (*joint appt. with Ophthalmology*)

Samuel David; Ph.D.(Manit.) (*joint appt. with Neurology and Neurosurgery*)

Louis Hermo; B.A.(Loyola), M.Sc., Ph.D.(McG.)

Timothy Kennedy; B.Sc.(McM.), M.Phil., Ph.D.(Col.) (*joint appt. with Neurology and Neurosurgery*)

Nathalie Lamarche-Vane; B.Sc., Ph.D.(Montr.)

Marc D. McKee; B.Sc., M.Sc., Ph.D.(McG.) (*joint appt. with Dentistry*)

Peter McPherson; B.Sc.(Manit.), Ph.D.(Iowa) (*joint appt. with Neurology and Neurosurgery*)

Sandra C. Miller; B.Sc.(Sir G. Wms.), M.Sc., Ph.D.(McG.)

Carlos R. Morales; D.V.M.(U.N., Argentina), Ph.D.(McG.)

Barry I. Posner; M.D.(Manit.), F.R.C.P.(C) (*joint appt. with Medicine*)

Dieter Reinhardt; M.S.(Kaiserslautern), Ph.D.(Munichh Dentistry

**Associate Members**

Alyson Fournier (*Neurology and Neurosurgery*)

Janet Henderson (*Medicine*)

Robert Scott Kiss (*Biochemistry*)

Bartha Knoppers (*Human Genetics*)

Svetlana Komarova (*Dentistry*)

Stephane Laporte (*Medicine*)

Andréa Leblanc (*Neurology and Neurosurgery*)

Tommy Nilsson (*Medicine*)

Christian Rocheleau (*Medicine*)

Edward S. Ruthazer (*Neurology and Neurosurgery*)

Michael Sacher (*Biology*)

Philippe Seguela (*Neurology and Neurosurgery*)

Peter Siegel (*Medicine and Biochemistry*)

Thomas Stroh (*Neurology and Neurosurgery*)

Jacalyn Vogel (*Biology*)

Xiang-Jiao Yang (*Medicine*)

**Adjunct Professors**

Michel Cayouette; Ph.D.(Laval)

Frédéric Charron; B.Sc.(Montr.), Ph.D.(McG.)

Miroslaw Cygler; M.Sc., Ph.D.(Lodz, Poland)

Daniel Cyr; B.Sc., M.Sc.(C'dia), 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)

**Faculty Lecturer**

Ayman Behiery; M.B., Ch.B.(Cairo)

### 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 |

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 | (3) | 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:

BME Modelling and IdentifiAN

## 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*
Website: *www.mcgill.ca/biochemistry*
Website: *www.mcgill.ca/biochemistry/graduate-studies-2/chemicalbiology*
Website: *www.mcgill.ca/biochemistry/graduate-studies-2/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 many aspects of cancer. Specialized graduate training programs in Chemical Biology, Human Systems Biology (Bioinformatics), Cancer Research/Oncology (*http://cancercentre.mcgill.ca/research*), and Structural Biology (*http://grasp.mcgill.ca*) are available. Laboratories are located in the new Bellini Life Sciences Building and Goodman Cancer Research Centre, and the renovated McIntyre Medical Sciences Building, together comprising one of the best-equipped research facilities in Canada. The outstanding quality of our research has been recognized by recent awards including a Gairdner Award, two Killam Prizes, and eight Canada Research Chairs.

**Funding**

Master's students receive a minimum stipend of $20,000 annually; doctoral students receive $22,000. The Department is committed to helping graduate students secure adequate funding for their research. All students are financially supported either by their supervisor or through fellowships or scholarships. Prospective students are urged to make every effort to secure their own funding. Applications may be made for a variety of fellowships administered by the University or by various federal, provincial, or private agencies. For more information on fellowships and awards, see the Graduate and Postdoctoral Studies website, *www.mcgill.ca/gps/funding/students-postdocs*.

**Departmental Seminars**

Visiting scientists and senior doctoral students present their research findings to the Department at a regular seminar series throughout the academic year. All graduate students are required to attend the regular seminars and additional special lectures, and are encouraged to attend scientific conferences and symposia.

***section 11.2.5: Master of Science (M.Sc.); Biochemistry (Thesis) (45 credits)***

The M.Sc. in Biochemistry introduces students to laboratory-based research at an advanced level. The M.Sc. program offers core courses in advanced biochemistry topics, but focuses on laboratory research. The program provides sophisticated training in the technical as well as theoretical aspects of biochemistry, at one of the leading Biochemistry departments in Canada. The M.Sc. program is an excellent preparation for skilled positions in the biomedical sciences, in industry or the public sector, or for superior research in a Ph.D. program.

***section 11.2.6: Master of Science (M.Sc.); Biochemistry (Thesis) — Chemical Biology (47 credits)***

The Chemical Biology

### *section 11.2.6: Master of Science (M.Sc.); Biochemistry (Thesis) — Chemical Biology (47 credits)*

Financial support for students in the program is available from a variety of sources, including competitively awarded CIHR-funded Chemical Biology Scholarship awards.

### *section 11.2.7: Master of Science (M.Sc.); Biochemistry (Thesis) — Bioinformatics (45 credits)*

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

**Emeritus Professors**

Rhoda Blostein; B.Sc., M.Sc., Ph.D.(McG.), F.R.S.C.

Peter E. Braun; B.Sc., M.Sc.(Br. Col.), Ph.D.(Calif., Berk.)

Robert E. MacKenzie; B.Sc.(Agr.)(McG.), M.N.S., Ph.D.(C'nell)

Edward A. Meighen; B.Sc.(Alta.), Ph.D.(Calif., Berk.)

Walter E. Mushynski; B.Sc., Ph.D.(McG.)

Theodore L. Sourkes; M.Sc.(McG.), Ph.D.(C'nell), F.R.S.C.

Clifford P. Stanners; B.Sc.(McM.), M.A., Ph.D.(Tor.)

Maria Zannis-Hadjopoulos; B.Sc., M.Sc., Ph.D.(McG.) (*joint appt. with Oncology and Medicine*)

**Professors**

Nicole Beauchemin; B.Sc., M.Sc., Ph.D.(Montr.) (*joint appt. with Oncology and Medicine*)

Albert Berghuis; B.Sc., M.Sc.(Rijks Univ. Groningen, The Netherlands), Ph.D.(Br. Col.) (*Canada Research Chair in Structural Biology*)

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

Imed Gallouzi; Maitrise, D.E.A., Ph.D.(Montpellier, France) (*Canada Research Chair in Cellular Information Systems*)

Kalle Gehring; B.A.(Brown), M.Sc.(Mich.), Ph.D.(Calif., Berk.) (*Chercheur National du FRSQ*)

Vincent Giguère; B.Sc., Ph.D.(Laval) (*joint appt. with Oncology and Medicine*)

**Associate Members**

Karine Auclair (*Chemistry*)

Edward A. Fon (*Neurology and Neurosurgery*)

Jacques Genest (*Dept. of Medicine*)

Matthias Götte (*Microbiology and Immunology*)

Michael Hallett (*McGill Centre for Bioinformatics*)

Qutayba Hamid (*Meakins-Christie Labs*)

Robert S. Kiss (*Dept. of Medicine*)

Gergely Lukacs (*Physiology*)

Vassilios Papadopoulos (*Dept. of Medicine*)

Janusz Rak (*Montreal Children's Hospital*)

Reza Sala

| | | |
|---|---|---|
| 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 biomedical and allied sciences.

* 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.

### 11.2.6 Master of Science (M.Sc.); Bioc hemistr y (Thesis) Ð Chemical Biology (47 credits)

#### Thesis Cour ses (33 credits)

| | | |
|---|---|---|
| BIOC 695 | (6) | Thesis Research 1 (Chemical - Biology) |
| BIOC 698 | (12) | Thesis Research 2 |
| BIOC 699 | (15) | Thesis Research 3 |

#### Required Cour se (3 credits)

| | | |
|---|---|---|
| BIOC 696 | (3) | Seminars in Biochemistry |

#### Complementar y Cour ses* (11 credits)

Two of the following courses:

| | | |
|---|---|---|
| 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 |

At least 3 credits from the following:

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

and 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 11 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 |

| | | |
|---|---|---|
| EXMD 635D1 | (3) | Experimental/Clinical Oncology |
| EXMD 635D2 | (3) | Experimental/Clinical Oncology |

Plus 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 |

* 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.

### 11.2.8 Doctor of Philosophy (Ph.D.); Biochemistry

#### 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)

| | | |
|---|---|---|
| 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 |

*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*** (6 credits)

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 Ð 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 (7 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 |
| 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 |

* 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)

At least 3 credits from the following:

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

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 Philosoph y (Ph.D.); Bioc hemistr y Ð Bioinf ormatics

#### 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 e

(3) Structural Biology and Proteomics

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.

### 11.4.2 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 available in the Department and in the laboratories of associated staff located elsewhere on campus. The Department operates a network of high-performance workstations and well-equipped mechanical and electronics workshops.

Basic research in the Department concentrates on the application of quantitative engineering analysis methods to basic biomedical research problems. Currently active areas of research include: neuromuscular and postural control, muscle mechanics, the vestibular system, oculomotor control, the auditory system, joint prosthetics, biomaterials, artificial cells and organs, cell and tissue engineering, drug delivery, probiotics, functional food and neutraceuticals, medical imaging, microfluidics, nanotechnology, and bioinformatics in genomics and proteomics. Staff members are also active in more applied research related to the development of quantitative analysis tools and instruments for biomedical research. Areas of activity here include: signal analysis, system identification, modelling, simulation and parameter estimation, image processing, pattern recognition, ultrasound, and biorobotics. A new option in bioinformatics is offered jointly with other University departments.

Graduate students may also be registered through the departments of Medicine, Science, and Engineering, and must then fulfil the requirements for advanced degrees imposed by their respective departments.

In addition, all students are required, through coursework and independent study, to achieve a degree of interdisciplinary competence appropriate to their area of specialization.

M.Eng. Meetings: 1) Initial; 2) Progress; and Fast-Track transfer to the Ph.D. program. Details of each meeting can be found at: *www.mcgill.ca/bme/students/policies-forms*.

Ph.D. Meetings: 1) Preliminary; 2) Comprehensive Exam Preparation; 3) Thesis Proposal and Comprehensive Exam; 4) Thesis Progress; and 5) Thesis Pre-submission. Details of each meeting can be found at: *www.mcgill.ca/bme/students/policies-forms*.

***section 11.4.5: Master of Engineering (M.Eng.); Biomedical Engineering (Thesis) (45 credits)***

As the first Biomedical Engineering (BME) department in Canada, BME's internationally renowned staff provide frequent and stimulating interactions with physicians, scientists in many fields, and with the biomedical industry. McGill BME provides opportunities to receive training in a unique multidisciplinary environment, taking advantage of research collaborations between staff in the Faculties of Medicine, Science, and Engineering. BME offers only thesis-based graduate degrees (M.Eng.) 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*. The best preparation is with a bachelor's degree in engineering, science, or medicine with a strong emphasis on mathematics, physics, chemistry, and basic physiology, or cell biology. Our BME graduates have secured positions in academia, biomedical and other industries, and government or regulatory sectors, either before or within a few months of graduation.

