

FINAL ASSESSMENT REPORT
Evaluation of Graduate Programs
Department of Biochemistry, Microbiology and Immunology
Cycle: 2019–2020
Date: December 9, 2020

I. Programs Evaluated

- Master of Science in Microbiology and Immunology
- Doctorate in Microbiology and Immunology

II. Evaluation Process (Outline of the Visit)

- The Final Assessment Report for the evaluation of the aforementioned program(s) was based on the following documents: (a) the self-study brief produced by the academic unit; (b) the report produced by the two external evaluators following their virtual visit; and (c) the comments from the unit and the Faculty.
- During their visit, the external evaluators met with the Vice-Provost, Graduate and Postdoctoral Studies Claire Turenne-Sjolander; the dean of the Faculty of Medicine, Bernard Jasmin; Vice-Dean, Graduate and Postdoctoral Studies Alain Stintzi; Vice-Dean, Research Jocelyn Côté; the interim associate vice-dean of the Faculty of Medicine, Nadine Wiper-Bergeron; the Department director, Jean-François Couture; the program director, Thien Fah Mah; the former program director, Subash Sad; a member of the Health Promotion Program; the library representative; members of support staff; regular professors; and students in the program.
- The visit was conducted virtually owing to the SARS-CoV-2 pandemic. A pre-recorded visit was provided, showing outdoor and teaching spaces, student and relaxation areas, labs, shared facilities and technology platforms.

Comments from internal delegate

- Internal delegate Charles-A. Darveau from the Faculty of Science observed the external evaluator meetings with the members of the microbiology and immunology program. The evaluators had a very good understanding of this kind of program, and they were very knowledgeable about the content and the approach to graduate studies in this field. They highlighted the fact that graduate students had a very positive opinion of their program. The two evaluators shared their impressions of the program, which they described as strong and very promising. They raised weaknesses relating to the timeframes for evaluating master's theses, and to a lack of diversity in courses offered. However, following their visit, both evaluators insisted that the positives outweighed the negatives by far. The evaluators took the time to comment on the format of their virtual visit. It was a first for both evaluators. They said the visit went well. They remarked that they had not had the opportunity to talk to each other as they would have had on site. Nonetheless, the format worked well. In short, the evaluators had the

knowledge and information they needed for their visit. Their impression of the program was very positive, and the visit went well even though it was conducted remotely.

III. Summary of Reports on the Quality of Programs¹

This section aims to inform the unit of the strengths and weaknesses observed during the evaluation process in order to improve its programs.

1. EMPHASIZING STRENGTHS AND IDENTIFYING CHALLENGES

Strengths

- The external evaluators concluded that the master's and PhD microbiology and immunology programs "are of excellent quality" and that "student satisfaction is high."
- One of the leading microbiology and immunology programs in Ontario.
- NSERC scholarship: Technomise
- The program is supported by multidisciplinary faculty members and strong research intensity. Many of them have received prestigious awards and honours.
- Clearly defined and detailed learning objectives and outcomes.
- The master's and PhD programs both emphasize the development of transferable skills.
- The new program of studies strikes a balance between practical and theoretical courses.
- The Professionalism and Professional Skills Course (MED8166) provides students with non-traditional instruction in the discipline.
- The undergraduate programs provide a strong pool for recruitment for graduate studies.
- University of Ottawa graduates have unique advantages owing to the proximity of government agencies.
- The ratio of full-time students to full-time faculty is excellent.

Challenges

- In some cases, specific learning objectives are evaluated by the Thesis Advisory Committee (TAC). However, the TAC may not be aware of its responsibility in the evaluation process.
- Inadequate stakeholder awareness of the amount and nature of research required for master's theses tends to lengthen the average time needed to complete the program. Greater awareness is also required at the PhD level.
- Students would like more interaction with their professors.
- The program could be better aligned with student interests, in terms of the breadth of subjects covered in MIC5100 and in the range of pedagogical approaches and evaluation methods used.

¹ Based on all of the documents produced during the evaluation process.

- There seem to be planning issues with the thesis defence schedule.
- Students say it takes too long time to get a response from the Faculty's Office of Graduate and Postdoctoral Studies.

Sections 2 to 6 seek to put the recommendations into context.