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

Bioinformatics research lies at the intersection of biological/medical sciences and mathematics/computer science/engineering. The intention of the Bioinformatics Option is to train M.Eng. 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. 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 11.4.7: Doctor of Philosophy (Ph.D.); Biomedical Engineering***

As the first Biomedical Engineering (BME) department in Canada, BME internationally renowned staff provide frequent and stimulating interactions with physicians, scientists in many fields and with the biomedical industry. McGill BME provides opportunities to receive training in a unique multidisciplinary 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*. 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. Our BME graduates have secured positions in academia, biomedical and other industries, and government or regulatory sectors, either before or within a few months of graduation.

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

Bioinformatics research lies at the intersection of biological/medical sciences and mathematics/computer science/engineering. 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 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, and will be capable of developing an independent Bioinformatics research program. 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.

### 11.4.3 Biomedical Engineering Admission Requirements and Application Pr ocedures

#### 11.4.3.1 Admission Requirements

See *section 6.2: Admission Requirements (Minimum Requirements to be Considered for Admission)*. In addition, please see the Department website: *www.mcgill.ca/bme*.

#### 11.4.3.2 Application Pr ocedures

McGill's online application form for graduate program candidates is available at *www.mcgill.ca/gradapplicants/apply*.

See *section 6.3: Application Procedures* for detailed application procedures.

Please address enquiries directly to the Department.

#### 11.4.3.3 Application Deadlines

| Canadian | International | Special/Exchange/Visiting |
|---|---|---|
| Fall: March 15 | Fall: March 15 | Fall: March 15 |
| Winter: Oct. 15 | Winter: Sept. 15 | Winter: Same as Canadian/International |
| Summer: N/A | Summer: N/A | Summer: N/A |

**Note:** Applications for Summer term admission will not be considered.

### 11.4.4 Biomedical Engineering F aculty

**Chair**

R.E. Kearney

**Emeritus Professor**

T.M.S. Chang; B.Sc., M.D.,C.M., Ph.D.(McG.), F.R.C.P.(C), F.R.S.(C) (*joint appt. with Physiology*)

**Professors**

J.D. Bobyn; B.Sc., M.Sc.(McG.), Ph.D.(Tor.) (*joint appt. with Surgery*)

D.L. Collins; B.Sc., M.Eng., Ph.D.(McG.) (*joint appt. with Neurology and Neurosurgery*)

A.C. Evans; B.Sc.(Liv.), M.Sc.(Sur.), Ph.D.(Leeds) (*joint appt. with Neurology and Neurosurgery*)

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

R.E. Kearney; B.Eng., M.Eng., Ph.D.(McG.)

G.B. Pike; B.Eng., M.Eng., Ph.D.(McG.) (*joint appt. with Neurology and Neurosurgery*)

S. Prakash; B.Sc.(Hon.), M.Sc., M.Tech.(BHU), Ph.D.(McG.)

M. Tabrizian; B.Sc.(Iran), M.Sc., Ph.D.(PMC-France), M.B.A.(HEC) (*joint appt. with Dentistry*)

**Associate Professors**

W.R.J. Funnell; B.Eng., M.Eng., Ph.D.(McG.) (*joint appt. with Otolaryngology*)

D. Juncker; Dipl., Ph.D.(Neuch-Switzerland)

J.L. Nadeau; B.A., Ph.D.(Minn.)

**Assistant Professor**

C. Grova; B.Sc. M.Sc.(UTC-France), Ph.D.(Rennes)

**Associate Members**

S. Baillet (*Neurology and Neurosurgery*)

C. Baker (*Ophthalmology*)

**Associate Members**

F. Barthelat (*Mechanical Engineering*)

K. Cullen (*Physiology*)

I. El Naqa (*Oncology*)

J. Gotman (*Neurology and Neurosurgery*)

D. Guitton (*Neurology and Neurosurgery*)

E. Jones (*Chemical Engineering*)

A. Katsarkas (*Otolaryngology*)

J. Kinsella (*Bioengineering*)

A.M. Lauzon (*Medicine*)

R. Leask (*Chemical Engineering*)

T. Milner (*Kinesiology and Physical Education*)

L. Mongeau (*Mechanical Engineering*)

R. Mongrain (*Mechanical Engineering*)

J. Near (*Psychiatry*)

D. Nicolau (*Bioengineering*)

D. Pasini (*Mechanical Engineering*)

A. Reader (*Neurology and Neurosurgery*)

A. Shmuel (*Neurology and Neurosurgery*)

**Adjunct Professors**

P.G. Charette (Sher.)

J.-M. Lina (ETS)

T. Veres (NRC)

### 11.4.5 Master of Engineering (M.Eng.); Biomedical Engineering (Thesis) (45 credits)

Thesis Cour ses (24 credits)

| | | |
|---|---|---|
| BMDE 695 | (12) | Thesis Submission |

| | | |
|---|---|---|
| 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 |
| BMDE 652 | (3) | Bioinformatics: Proteomics |
| COMP 526 | (3) | Probabilistic Reasoning and AI |
| COMP 546 | (4) | Computational Perception |
| COMP 558 | (3) | Fundamentals of Computer Vision |
| 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) | Molecular 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) Ð Bioinf ormatics (45 credits)

Thesis Cour ses (24 credits)

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

Required Cour ses (3 credits)

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

Complementar y Cour ses (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 546 | (4) | Computational Perception |
| COMP 558 | (3) | Fundamentals of Computer Vision |
| 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) | Molecular 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 |

6 credits selected 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 |

In addition, students are required to present their work as a conference paper or departmental seminar before being granted the M.Eng. (Bioinformatics Option) degree.

### 11.4.7 Doctor of Philosophy (Ph.D.); Biomedical Engineering

#### 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 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 Ð 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)

| | | |
|---|---|---|
| BMDE 700 | (0) | Ph.D. Comprehensive |
| COMP 616D1 | (1.5) | Bioinformatics Seminar |
| COMP 616D2 | (1.5) | Bioinformatics Seminar |

Any additional coursework required will be determined on an individual basis by the student's adviser and the Graduate Program Director.

#### Complementary Courses (6 credits)

6 credits 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 |

## 11.5 Communication Sciences and Disorders

### 11.5.1 Location

School of Communication Sciences and Disorders
Beatty Hall
1266 Pine Avenue West
Montreal, QC H3G 1A8
Canada

Telephone: 514-398-4137
Fax: 514-398-8123
Email: 2

### 11.5.2 About Communication Sciences and Disorders

The School provides both professional and research training in communication sciences and disorders at the graduate level through its M.Sc. (Applied), M.Sc., and Ph.D. degrees. We were the first department in Canada to provide both clinical and research degrees. Our M.Sc.A. program aims to educate the next generation of well-prepared and innovative speech-language pathology professionals by providing enriched classroom training, clinical laboratory activities that enhance the transition from theory to practice, and outstanding clinical practicum experiences. Our research degrees are designed to develop 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 network via the McGill Centre for Research on Brain, Language and Music, a world-class interdisciplinary research centre established and directed by the School. The multilingual context in which we reside provides a unique environment for language research.

The School offers a professional degree in Communication Sciences and Disorders at the M.Sc. (Applied) level with specialization in Speech Language Pathology and two research degrees: an M.Sc. (Research) and a Ph.D. in Communication Sciences and Disorders.

**Requirements for Licensure**

The majority of provinces in Canada and certain states in the U.S. require that those intending to practise as speech-language pathologists within their borders comply with special provincial or state licensing regulations. Graduates wishing to practise in the province of Quebec must be members of the *Ordre des Orthophonistes et Audiologistes du Québec* (OOAQ) in order to call themselves speech-language pathologists. Further information is available from the OOAQ, 235 boulevard René-Lévesque est, bureau 601, Montreal, Quebec, H2X 1N8; telephone: 514-282-9123; website: *www.ooaq.qc.ca*.

Quebec law requires that candidates seeking licensure in provincially recognized professions demonstrate a verbal and written working knowledge of the French language. See the *Language Requirements for Professions* in the *General University Information and Regulations* section of the *Health Sciences Calendar* available at *www.mcgill.ca/study*.

**Funding**

The IODE Provincial Chapter of Quebec funds tw

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

Selected candidates may be accepted for the Ph.D. research degree. Each student's thesis supervisor and Thesis Committee design an individualized program of study in collaboration with the student. The program can include graduate courses offered by the School and by other departments at McGill.

Students pursuing a Ph.D. in SCSD have varied educational backgrounds, including both clinical and related non-clinical fields. Students who enter the program from a related field (e.g., Psychology, Linguistics) or without a master's thesis complete a Qualifying year, which includes coursework and a research project. This flexible entry attracts independent scholars with diverse backgrounds and interests, which creates a stimulating and enriched training environment. The main component of the Ph.D. program (beyond the Qualifying year) has minimal required coursework and is structured to support students as they develop and pursue an innovative, individualized program of doctoral studies. Admission to the doctoral program requires identification 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*. 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**

The M.Sc. provides research training for:

1. students who are also taking courses for professional qualification;
2. students who have a non-thesis professional degree in Communication Sciences and Disorders; and
3. students with degrees in related fields who wish to do research but not obtain professional qualification in Communication Sciences and Disorders.

**Ph.D. in Communication Sciences and Disorders**

Applicants should normally have a master's degree with thesis or its equivalent in Communication Sciences and Disorders or a related field (e.g., psychology, linguistics).

Students who possess an appropriate bachelor's degree or master's degree without thesis will also be considered for the Ph.D. program, but, if admitted, must first complete a Qualifying year of coursework and a research project.

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 (angloymunication Sc1117 255.161 Tmipnot completed an un

#### 11.5.3.2.1 Additional Requirements

The items and clarifications below are additional requirements set by this department:

**M.Sc. (Applied)**

- Prerequisite Form
- Personal Statement
- Curriculum Vitae
- Reference letters – one professional and one academic

**M.Sc. (Thesis) and Ph.D.**

- Personal Statement
- Curriculum Vitae
- Research Proposal
- Writing Sample
- Acceptance by a research supervisor

Applications will be considered upon receipt of supporting documents as outlined above. All applicants are strongly encouraged to submit reports of their performance on the Graduate Record Examination (GRE).

#### 11.5.3.3 Application Deadlines

| 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) |
| Marc Pell; B.A.(Ott.), M.Sc., Ph.D.(McG.) |

| Associate PrC'nel7Tm(09.8079)Tj1 0i16.nt8 Tmcco52 239161.208 Sa7 5i580.04 Tm(Wr190f)T39.8079 |
|---|

**Assistant Professors (Part-Time)**

Christina Lattermann; Staatlich anerkannte Logopaedin(Westfaelische Wilhelms-Universität, Muenster), M.Sc.(McG.), Ph.D.(Kassel)

Gabriel Leonard; B.A.(Dublin), D.A.P., M.Sc., Ph.D.(McG.)

Rosalee Shenker; B.Sc.(Syrac.), M.A.(Calif. St.), Ph.D.(McG.)

**Faculty Lecturers**

M. Kelly Root; B.A.(Ott.), M.Sc.(Dal.)

Sophie Vaillancourt; B.Sc., MOA(Montr.), M.B.A.(McG.)

**Faculty Lecturers (Part-Time)**

Catherine Bosse; B.Ed.(Montr.), M.Sc.A.(McG.)

Myrto Brandeker; M.Sc.(Karolinska Inst.)

Liliane Brunetti; B.Sc.(C'dia), M.Cl.Sc.(W. Ont.)

Patricia Coffin; B.A.(PEI), M.Sc.(Dal.)

Karen Evans; Licentiate(L.C.S.T.), M.A.(Car.), M.Sc.(McG.)

Ariana Fraid; B.A., M.Sc.A.(McG.)

James Lapointe; B.A., M.Sc.A.(McG.)

Zinta Mateus; B.S.(Rutg.), B.Ed., M.Sc.A.(McG.)

Gina Mills; B.Sc.(Acad.), M.Sc.(Dal.)

Katherin Rees; Staatsexamen(Germany)

Judith Robillard-Shultz; B.A., M.Sc.A.(McG.)

Aruna Sudarshan; B.Sc., M.Sc.(Institute of Speech and Hearing, Bangalore)

Colleen Timm; B.A.(C'dia), M.Sc.A.(McG.)

**Associate Members**

Eva Kehayia (*Physical and Occupational Therapy*)

Yuriko Oshima-Takane (*Psychology*)

**Adjunct Members**

Howard Chertkow (*Jewish Gen.*)

David McFarland (*Montr.*)

Lucie Menard (

0-15 credits chosen from:

| | | |
|---|---|---|
| SCSD 673 | (12) | M.Sc. Thesis 3 |
| SCSD 674 | (3) | M.Sc. Thesis 4 |

or courses in other departments, as arranged with the student's thesis supervisor.

### 11.5.6 Master of Science, Applied (M.Sc.A.); Communication Sciences & Disorders (Non-Thesis) – Speech-Language Pathology (81 credits)

The professional degree program involves two academic years of full-time study and related practical work, followed by a Summer internship.

#### Required Courses (75 credits)

| | | |
|---|---|---|
| SCSD 609 | (3) | Neuromotor Disorders |
| SCSD 616 | (3) | Audiology |
| SCSD 617 | (3) | Anatomy and Physiology: Speech and Hearing |
| SCSD 618 | (3) | Research and Measurement Methodologies 1 |
| SCSD 619 | (3) | Phonological Development |
| SCSD 624 | (3) | Language Processes |
| SCSD 631 | (3) | Speech Science |
| SCSD 632 | (3) | Phonological Disorders: Children |
| SCSD 633 | (3) | Language Development |
| SCSD 636 | (3) | Fluency Disorders |
| SCSD 637 | (3) | Developmental Language Disorders 1 |
| SCSD 638 | (3) | Neurolinguistics |
| SCSD 639 | (3) | Voice Disorders |
| SCSD 642 | (3) | Aural Rehabilitation |
| SCSD 643 | (3) | Developmental Language Disorders 2 |
| SCSD 644 | (3) | Applied Neurolinguistics |
| SCSD 646 | (4) | Introductory Clinical Practicum |
| SCSD 669 | (3) | ASD and Neurodevelopmental Disorders |
| SCSD 679 | (12) | 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 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 |

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

#### 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

Complementar y Cour ses (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 736 | (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 |

## 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*
Website: *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 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.

### 11.6.3 Epidemiology and Biostatistics F aculty

| **Chair** |
| --- |
| G. Paradis |

**Professors**

R. Tamblyn; M.Sc.(McM.), Ph.D.(McG.) (*joint appt. with Medicine*) (

**Associate Members**

*Pathology*: B. Case

*Pediatrics*: M. Ben Shoshan, G. Dougherty, P. Fontela, B. Foster, C. Quach-Thanh, M. Zappitelli

*Physical and Occupational Therapy*: S. Ahmed

*Psychiatry*: E. Latimer, A. Malla, N. Schmitz, B. Thombs

*Sociology*: S. Clark

*Surgery*: D. Deckelbaum

**Lecturers**

J.P. Courteau, J.P. Gauvin, C. Paquette, W. Wood

**Adjunct Professors**

*Asociación Civil Selva Amazónica Peru*: M. Casapia

*Boehringer Ingelheim GmbH*: D. Bartels

*Caro Research*: J. Caro

*Direction régionale de la santé publique*: M. Baillargeon, K. Dehaghani, G. Denis, A. Kossowski, R. Lessard, R. Massé, S. Palmieri, S. Perron, M. Roy

*Harvard Univ.*: J. Brownstein

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

*INSPQ*: E. Lo, F. Richer, P. Robillard, D. Roy, S. Stock

*Montreal Chest Hospital Centre*: P. Rohan

*Mount Sinai*: M. Baltzan

*Shire Inc.*: A. Koutsavlis

*Stabilis*: P. Simon

11.6.4.1.1.1.1 Additional Requirements

The items and clarifications below are additional requirements set by this department:

- Curriculum Vitae
- Personal Statement
- EBOH Application Checklist – not required for Ph.D.
- Research Proposal – required for intensive M.Sc. for clinicians
- Acceptance by a research supervisor – required for intensive M.Sc. for clinicians

F

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

Health services research policy and management;

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

Epidemiology in practice or field epidemiology.

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

3 credits chosen from:

| | | |
|---|---|---|
| ENVR 519 | (3) | Global Environmental Politics |
| ENVR 544 | (3) | Environmental Measurement and Modelling |
| 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 other courses at the 500 level or higher recommended by the Advisory Committee and approved by the Environmental Option Committee.

AND

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

#### Preparatory Year

Students who are admitted to the Ph.D. degree program without the equivalent of an M.Sc. in epidemiology at McGill will, in their first year, be required to take, as a minimum, the following courses: EPIB 601, EPIB 602, EPIB 603, EPIB 605, EPIB 607, EPIB 613, EPIB 614, EPIB 621 (equivalent to required coursework of the master's program).

This year is called the Preparatory Year. Students then continue, in their second year, into the Core Year.

#### Core Year

Students who are admitted to the Ph.D. degree program with the equivalent of the M.Sc. in epidemiology at McGill will, in their first year, be required to take, as a minimum, 15 credits of required Ph.D. courses. This year is called the Core Year.

#### 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.

### 11.6.5.4 Doctor of Philosophy (Ph.D.); Biostatistics

Students will study theoretical and applied statistics and related fields; the program will train them to become independent scientists able to develop and apply statistical methods in medicine and biology and make original contributions to the theoretical and scientific foundations of statistics in these disciplines. Graduates will be prepared to develop new statistical methods as needed and apply new and existing methods in a range of collaborative projects. Graduates will be able to communicate methods and results to collaborators and other audiences, and teach biostatistics to biostatistics students, students in related fields, and professionals in academic and other settings.

#### 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

| | | |
|---|---|---|
| BIOS 700 | (0) | Ph.D. Comprehensive Examination Part A |
| BIOS 701 | (0) | Ph.D. Comprehensive Examination Part B |
| BIOS 702 | (0) | Ph.D. Proposal |

#### Complementary Courses (28 credits)

0-28 credits from the follo

Stewart Biological Sciences Building
1205 Dr. Penfield Avenue, N5/13
Montreal, QC H3A 1B1
Canada

Telephone: 514-398-4198
Fax: 514-398-2430
Email: *grad.hg@mcgill.ca*
Website: *wwwwww*

### *section 11.9.6: Master of Science (M.Sc.); Human Genetics (Thesis) — Bioinformatics (45 credits)*

**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.**

### *section 11.9.7: Master of Science (M.Sc.); Human Genetics (Thesis) — Bioethics (45 credits)*

McGill University offers specialized education in bioethics to graduate students in the Faculties of Medicine, Religious Studies, and Law, and the Department of Philosophy. The Master's degree Specialization in Bioethics is an interdisciplinary academic program that emphasizes both the conceptual and the practical aspects of bioethics.

### *section 11.9.8: Master of Science (M.Sc.); Genetic Counselling (Non-Thesis) (48 credits)*

The M.Sc. in Genetic Counselling program provides the academic foundation and clinical training required for the contemporary practice of genetic counselling. Genetic counsellors are health professionals who provide information and support to families who have members with birth defects or genetic disorders and to families who may be at risk for a variety of inherited conditions. Genetic counsellors investigate the problem present in the family, analyze inheritance patterns and risks of recurrence, and review available options with the family. Some counsellors also work in administrative and academic capacities, and many engage in research activities. The curriculum includes a variety of required courses in human genetics and other departments, and 40 weeks of supervised clinical training spread over four semesters. Graduates will be eligible to sit for both the Canadian Association of Genetic Counsellors and the American Board of Genetic Counselling certification examinations. Upon completion of the M.Sc. in Genetic Counselling program, students will demonstrate competence in, or satisfactory knowledge of: principles of human genetics, including cytogenetics, biochemical, molecular, and population genetics; methods of interviewing and counselling, and the dynamics of human behaviour in relation to genetic disease; and social, legal, and ethical issues in genetics. Enrolment will be limited to four students.

### *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**

instruction or from a recognized Canadian institution (anglophone or francophone), must submit a TOEFL score of 600 on the TOEFL paper-based test (or 100 on the Internet-based test), with each component score no less than 20, as the minimum standard for admission.

Admission is based on acceptance by a research director who has agreed to provide adequate funding for the duration of the academic program and on an evaluation by the Graduate Training Committee.

Prospective graduate students should complete the online application form and indicate at least three faculty members they are interested in working with.

#### 11.9.3.2 Application Pr ocedures

McGill's online application form for graduate program candidates is available at *www.mcgill.ca/gradapplicants/apply*.

See *section 6.3: Application Procedures* for detailed application procedures.

#### 11.9.3.3 Application Deadlines

| **Canadian** | | | **International** | | | **Special/Exchange/Visiting** |
|---|---|---|---|---|---|---|
| **M.Sc. Genetic Counselling program* (Non-Thesis)** | **M.Sc. (Thesis) programs** | **Ph.D. programs** | **M.Sc. Genetic Counselling program* (Non-Thesis)** | **M.Sc. (Thesis) programs** | **Ph.D. programs** | |
| Fall: Jan. 15 | Fall: March 31 | Fall: March 31 | Fall: Jan. 15 | Fall: March 31 | Fall: March 31 | Fall: N/A |
| Winter: N/A | Winter: Sept. 30 | Winter: Sept. 30 | Winter: N/A | Winter: Sept. 30 | Winter: Sept. 30 | Winter: N/A |
| Summer: N/A | Summer: N/A** | Summer: Jan. 31 | Summer: N/A | Summer: N/A** | Summer: Jan. 31 | Summer: N/A |

Applications for thesis programs submitted after these deadlines may be considered, if a suitable supervisor can be secured. However, these applications will not be considered for departmental funding or entrance awards.

* The **M.Sc. Genetic Counselling program** accepts applications for the Fall term only. **No late applications or applications for Summer or Winter terms for the Genetic Counselling program will be considered under any circumstances.**

** The Department of Human Genetics is not willing to consider any applications to the M.Sc. (Thesis) for the Summer term.

### 11.9.4 Human Genetics F aculty

**Chair**

D.S. Rosenblatt

**Program Directors**

J. Fitzpatrick – *M.Sc. in Genetic Counselling*

E. Shoubridge – *M.Sc. and Ph.D. in Human Genetics*

**Emeritus Professors**

V. Der Kaloustian; B.A.(Acad.), M.Sc., Ph.D., M.D.,C.M.(McG.), D.Sc.(Acad.), F.R.S.C., F.R.C.P.S.(C)

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.)

**Professors**

E. Andermann; M.Sc., Ph.D., M.D.,C.M.(McG.) (*Neurology and Neurosurgery*)

A. Duncan; B.Sc.(Qu.), Ph.D.(Edin.) (*Pathology and Pediatrics*)

W. Foulkes; B.Sc., MB.BS., Ph.D.(Lond.) (*Medicine*)

F. Glorieux; M.D.(Louvain), Ph.D.(McG.) (*Surgery*

**Assistant Professors**

A. Karalis; M.D.,C.M.(McG.)

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

Y. Riaz Alhosseini; Ph.D.(Heidel.) (*Genome Quebec*)

R. Sladek; B.A.Sc., M.D.(Tor.)

### 11.9.5 Master of Science (M.Sc.); Human Genetics (Thesis) (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)

| | | |
|---|---|---|
| HGEN 662 | (3) | Laboratory Research Techniques |
| HGEN 692 | (3) | Human Genetics |

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 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) Ð 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) Ð 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 (48 credits)

| | | |
|---|---|---|
| HGEN 600D1 | (3) | Genetic Counselling Practicum |
| HGEN 600D2 | (3) | Genetic Counselling Practicum |
| HGEN 601 | (3) | Genetic Counselling Principles |
| HGEN 610D1 | (3) | Genetic Counselling: Independent Studies |
| HGEN 610D2 | (3) | Genetic Counselling: Independent Studies |
| HGEN 617 | (3) | Principles of Medical Genetics |
| HGEN 620 | (3) | Introductory Field Work Rotations 1 |
| HGEN 621 | (6) | Intro Field Work Rotations 2 |
| HGEN 630D1 | (6) | Advanced Field Work Rotations |
| HGEN 630D2 | (6) | Advanced Field Work Rotations |

| | | |
|---|---|---|
| HGEN 640 | (3) | Second Year Practicum 1 |
| HGEN 641 | (3) | Second Year Practicum 2 |
| PATH 653 | (3) | Reading and Conference |

### 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 approved institution elsewhere, and is proceeding in the same subject toward a Ph.D. degree may, upon the recommendation of the Graduate Training Committee, enter at the Ph.D. 2 level.

#### 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)

| | | |
|---|---|---|
| HGEN 692 | (3) | Human Genetics |
| HGEN 701 | (0) | Ph.D. Comprehensive Examination |

#### Complementary Courses (15 credits)

(15 credits or 6 credits depending on admission status as described above.)

Courses are to be chosen from the list below and/or from among 500-, 600-, or 700-level courses offered in the Faculties of Medicine and Science.

| | | |
|---|---|---|
| HGEN 660 | (3) | Genetics and Bioethics |
| HGEN 661 | (3) | Population Genetics |
| HGEN 663 | (3) | Beyond the Human Genome |
| 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 |

Students are restricted to taking the following courses:

Advances in Human Geneticsj1 0 0 1 221.949 3o tak5.924 Tm((3))Tj1 0 0tud6 r70176.624 Tm(Adv)Tj1 0 0 1.

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 ses (6 credits)

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

### Complementar y Cour ses (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 Ph ysics

### 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*
Website: *www.medphys.mcgill.ca*

### 11.10.2 About Medical Ph ysics

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, Monte Carlo numerical simulation techniques; 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 ebsite:

development careers in industry in radiation therapy, diagnostic radiology

#### 11.10.3.3 Application Deadlines

Students are admitted to the M.Sc. program only to start in the Fall term (in September) of a given academic year. Applications must be completed by January 15, 2014 to be considered for the Fall 2014 term. The online application for Fall 2014 will be available by the end of September 2013.

| 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 |

### 11.10.4 Medical Ph ysics F aculty

**Director**

J.P.F. Seuntjens

**Emeritus Professor**

E.B. Podgorsak; Dipl.Ing.(Ljubljana), M.Sc., Ph.D.(Wisc.), F.C.C.P.M., F.A.A.P.M., D.A.B.M.P., D.A.B.R.

**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 Professors**

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

D. Louis Collins; M.Eng., Ph.D.(McG.), Post Doc.(Rennes), F.C.C.P.M.

A. Reader; B.Sc.(Kent), Ph.D.(Lond.)

**Assistant Professors**

F. DeBlois; M.Sc., Ph.D.(McG.), F.C.C.P.M.

S. Devic; M.Sc., Ph.D.(Belgrade), F.C.C.P.M.

M.D.C. Evans; B.A.(Qu.), M.Sc.(McG.), F.C.C.P.M.

W. Parker; M.Sc.(McG.), F.C.C.P.M.

H.J. Patrocinio; M.Sc.(McG.), F.C.C.P.M.nt), Ph.D.(Lond.)A. ReSarfneriaM.Sc., Ph.D.(McG.), FA..C.PA..E.B. Ss; son;.Sc., Ph.D.(WE.c.), j1 0 0 1 70.52 28336.06Tm

| | | |
|---|---|---|
| MDPH 601 | (3) | Radiation Physics |
| MDPH 602 | (3) | Applied Dosimetry |
| MDPH 603 | (2) | Laboratory Practicum 1 |
| | | Introdosimetry |

### *section 11.11.7: Master of Science (M.Sc.); Experimental Medicine (Thesis) — Environment (45 credits)*

Environment Option is aimed at students who wish to use interdisciplinary approaches in their graduate research on environmental issues and who wish to benefit from interactions that will occur as they are brought into contact with students from a wide range of disciplines through structured courses, formal seminars, and informal discussions and networking. The graduate option in Environment provides students with an appreciation for the role of science in informed decision-making in the environmental sector, and its influence on political, socio-economic, and ethical judgments.

### *section 11.11.8: Master of Science (M.Sc.); Experimental Medicine (Thesis) — Family Medicine (45 credits)*

Ideal candidates for the M.Sc. (Family Medicine Option) would be 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 to be 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 of this program may pursue careers in clinical or primary care research, government, or academia.

### *section 11.11.9: Doctor of Philosophy (Ph.D.); Experimental Medicine*

Applicants for the Ph.D. in Experimental Medicine must normally hold an M.Sc. degree. The one exception is the possibility of direct entry offered to candidates having demonstrated academic excellence, i.e., a CGPA of 3.5 or more out of a possible 4.0 throughout their undergraduate studies. The training is in the conduct of research in a wide range of medical specialties. The method of instruction consists of a combination of in-class and practical training as well as exposure to international conferences and guest seminars. Success is ultimately determined by the preparation and defense of a thesis. This program may lead to research careers in industry, government, or academia.

### *section 11.11.10: Doctor of Philosophy (Ph.D.); Experimental Medicine — Environment*

Applicants to the Ph.D. (Environment Option) must meet the same qualifications as those for the M.Sc. (Environment Option), the only difference being that they must  0 0 1 70.52 56 0the

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.

For those who apply to the M.Sc. (Family Medicine Option), the requirements, as well as the application deadline, are different. For further information regarding this program, please visit their website at: *www.mcgill.ca/familymed/mastersprogram*.

**Graduate Diploma in Clinical Research**

The Diploma program is open to health care and research professionals, medical residents, pharmacists, nurses, and those with an undergraduate degree in the medical and allied sciences.

#### 11.11.3.2 Application Procedures

McGill's online application form for graduate program candidates is available at *www.mcgill.ca/gradapplicants/apply*.

See *section 6.3: Application Procedures* for detailed application procedures.

##### 11.11.3.2.1 Additional Requirements

The items and clarifications below are additional requirements set by this department:

**M.Sc. and Ph.D. in Experimental Medicine**

- Personal Statement
- Curriculum Vitae
- Acceptance by a research director
- Letter from the candidate's research director outlining the M.Sc. or Ph.D. project
- Additional documents (in the cases of the M.Sc. (Bioethics Option), the M.Sc. (Environment Option), and the M.Sc. (Family Medicine option))

#### 11.11.3.3 Application Deadlines

| 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**

J. Martin (*Interim*)

**Director, Division of Experimental Medicine**

H. Bennett

**Emeritus Professor**

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

**Professors**

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

C. Autexier; B.Sc.(C'dia), 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)

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

J. Bergeron; B.Sc.(McG.), Ph.D.(Oxf.)

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)

**Professors**

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

J. Genest Jr.; M.D.,C.M.(McG.), F.R.C.P.(C)

A. Giaid; D.V.M.(Baghdad), M.D., Ph.D.(Lond.)

V. Giguere; B.Sc., Ph.D.(Laval)

M. Goldberg; B.Sc., M.Sc., Ph.D.(McG.)

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

S.A. Grover; B.A.(Roch.), M.D.,C.M.(McG.), M.P.A.(Harv.), F.R.C.P.(C)

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

G. Hendy; B.Sc.(Sheff.), Ph.D.(Lond.)

J. Hiscott; B.Sc., M.Sc.(W. Ont.), Ph.D.(NYU)

L.J. Hoffer; B.Sc., M.D.,C.M.(McG.), Ph.D.(MIT)

S. Hussain; M.D.(Baghdad), Ph.D.(McG.)

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

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

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

S. Lehnert; B.Sc.(Nott.), 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)

S. Magder; M.D.(Tor.), F.R.C.P.(C)

D. Malo; D.V.M., M.Sc.(Montr.), Ph.D.(McG.)

O.A. Mamer; B.Sc., Ph.D.(Windsor)

J. Martin; B.Sc., M.B., B.Ch., M.D.(Cork), F.R.C.P.(C)

J. Milic-Emili; M.D.(Milan), F.R.S.C.

W.H. Miller; A.B.(Princ.), Ph.D.(Rock.), M.D.(C'nell)

W.J. Muller; B.Sc., Ph.D.(McG.)

A. Nepveu; B.Sc., M.Sc.(Montr.), Ph.D.(Sher.)

T. Nilsson; B.Sc., Ph.D.(Sweden)

L. Panasci; B.Sc., M.D.(G’town)

K. Pantopoulos; B.Sc., Ph.D.(Aristotelian, Greece)

V. Papadopoulos; D.Pharm.(Athens), Ph.D.(Paris)

M. Park; B.Sc., Ph.D.(Glas.)

A.C. Peterson; B.Sc.(Vic., BC), Ph.D.(Br. Col.)

B.J. Petrof; M.D.(Laval)

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

P. Ponka; M.D., Ph.D.(Prague)

B. Posner; M.D.(Manit.), F.R.C.P.(C)

W.S. Powell; B.A.(Sask.), Ph.D.(Dal.)

S. Prakash; M.Sc., M.Tech., M.Phil.(India), Ph.D.(McG.)

S. Rabbani; M.B.B.S.(King Edward Med. Coll., Lahore)

D. Radzioch; M.Sc., Ph.D.(Jagiellonian, Cracow)

S. Richard; B.Sc., Ph.D.(McG.)

E. Schiffrin; M.D.(Argentina), Ph.D.(McG.)

**Professors**

E. Schurr; Diplom., Ph.D.(Al. Ludwigs U., Freiburg)

A.D. Sniderman; M.D.(Tor.)

C. Srikant; M.Sc., Ph.D.(Madr.)

M.M. Stevenson; B.A.(Hood), M.Sc., Ph.D.(Catholic U. of Amer.)

D.M.P. Thomson; M.D.(W. Ont.), Ph.D.(Lond.), F.R.C.P.(C)

M. Trifiro; B.Sc., M.D.,C.M.(McG.)

C. Tsoukas; B.Sc.(McG.), M.Sc.(Haw

**Associate Professors**

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)

G. Spurll; 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)

M. Kokoe a; B.Sc., Ph.D.(Russia)

L. K .), Ph.D.(McG.)

A. Kristof; B.Sc., M.D.,C.M.(McG.), F8R.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.(T .), F .(C)

**Assistant Professors**

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, H. Bergman, 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. Duchaine, D. Dufort, C. Ells, I.M. El Naqa, M. Fabian, R. Farookhi, L. Ferri, K. Glass, C. Goodyer, P. Goodyer, W. Gotlieb, M. Götte, R. Grad, D. Groleau, I. Gupta, J. Haggerty, M. Hunt, N. Jabado, M. Kaartinen, N. Kabani, J. Kimmelman, A. Koromilas, L. Lands, J. Lapointe, S.K. Law, B. Lebouché, C. Mandato, A. Macaulay, K. Mann, L. McCaffrey, C. McCusker, M. Meaney, T. Muanza, M. Nagano, J. Nalbantoglu, M. Ndao, F. Ni, C. O'Flaherty, A. Pause, C. Piccirillo, P. Pluye, C. Polychronakos, J. Rak, C. Rodriguez, E. Rosenberg, A. Ryan, S. Sabri, G. Sant'Anna, R. Schirrmacher, R. Slim, N. Sonenberg, M. Sullivan, G. Tannenbaum, I. Topisirovic, M. Tremblay, J. Ursini-Siegel, I. Vedel, M. Ware, M. Witcher, C. Wu, J.-H. Wu, M. Yaffe, M. Zappitelli, G. Zogopoulos, J. Zwaagstra

**Associate Members, Université de Montréal**

J. Archambault, M. Cayouette, F. Charron, C. Cheong, E. Cohen, J.-F. Côté, V. Dave, J. Davignon, A. Deng, C.F. Deschepper, C. Desrosiers, J.M. Di Noia, J. Drouin, J. Estall, J.-P. Gratton, H. Gu, J. Gutkowska, B. Haibe-Kains, P. Hamet, Z. Hanna, D. Hipfner, P. Jolicoeur, A. Kania, M. Kmita, E. Lecuyer, T. Moroy, M. Oeffinger, K. Podsypanina, R. Rabasa-Lhoret, E. Racine, T. Reudelhuber, M. Sairam, N. Seidah, W.-K. Suh, J. Tremblay, M. Trudel, W.Y. Tsang, J. Vacher, A. Veillette

**Associate Member, Pharmaceutical Industry**

B. Gibbs

### 11.11.5 Master of Science (M.Sc.); Experimental Medicine (Thesis) (45 credits)

#### Thesis Courses (36 credits)

24-36 credits selected from the following:

| | | |
|---|---|---|
| EXMD 690 | (3) | Master's Thesis Research 1 |
| EXMD 691 | (6) | Master's Thesis Research 2 |
| EXMD 692 | (9) | Master's Thesis Research 3 |
| EXMD 693 | (12) | Master's Thesis Research 4 |
| EXMD 694 | (12) | Master's Thesis Research 5 |

#### Complementary Courses (21 credits)

9-21 credits of courses at the 500, 600, or 700 level chosen in consultation with the Supervisor. A minimum of 9 course credits is required for students entering the program with a bachelor's or M.D. degree.

### 11.11.6 Master of Science (M.Sc.); Experimental Medicine (Thesis) Ð Bioethics (45 credits)

#### Thesis Courses (24 credits)

| | | |
|---|---|---|
| BIOE 690 | (3) | M.Sc. Thesis Literature Survey |
| BIOE 691 | (3) | M.Sc. Thesis Research Proposal |
| BIOE 692 | (6) | M.Sc. Thesis Research Progress Report |
| BIOE 693 | (12) | M.Sc. Thesis |

#### Required Courses (6 credits)

| | | |
|---|---|---|
| BIOE 680 | (3) | Bioethical Theory |
| BIOE 681 | (3) | Bioethics Practicum |

Complementary Courses (15 credits)

3 credits, one of 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 |

12 credits, four 3-credit BIOE or EXMD graduate courses (500, 600, or 700 level) chosen in consultation with the Supervisor.

### 11.11.7 Master of Science (M.Sc.); Experimental Medicine (Thesis) Ð 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 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) Ð 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 (16 credits)

| | | |
|---|---|---|
| EPIB 507 | (3) | Biostatistics for Health Professionals |

(1) Introduction to Research

| | | |
|---|---|---|
| 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 |
| EXMD 701D1 | (0) | Comprehensive Oral Examination |
| EXMD 701D2 | (0) | Comprehensive Oral Examination |

#### Complementary Courses (12 credits)

(6-12 credits)

One of the following courses:*

| | | |
|---|---|---|
| ENVR 519 | (3) | Global Environmental Politics |
| ENVR 544 | (3) | Environmental Measurement and Modelling |
| 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.

One to three courses at the 500, 600, or 700 level chosen in consultation with the student's academic supervisor.

### 11.11.11 Graduate Diploma in Clinical Research (30 credits)

The core element of the diploma is the Practicum in Clinical Research. It is a six-step program with active “clerkship” or “intern/resident type” participation in each component that is essential to the successful development and evaluation of a clinical trial.

#### Required Courses (6 credits)

| | | |
|---|---|---|
| EXMD 617 | (1) | Workshop in Clinical Trials 1 |
| EXMD 618 | (1) | Workshop in Clinical Trials 2 |
| EXMD 619 | (1) | Workshop: Clinical Trials 3 |
| EXMD 620 | (1) | Clinical Trials and Research 1 |
| EXMD 625 | (1) | Clinical Trials and Research 2 |
| EXMD 626 | (1) | Clinical Trials and Research 3 |

#### Complementary Courses (6 credits)

Two courses chosen from: Experimental Medicine (EXMD), Pharmacology and Therapeutics (PHAR), Epidemiology and Biostatistics (EPIB). With approval, courses from other Allied Health Sciences departments may be considered.

#### Required Practicum (18 credits)

| | | |
|---|---|---|
| EXMD 627 | (18) | Practicum in Clinical Research |

## 11.12 Medicine, Family (Option)

### 11.12.1 Location

Department of Family Medicine

**Personal Statement:** Applicants must submit a personal statement in which they describe their background, research interests, and reasons for wishing to undertake the desired program. The statement should be no more than two (2) pages long.

#### 11.12.3.2.1 Additional Requirements

The items and clarifications below are additional requirements set by this department:

- *Applicant Evaluation Form* completed by each referee
- *Application Checklist*
- *Confirmation of Supervisor Form*, signed by the proposed supervisor and student.
- Curriculum Vitae
- Personal Statement – no more than two (2) pages long
- Research Proposal

### 11.12.3.3 Application Deadlines

| Canadian | International | Special/Exchange/Visiting |
|---|---|---|
| Fall: March 15 | Fall: March 15 | Fall: N/A |
| Winter: N/A | Winter: N/A | Winter: N/A |
| Summer: N/A | Summer: N/A | Summer: N/A |

All supporting documents must be received by March 15th. Admissions are for the Fall term only.

## 11.12.4 Medicine , Family (Option) Faculty

**Chair**

Howard Bergman

**Graduate Program Director**

Gillian Bartlett

**Professors**

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

Ann Macaulay; M.B., Ch.B.(St. And.), C.C.F.P.

Mark Yaffe; B.Sc., M.D.,C.M.(McG.), M.Cl.Sc.(W. Ont.)

**Associate Professors**

Gillian Bartlett; B.Sc., M.Sc., Ph.D.(McG.)

Eugene Bereza; B.A., M.D.,C.M.(McG.), C.C.F.P.

Roland Grad; M.D.,C.M.(McG.), M.Sc.(McM.), C.C.F.P.

Jeannie Haggerty; B.Sc.(S. Fraser), M.Sc., Ph.D.(McG.)

Susan Law; B.Sc.(Guelph), M.H.Sc.(Tor.), Ph.D.(Lond.)

Charo Rodriguez; M.D.(Alicante), M.P.H.(Valencia), Ph.D.(Montr.)

Ellen Rosenberg; B.A.(Smith), M.D.,C.M.(McG.), C.C.F.P.

Pierre Pluye; M.D.(P. Sabatier), M.Sc., Ph.D.(Montr.)

Mark Ware; B.A.(Qu.), M.B., B.S(W. Indies), M.Sc.(Lond.)

**Assistant Professor**

Anne Andermann; B.Sc. M.D.,C.M.(McG.), M.Phil.(Camb.), D.Phil.(Oxf.), C.C.F.P., F.R.C.P.(C), F.F.P.H.(UK)

## 11.13 Microbiology and Immunology

### 11.13.1 Location

Department of Microbiology and Immunology
3775 University Street
Montreal, QC H3A 2B4
Canada

Telephone: 514-398-3061
Fax: 514-398-7052
Email: *grad.microimm@mcgill.ca*
Website: *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 ph

- The International English Language Testing System (IELTS): a minimum overall band score of 7.0

The TOEFL Institution Code for McGill University is 0935.

**Ph.D.**

Students who have satisfactorily completed an M.Sc. degree in microbiology and immunology, a biological science, or biochemistry, or highly qualified students enrolled in the departmental M.Sc. program, may be accepted into the Ph.D. program provided they meet its standards.

#### 11.13.3.2 Application Procedures

McGill's online application form for graduate program candidates is available at *www.mcgill.ca/gradapplicants/apply*.

See *section 6.3: Application Procedures* for detailed application procedures.

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

##### 11.13.3.2.1 Additional Requirements

The items and clarifications below are additional requirements set by this department:

- Letter from a prospective supervisor

#### 11.13.3.3 Application Deadlines

All applications and documents must be submitted by the application deadlines.

| 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 Professors**

Z. Ali-Khan, M. Baines, G. Faubert, 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.)

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

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.)

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

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

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

**Associate Professors**

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

D. Sheppard; M.D.(Tor.)

S. V

### 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 de

## 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
F

***section 11.14.6: Doctor of Philosophy (Ph.D.); Neuroscience***

In exceptional circumstances, students MAY enter the Ph.D. program directly from their undergraduate degree if a CGPA of 3.7 is attained and if the student already presents extensive research experience.

## 11.14.3 Neuroscience (Integrated Program in) Admission Requirements and Application Procedures

### 11.14.3.1 Admission Requirements

**General**

The applicant must be a university graduate and hold a bachelor's degree in a field related to the subject selected for graduate work.

The applicant must present evidence of high academic achievement. A standing equivalent to a cumulative grade point average (CGPA) of 3.0 out of a possible 4.0 is required by Graduate and Postdoctoral Studies; however, the Integrated Program in Neuroscience (IPN) prefers applicants to show a higher academic standing, and requires a minimum CGPA of 3.3.

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 results of the TOEFL exam with their application and have a minimum score of 600 on the paper-based test (86 on the Internet-based test with each component score not less than 20).

**M.Sc. Degree**

Bachelor's degree with adequate background in basic sciences, or an M.D.

**Ph.D. Degree**

Applicants must hold a master's degree in a field related to neuroscience, or an M.D. degree with postgraduate training.

Students currently registered in the master's program in neuroscience may be permitted to transfer to the Ph.D. program.

Applicants are expected to have a high academic standing in their previous academic studies and research.

To meet the diversity of individual interests and backgrounds, the graduate program for each student is designed at the time of entry. As part of the admission process, each applicant will identify, with the participation of the prospective thesis supervisor and the Graduate Studies Committee, a research thesis topic and the coursework required to complete the training deemed necessary for the degree sought. These decisions become an integral part of the graduation requirements for the student.

### 11.14.3.2 Application Procedures

McGill’s online application form for graduate program candidates is available at *www.mcgill.ca/gr*

**Administrator**

J. Makkerh; Ph.D.(Camb.)

**Emeritus Professors**

B. Collier; Ph.D. (*Dept. of Pharmacology*)

**Professors**

H. Schipper; M.D., Ph.D.(McG.), F.R.C.P.(C) (*Dept. of Neurology and Neurosurgery*)

T. Schultz; M.Phil., Ph.D.(Yale) (*Dept. of Psychology*)

P. Seguela; Doct. 3e Cycle(Bord.), Ph.D.(Montr.) (*Dept. of Neurology and Neurosurgery*)

M. Shevell; B.Sc., M.D.(Vanderbilt) (*Dept. of Neurology and Neurosurg*

**Associate Professors**

R. Joober; M.D.(Tunisia), Ph.D.(McG.) (*Dept. of Psychiatry*)

D. Juncker; Dipl., Ph.D.(Neuchâtel) (*Dept. of Biomedical Engineering*)

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*)

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

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

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

N. Mechawar; Ph.D.(Montr.) (*Dept. of Psychiatry*)

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*)

C. Pack; B.Sc.(Tufts), Ph.D.(Boston) (*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*)

M. Pompeiano; M.D.(Pisa), Ph.D.(Scuola Sup. Pisa) (*Dept. of Psychology*)

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

**Assistant Professors**

C. Grova; Ph.D.(Rennes) (*Depts. of Biomedical Engineering & Neurology and Neurosurgery*)

P. Haghighi; Ph.D.(McG.) (*Dept. of Physiology*)

K.L. Hyde; Ph.D.(Montr./McG.) (*Depts. of Psychiatry and Neurology and Neurosurgery*)

F. Jollant; M.D., M.Sc., Ph.D.(Montpellier) (*Dept. of Psychiatry*)

D. Klein; B.A., Ph.D.(Witw./S. Af.) (*Dept. of Neurology and Neurosurgery*)

E. Kobayashi; M.D., Ph.D.(Campinas State) (*Dept. of Neurology and Neurosurgery*)

M. Kokoeva; Ph.D.(Russian Acad. of Sci.) (*Faculty of Medicine*)

L. Koski; B.Sc.(Tor.), Ph.D.(McG.) (*Dept. of Neurology and Neurosurgery*)

N. Ladbon-Bernasconi; M.D.(Lausanne), Ph.D.(McG.) (*Dept. of Neurology and Neurosurgery*)

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

G. Leonard; Ph.D.(McG.) (*Dept. of Neurology and Neurosurgery*)

W. Ma; M.D.(Tongji), M.Sc., Ph.D.(McG.) (*Dept. of Psychiatry*)

J. Marcoux; M.Sc., M.D.(Montr.) (*Dept. of Neurology and Neurosurgery*)

L. Münter; Ph.D.(Berlin) (*Dept. of Pharmacology and Therapeutics*)

K. Petrecca; B.Sc., M.D., Ph.D.(McG.) (*Dept. of Neurology and Neurosurgery*)

P. Rosa-Neto; M.D., M.Sc.(UFRGS), Ph.D.(Aarhus) (*Depts. Neurology and Neurosurgery, and Psychiatry*)

J.T. Sakata; B.A.(C'nell), Ph.D.(Texas-Austin) (*Dept. of Biology*)

P. Schweinhardt; M.D.(Heidelberg), Ph.D.(Oxf.) (*Dentistry, Dept. of Neurology and Neurosurgery*)

R. Sharif; Ph.D.(McG.) (*Dept. of Physiology*)

D. Sinclair; B.Sc., Ph.D.(Dal.) (*Dept. of Neurology and Neurosurgery*)

P.J. Sjostrom; M.Sc.(Uppsala), Ph.D.(Brandeis) (*Dept. of Neurology and Neurosurgery*)

K. Steinhauer; M.Sc., Ph.D.(Dr.rer.nat)(Free Univ., Berlin) (*School of Communication Sciences and Disorders*)

D. Stellwagen; B.Sc.(Brown), Ph.D.(Calif.) (*Dept. of Neurology and Neurosurgery*)

K.-F. Storch; Ph.D.(Max Planck) (*Dept. of Psychiatry*)

T. Stroh; Dip.(J. Liebig U.), Ph.D.(Max Planck) (*Dept. of Neurology and Neurosurgery*)

V. Sziklas; Ph.D.(McG.) (*Dept. of Neurology and Neurosurgery*)

T. Taivassalo; B.Sc., Ph.D.(McG.) (*Dept. of Kinesiology and Physical Education*)

M. Vollrath; Ph.D.(Baylor) (*Dept. of Neurology and Neurosurgery*)

A. Watt; Ph.D.(Brandeis) (*Dept. of Biology*)

P. Wintermark; M.D.(Lausanne) (*Dept. of Pediatrics*)

S.C. Woolley; B.Sc.(Duke), Ph.D.(Texas-Austin) (*Dept of Biology*)

T.P. Wong; Ph.D.(McG.) (*Dept. of Psychiatry*)

J. Zhang; M.D.(Shanghai II Medical U.), M.Sc.(Paris XI), Ph.D.(Laval) (*Dept. of Neurology and Neurosurgery*)

**Lecturer**

S. Antel

**Adjunct Professors**

G. Duncan

M. Ptito

E. Racine

### 11.14.5 Master of Science (M.Sc.); Neuroscience (Thesis) (45 credits)

#### Thesis Courses

Any remaining credits needed to complete the minimum of 45 may be chosen from the following:

| | | |
|---|---|---|
| NEUR 695 | (3) | Master's Thesis Research 1 |
| NEUR 696 | (6) | Master's Thesis Research 2 |

Students must take one of the following courses:

| | | |
|---|---|---|
| NEUR 610 | (5) | Central Nervous System |
| NEUR 631 | (3) | Principles of Neuroscience 2 |

Two courses at the 500, 600, or 700 level, approved by the graduate program adviser.

**Associate Members**

*Dietetics and Human Nutrition*: K. Gray-Donald

*Dentistry*: P. Allison, J. Feine

*Family Medicine*: A. Andermann, J. Haggerty, E. Robinson

*Geography*: N. Ross

*Medicine*: J. Afilalo, A. Barkun, M. Behr, S. Bernatsky, J. Bourbeau, P. Brassard, A. Clarke, K. Dasgupta, M. Eisenberg, P. Ernst, K. Filion, M. Goldberg, C. Greenaway, S. Kahn, M. Klein, A. Marelli, N. Mayo, N. Pant Pai, L. Pilote, E. Rahme, B. Richards, K. Schwartzman, M. Sewitch, I. Shrier, V. Tagalakis, G. Thanassoulis

*Ob/Gyn*: H. Abenhaim, R. Gagnon

*Oncology*:

| | | |
|---|---|---|
| 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 |
| OCCH 616 | (3) | Occupational Hygiene |

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

This program is not accepting applicants for 2013-2014.

#### Research Project (15 credits)

| | | |
|---|---|---|
| OCCH 699 | (15) | Project Occupational Health and Safety |

#### Required Cour ses (30 credits)

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

Each course has a final (proctored) examination at the end of the term.

| | | |
|---|---|---|
| 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 608 | (3) | Biological Hazards |
| OCCH 612 | (3) | Principles of Toxicology |
| OCCH 615 | (3) | Occupational Safety Practice |
| OCCH 616 | (3) | Occupational Hygiene |
| OCCH 617 | (3) | Occupational Diseases |
| OCCH 624 | (3) | Social and Behavioural Aspects - Occupational Health |
| OCCH 625 | (3) | Work and Environment Epidemiology 2 |
| OCCH 626 | (3) | Basics: Physical Health Hazards |
| OCCH 627 | (3) | Work Physiology and Ergonomics |
| OCCH 630 | (3) | Occupational Diseases for OHNS |
| OCCH 635 | (3) | Environmental Risks to Health |

On-campus practicum may be held at the discretion of each professor. These sessions are held in Montreal on the McGill University campus. Their aim is to offer students additional specific learning activities. Participation in the practicum is an essential component of the program.

### 11.15.7 Doctor of Philosoph y (Ph.D.); Occupational Health

This program is not accepting applicants for 2013-2014.

#### 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 ses (2 credits)

| | | |
|---|---|---|
| OCCH 700 | (0) | Ph.D. Comprehensive Examination |
| OCCH 706 | (2) | Ph.D. Seminar on Occupational Health and Hygiene |

Students are encouraged to take up to 12 credits in areas pertinent to their specialty or in areas necessary to complete their knowledge of occupational health.

## 11.16 Otolaryngology – Head and Neck Surgery

### 11.16.1 Location

Department of Otolaryngology – Head and Neck Surgery
Jewish General Hospital
3755 Chemin de la Côte-Sainte-Catherine, Suite E-903
Montreal, QC H3T 1E2
Canada

Telephone: 514-340-8222 ext. 3179
Fax: 514-340-7934
Website: *www.mcgill.ca/ent*

### 11.16.2 About Otolaryngology – Head and Neck Surgery

The Master of Science degree in Otolaryngology trains otolaryngologists and physicians for clinical or basic science research in Otolaryngology – Head and Neck Surgery. Master's programs can include research on normal function and disease of head and neck structures: otology, neuro-otology, laryngology, rhinology, oncology, surgery, auditory-vestibular sciences, middle-ear modelling, oto-toxicity, genomics, infection, thyroid disease, or genetics.

***section 11.16.5: Master of Science (M.Sc.); Otolaryngology (Thesis) (45 credits)***

The master's program is intended for otolaryngologists or for physicians with a strong interest in otolaryngology research. Under exceptional circumstances, others (Ph.D.s, dentists, veterinarians, medical professionals, etc.) may be considered. The program addresses research questions using an interdisciplinary approach, combining methodologies of both the clinical sciences and the basic sciences. The master's program is unique in Canada and rare elsewhere. Medical professionals graduating from the program can better treat ear-nose-throat diseases; they are better positioned to do, and to evaluate, research in Otolaryngology. They typically obtain the most highly sought positions in their fields.

### 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 Department.

Applicants should be otolaryngologists, or they should be currently enrolled in a residenc

11.16.3.3 Application Deadlines

| Canadian | International | Special/Exchange/Visiting |
|---|---|---|
| Fall: March 15 | Fall: March 15 | Fall: March 15 |
| Winter: Sept. 15 | Winter: Sept. 15 | Winter: Sept. 15 |
| Summer: Jan. 15 | Summer: Jan. 15 | Summer: Jan. 15 |

## 11.16.4 Otolaryngology ± Head and Neck Surgery Faculty

**Chair**

S. Frenkiel

**Graduate Program Director and Director of Research**

B. Segal

**Director of Residency Training Program**

J. Manoukian

**Director of Head and Neck Oncology Program**

M.J. Black

**Director of Undergraduate Education**

L. Nguyen

**Director of Fellowship Training**

J. Rappaport

**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.

**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 507 | (3) | Biostatistics for Health Professionals |

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*
Website: *www.mcgill.ca/pathology*

### 11.17.2 About P athology

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 Pr ocedures

#### 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 cumulative grade point average (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.

For further information, applicants may contact the Teaching Office, Department of Pathology.

#### 11.17.3.2 Application Procedures

McGill's online application form for graduate program candidates is available at *www.mcgill.ca/gradapplicants/apply*.

See *section 6.3: Application Procedures* for detailed application procedures.

All applications will be evaluated by the Graduate Students Committee. Candidates found suitable must then be accepted by a research director, and adequate funding must be obtained for both personal support and research expenses.

##### 11.17.3.2.1 Additional Requirements

- Personal Statement
- Curriculum V

**Associate Professors**

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)

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

T. Haliotis; M.D.(Univ

**Associate Members**

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

V. Papadopoulos; D.Pharm.(Univ. of Athens), Ph.D.(Paris VI)

### 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 insufficient background in one of the biomedical sciences will be required to take specific courses to remedy the deficiency. These and additional courses that are relevant to the student's area of research will be chosen in consultation with the research director and Graduate Students Committee.

#### Thesis Courses (30 credits)

| | | |
|---|---|---|
| PATH 690 | (9) | M.Sc. Thesis Research Project 1 |
| PATH 691 | (9) | M.Sc. Thesis Research Project 2 |
| PATH 692 | (12) | M.Sc. Thesis Research Project 3 |

#### Required Courses (6 credits)

| | | |
|---|---|---|
| PATH 620 | (3) | Research Seminar 1 |
| PATH 622 | (3) | Research Seminar 2 |

#### Complementary Courses (9 credits)

3 credits, one of the following courses:

| | | |
|---|---|---|
| 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.

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.

## 11.18.3 Pharmacology and Therapeutics Admission Requirements and Application Procedures

### 11.18.3.1 Admission Requirements

Candidates are required to hold a B.Sc. de

**Emeritus Professors**

R. Capek; M.D., Ph.D.(Prague)

B. Collier; Ph.D.(Leeds)

T. Sourkes; Ph.D.(McG.)

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

**Professors**

G. Almazan; Ph.D.(McG.)

P.B.S. Clarke; M.A.(Camb.), Ph.D.(Lond.)

A.C. Cuello; M.D.(Buenos Aires), M.A., D.Sc.(Oxf.), F.R.S.C.

B.F. Hales; Ph.D.(McG.)

D. Maysinger; Ph.D.(USC)

P.J. McLeod; M.D.(Manit.), F.R.C.P.(C)

G. Multhaup; Ph.D.(Univ. of Cologne)

A. Ribeiro-da-Silva; M.D., Ph.D.(Oporto)

B. Robaire; Ph.D.(McG.)

H. Saragovi; Ph.D.(Miami)

M. Szyf; Ph.D.(Hebrew)

J. Trasler; M.D.,C.M., Ph.D.(McG.)

**Associate Professors**

D. Bernard; Ph.D.(Johns Hop.)

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 Professors**

L. Münter; Ph.D.(Free Univ., Berlin)

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

**Associate Members**

V. Pappadopoulis; Ph.D.(Univ. Pierre & Marie Curie)

R. Prichard; Ph.D.(UNSW)

S. Rousseau; Ph.D.(Laval)

Y. Shir; M.D.(Israel), Ph.D.(Johns Hop.)

L. Stone; Ph.D.(Minn.)

M. Ware; M.B.B.S.(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, G. Miller, 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 taken PHAR 562 and PHAR 563 as part of their undergraduate degree, they will register for the following course:

| | | |
|---|---|---|
| PHAR 697 | (6) | Thesis Preparation 1 |

6 credits, two 700-level PHAR courses.

### 11.18.6 Master of Science (M.Sc.); Pharmacology (Thesis) Ð Chemical Biology (47 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 |

Complementar y Cour ses (14 credits)

2 credits, two of the following courses:

| | | |
|---|---|---|
| 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 |

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 be replaced 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 |

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 Discovery and Development 1 |

### 11.18.7 Doctor of Philosoph y (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 e

| | | |
|---|---|---|
| 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 |

## 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
W

## 11.19.3 Physiology Admission Requirements and Application Pr ocedures

### 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 Enrolment Services, 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 the comprehensive exam. 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.

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 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 Pr ocedures

McGill's online application form for graduate program candidates is available at *www.mcgill.ca/gradapplicants/apply*.

See *section 6.3: Application Procedures* for detailed application procedures.

Applications should be submitted as early as possible in order to facilitate processing. However, no applications will be considered after the application deadlines.

#### 11.19.3.2.1 Ad ditional Requirements

The items and clarifications below are additional requirements set by this department:

- Curriculum Vitae
- Personal Statement

**Emeritus Professors**

Geoffrey Melvill Jones; B.A., M.A., M.B., B.Ch., M.D.(Cant.)

Joseph Milic-Emili; M.D.(Milan) (*joint appt with Medicine*)

C. Polosa

Douglas G.D. Watt; M.D., Ph.D.(McG.)

**Professors**

Monroe W. Cohen; B.Sc., Ph.D.(McG.)

Ellis J. Cooper; B.Eng.(Sir G. Wms.), M.Sc.(Surr.), Ph.D.(McM.)

Kathleen Cullen; B.Sc.(Brown), Ph.D.(Chic.) (*William Dawson Scholar*)

Leon Glass; B.S.(Brooklyn), Ph.D.(Chic.) (*Rosenfield Professor of Medicine*)

Phil Gold; M.Sc., Ph.D., M.D.,C.M.(McG.), F.R.C.P.(C.) (*Douglas G. Cameron Professor of Medicine*)

David Goltzman; B.Sc., M.D.,C.M.(McG.), F.R.C.P.(C) (*Antoine G. Massabki Professor of Medicine*) (*joint appt. with Medicine*)

John Hanrahan; Ph.D.(Br. Col.)

Gergely Lukacs; M.D., Ph.D.(Budapest)

Michael Mackey

**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*: Volker Blank, Mark Blostein, Andrey Cybulsky, Raymonde Gagnon, Geoffrey Hendy, Louise Larose, Anne-Marie Lauzon, James Martin, Mariana Newkirk, Barry Posner, Shafaat Rabbani, Mary Stevenson, Elena Torban, 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, Ed Ruthazer, Amir Shmuel, Melissa Vollrath

*Opthamology*: Curtis Baker

*Otolaryngology*: Bernard Segal

*Pediatrics*: Charles Rohlicek

*Pharmacology*: Terence Hebert

*Psychiatry*: Nicolas Cermakian, Bernardo Dubrovsky

### 11.19.5 Master of Science (M.Sc.); Physiology (Thesis) (45 credits)

Thesis Cour ses (27 credits)

| | | |
|---|---|---|
| PHGY 621 | (12) | Thesis 1 |
| PHGY 622 | (12) | Thesis 2 |
| PHGY 623 | (3) | M.Sc. Final Seminar |

Required Cour ses (12 credits)

| | | |
|---|---|---|
| PHGY 601 | (1) | M.Sc. Proposal Seminar |
| PHGY 602 | (2) | Literature Search and Research Proposal |
| PHGY 604 | (0) | Responsible Conduct in Research |
| PHGY 607 | (3) | Laboratory Research 1 |
| PHGY 608 | (3) | Laboratory Research 2 |
| PHGY 620 | (3) | Progress in Research |

Elective Cour ses (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) Ð Bioinf ormatics (45 credits)

Thesis Cour ses (27 credits)

| | | |
|---|---|---|
| PHGY 621 | (12) | Thesis 1 |
| PHGY 622 | (12) | Thesis 2 |
| PHGY 623 | (3) | M.Sc. Final Seminar |

Required Cour ses (12 credits)

| | | |
|---|---|---|
| COMP 616D1 | (1.5) | Bioinformatics Seminar |
| COMP 616D2 | (1.5) | Bioinformatics Seminar |
| PHGY 601 | (1) | M.Sc. Proposal Seminar |
| PHGY 602 | (2) | Literature Search and Research Proposal |
| PHGY 604 | (0) | Responsible Conduct in Research |
| PHGY 607 | (3) | Laboratory Research 1 |
| PHGY 608 | (3) | Laboratory Research 2 |

#### Complementar y Cour ses (6 credits)

6 credits to be chosen 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 |

### 11.19.7 Doctor of Philosoph y (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 mY 608

| | | |
|---|---|---|
| COMP 616D1 | (1.5) | Bioinformatics Seminar |
| COMP 616D2 | (1.5) | Bioinformatics Seminar |
| PHGY 604 | (0) | Responsible Conduct in Research |
| PHGY 701 | (0) | Ph.D. Comprehensive Examination |
| PHGY 703 | (1) | Ph.D. Progress Seminar 1 |
| PHGY 704 | (1) | Ph.D. Progress Seminar 2 |
| 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 |

#### Complementar y Cour ses (6 credits)

6 credits 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 Psyc hiatr y

### 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*
Website: *www.mcgill.ca/psychiatry*

### 11.20.2 About Psyc hiatr y

McGill University's Department of Psychiatry is one 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.

***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.
- TOEFL or IELTS certificate of proficienc

**Professors**

L. Annable; B.Sc.(Liv.), Dipl. in Stat.(Edin.)

C. Benkelfat; M.D.(Rabat) (*James McGill Professor*)

D. Boivin; Ph.D.(Montr.)

P. Boksa; B.Sc., Ph.D.(McG.)

M. Bond; B.Sc., M.D.,C.M.(McG.)

J. Breitner; B.A.(Harv.), M.P.H.(Johns Hop.), M.D.(Penn.)

M. Cole; B.Sc., M.D.,C.M.(McG.)

S. El Mestikawy; Ph.D.(U. Pierre & Marie Curie)

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.)

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

L.J. Kirmayer; B.Sc., M.D.,C.M., Dipl.Psych.(McG.) (*James McGill Professor*)

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

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

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.)

C. Rousseau; M.Sc.(McG.), M.D.,C.M.(Sher.)

J.J. Sigal; B.A.(Montr.), B.Ed., B.Sc.(Alta.), M.A., Ph.D.(Montr.)

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)

P. Assalian; Dip.Psychol.(McG.), M.B.,Ch.B.(Cairo)

S. Beaulieu; M.D./Ph.D.(Laval)

P. Beck; B.A.(C'nell), Dip.Psychol.(McG.), M.D.,C.M.(McG.)

V. Bohbot; B.A.(McG.), M.A., Ph.D.(Ariz.)

A. Brunet; Ph.D.(Montr.)

**Associate Professors**

B.M. Robertson; Dip.Psychol.(McG.), M.B.,Ch.B.(Otago)

J. Rochford; M.A.(Qu.), Ph.D.(C'dia)

M. Samy; Ph.D.(McG.), M.B.,Ch.B.(Cairo)

N. Schmitz; Dipl., Ph.D.(Univ. Dortmund)

D. Sookman; B.A.(McG.), M.A.(Guelph), Ph.D.(C'dia)

W. Steiner; M.D.,C.M.(McG.)

B. Suranyi-Cadotte; B.Sc., M.Sc.(McG.), M.D.,C.M.(Montpellier)

B. Thombs; B.A.(N'western), M.A.(Ariz.), Ph.D.(NYU)

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

G. Wiviott; B.Sc.(Wisc.), Gr.Dip.Psychiat.(McG.), M.D.,C.M.(NYU)

T.P. Wong; B.Sc.(HK), M.Ph.(HK), Ph.D.(McG.)

P. Zelkowitz; Ph.D.(McG.)

M. Zoccolillo; B.Sc.(New Orleans), M.D.(Norfolk)

**Assistant Professors**

A. Adamantidis; B.Biol., M.Biol., Ph.D.(Liege)

M.P. Adams; B.A.(Laval), Gr.Dip.Psychiat.(McG.), M.D.,C.M.(Sher.)

L. Amirali; M.D.(Univ. of Athens)

S. Bachneff; Dip.Psychol.(McG.), M.D.,C.M.

E. Banon; M.D.,C.M.(McG.)

L. Beauclair; B.Sc., M.D.(Laval)

P. Beaudry; M.D.(Sher.), Dipl.Psych.(McG.)

C. Belanger; B.A.(Ott.), M.A.(Ott.), Ph.D.(Montr.)

D. Belisle; M.D.(Laval)

C. Beneirakis; Gr.Dip.Psychiat.(McG.), M.D.(Trin. Coll.,Tor.)

R. Bergeron; M.D.,C.M.(Sher.)

M. Berlim; M.Med., M.D.(Rio Grande do Sul)

R. Biskin; M.D., M.Sc.(McG.)

P. Bleau; B.Sc., Gr.Dip.Psychiat., M.D.,C.M.(Sher.)

D. Bloom; B.Sc.(Regina), M.D.(Qu.)

M. Boily; B.Sc.(Laval), M.D.(Laval)

E.J. Brahm; B.Sc., Gr.Dip.Psychiat., M.D.,C.M.(McG.)

M.J. Brouillette; M.D.,C.M.(Sher.)

R. Brown; B.Sc., M.D.,C.M.(McG.)

T.G. Brown; Ph.D.(C'dia)

K. Bruce; Ph.D.(McG.)

J. Canfield; B.A.(New Br.), M.D.,C.M.(Dal.)

P. Cervantes; Dip.Psychol.(McG.), M.D.,C.M.(UAEM)

E. Chachamovich; M.D.(Rio Grande do Sul), Ph.D.(Edin.)

J. Coelho; B.Sc.(Br. Col.), M.Sc., Ph.D.(Tor.)

P. Cote; B.A.(Laval), M.D.,C.M.(Lav

**Assistant Professors**

D.P. Dastoor; M.Sc.(Bom.), Ph.D.(C'dia)

M.E. Davis; Dip.Psychol., M.D.,C.M.(McG.)

R. Desautels; B.Sc., M.D.,C.M.(McG.)

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

D.M. Dunkley; B.Sc.(Tor.), Ph.D.(McG.)

M. Elie; B.Sc., M.D.,C.M.(McG.)

J.P. Ellman; B.A.(Col.), M.D.,C.M.(Ott.)

M. Elsabbagh; Ph.D.

C.P. Ernst; B.Sc.(McG.), M.Sc.(Br. Col.), Ph.D.(McG.)

A. Fielding; M.D.,C.M.(McG.)

E. Foley; B.Sc.(Tor.)

R.E. Franck; B.A., M.D.,C.M.(McG.)

R. Fraser; B.A., M.D.(Dal.)

M. Gauthier; M.D.,C.M.(Montr.)

K. Geagea; M.D.,C.M.(SJU)

J. Glass; B.A.(Boston), M.D.,C.M.(McG.)

K. Goddard; M.D.,C.M.(Manit.)

M. Grignon; B.A.(Montr./Ott.), M.A.(Ott.)

B. Groulx; B.A.(Montr.), M.D.,C.M.(McG.)

J.M. Guile; Gr.Dip.Psychiat.(Aix-Marseilles)

M. Habra; B.A.(McG.), M.A., Ph.D.(Br. Col.)

B. Hayton; B.A.(Williams), M.D.,C.M.(McG.)

K. Hyde; B.Sc.(Car.), M.Sc., Ph.D.(Montr.)

F. Ianni; B.Sc.(McG.), M.D.,C.M.(Montr.)

K. Igartua; Dip.Ed., M.D.,C.M.(McG.)

H. Iskandar; Dip.Psychol.(McG.), M.B.,Ch.B.(Alexandria)

G.E. Jarvis; B.M.S., M.D.(Alta.)

C. Jolicoeur; M.D.,C.M.(Laval)

F. Jollant; M.D.(Paris), M.Sc., Ph.D.(Montpellier)

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

M. Kapuscinska; M.D.,C.M.(Medical U. Gdansk)

R. Keller; M.D.,C.M.(Manit.)

M.E. Kiely; B.Ed., B.Sc.(Montr.), M.Sc., Ph.D.(McG.)

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

P. Lageix; B.Sc., M.D.,C.M.(Sorbonne)

S. Lamarre; B.A., M.D.,C.M.(Laval)

M. Laporta; Dip.Psychol., M.D.,C.M.(McG.)

L. Laporte; B.A.(McG.), M.Psychol., Ph.D.(Montr.)

E. Levy; Gr.Dip.Psychiat.(McG.), M.Ed.(Sher.)

E. Libman; B.A., M.Sc., Ph.D.(McG.)

E. Lizondo; M.D.,C.M.(Nat. Univ. Central Buenos Aires )

S.J. Lloyd; B.A.(McG.)

**Assistant Professors**

**Assistant Professors**

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

M.A. Wolf; M.Sc., M.D.,C.M.(Strasbourg)

V. Zicherman; B.Sc., M.D.,C.M.(McG.)

**Associate Members**

J.L. Derevensky; Ph.D.

A. Evans; Ph.D.

**Adjunct Professors**

M. Alda; M.D.

P. Blier; M.D., Ph.D.

L. Booij; Ph.D.

W. Brender; Ph.D.

M. Cargo; Ph.D.

A. Duffy; M.D.

R. Fugere; M.D.

A. Gagnon; Ph.D.

V. Kovess-Masfety; M.D., Ph.D.

J-C. Lasry; Ph.D.

F. Lesperance; M.D.

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

The M.Sc. in Psychiatry is administered by the Graduate Training Committee. Each student selects a Supervisory Committee composed of the research supervisor plus two to four other faculty who are knowledgeable about the student's research area and who can advise both on appropriate coursework and on the thesis research project. The student will meet with this Supervisory Committee at least once during each year of matriculation for the purpose of evaluating academic and research progress of the student. The Supervisory Committee will also act as a resource body for the student, both with respect to academic and administrative matters.

#### Thesis Courses (36 credits)

| | | |
|---|---|---|
| PSYT 691 | (12) | Thesis Research 1 |
| PSYT 692 | (12) | Thesis Research 2 |
| PSYT 693 | (12) | Thesis Research 3 |

#### Complementary Courses (9 credits)

9 credits of graduate-level courses approved by the student's Supervisory Committee.

Courses are selected on the basis of the area of research interest and the background of the student, and must include a course in statistical analysis if not presented upon admission.

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11.21.3.3 Application Deadlines

| Canadian | International | Special/Exchange/Visiting |
|---|---|---|
| Fall: June 1 | Fall: Apr. 20 | Fall: Same as Canadian/International |
| W | Winter: Sept. 1 | Winter: Same as Canadian/International |

### 11.21.5 Master of Science (M.Sc.); Experimental Surgery (Thesis) (48 credits)

#### Thesis Courses (33 credits)

| | | |
|---|---|---|
| EXSU 690 | (4) | M.Sc. Research 1 |
| EXSU 691 | (4) | M.Sc. Research 2 |
| EXSU 692 | (4) | M.Sc. Research 3 |
| EXSU 693 | (21) | M.Sc. Thesis |

#### Required Courses (12 credits)

| | | |
|---|---|---|
| EXSU 601 | (6) | Knowledge Management |
| EXSU 605 | (3) | Biomedical Research Innovation |
| EXSU 606 | (3) | Statistics for Surgical Research |

#### Complementary Courses (3 credits)

3 credits, one graduate-level course in the student's specialty, selected in consultation with the Research Supervisory Committee.

Depending on their individual background, students may be asked by their Research Supervisory Committee to take additional courses.

### 11.21.6 Doctor of Philosophy (Ph.D.); Experimental Surgery

#### 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 (12 credits)

| | | |
|---|---|---|
| EXSU 601 | (6) | Knowledge Management |
| EXSU 605 | (3) | Biomedical Research Innovation |
| EXSU 606 | (3) | Statistics for Surgical Research |
| 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.