2. PROGRAM OBJECTIVES

- The program mission is clearly defined. The external evaluators both feel that teaching and research excellence is reflected in every aspect of the program.
- The requirements of the master's and PhD in microbiology and immunology are clearly defined and consistent with the University's policy on graduation requirements. According to the external evaluators, "[t]he learning outcomes are among the best learning outcomes to have been recorded for microbiology and are worthy of emulation by others." However, since these learning outcomes were developed recently, students and faculty members need to be informed of them: they seem to be unfamiliar with them at present.
- These learning outcomes will be very useful in clarifying student and supervisor expectations. TAC members could use them in assessing work that has been completed and in identifying deficiencies to be remedied.

3. CURRICULUM AND STRUCTURE

- The curriculum, structure and learning outcomes of the programs evaluated are similar to those of other microbiology and immunology programs in Canada.
- The self-study brief and the discussions that took place during the visit suggest there is an anomaly in the data on master's and PhD program completion rates. Given the significance of this statistic, program officials should conduct an in-depth analysis to determine whether such an anomaly indeed exists, and if not, they need to understand the causes of the lower-than-expected graduation rates.
- Program officials are well aware of the significance of the issues affecting the amount of time required to graduate. Specific measures have been implemented. For example, the first meeting with the TAC is now held during the first study term. More detailed annual reporting has been introduced to ensure more timely completion of the program.
- While the time needed to complete the PhD program is comparable to that at other institutions, completion of the master's program takes longer. Better communication, and learning outcomes and expectations framed in terms of the amount of data and results, could help reduce the time needed to complete the master's program.
- Students would like more diversity in evaluation methods and pedagogical approaches in the courses. Program officials welcomed their request and have proposed a series of measures, including a curriculum review every three years and a review of course outlines before the start of each term.

4. TEACHING, LEARNING AND ASSESSMENT

- As mentioned above, learning outcomes are clear and appropriate for both the master's and doctorate programs. Students are achieving these learning

outcomes not only through courses and seminars, but especially through their thesis research. Consequently, experiential learning plays an important role that is further enriched by the excellence of the research environment, as demonstrated by the numerous awards students have won and their post-graduation employment rates.

5. STUDENT EXPERIENCE AND GOVERNANCE

- Satisfaction is very high, based on student surveys and discussions.
- Students are satisfied with the advice received at TAC meetings concerning their research and progress.
- Although students identify strongly with the program, they say that student interactions with faculty members could be better.
- The external evaluators lauded the Faculty of Medicine's efforts to set up a health promotion program. The evaluators are optimistic that the program will become an excellent resource for students and should help them resolve issues they may encounter.

6. SPACE AND RESOURCES

- Thesis defence planning seems to be taking too long. Students have to wait for more than two weeks—and sometimes longer—for answers to emailed questions. The Faculty is aware of the challenges facing the Office of Graduate and Postdoctoral Studies. In its response to the external evaluators' report, the Faculty explained that it had hired two people in an effort to reduce the workload of current staff and provide quality service in a timely manner.
- The Faculty of Medicine and its associated institutes boast exceptional technology platforms, including microscopy, flux cytometry and bioinformatics. These platforms play a major role in research quality and in training students. Given the current state of research funding, purchasing such equipment is neither possible nor cost-effective. The external evaluators therefore stressed the need for ongoing financial support for platform maintenance.

IV. Program Improvement²

The programs under evaluation are in conformity with the standards of the discipline. The following recommendations aim to maintain or increase the level of quality already achieved by the programs.

The numbering of the recommendations follows the numbering used in the external evaluation report.

Program Objectives, Learning Outcomes, Mandate and University Plan

Recommendation 4: In the external evaluators' opinion, the recently developed learning outcomes are very detailed and are among the best learning outcomes ever reported for microbiology and immunology programs. The GPEC recommends that all master's and PhD learning outcomes be communicated to students, supervisors, and TAC members.

² Based on the external evaluators' report.

Curriculum and Structure

Recommendation 3: The GPEC recommends that pedagogical approaches and methods for evaluating learning outcomes in courses, including in MIC5100, be diversified.

Teaching and Evaluation

Recommendation 2: The GPEC recommends that the amount and nature of research required for master's theses be discussed, agreed upon, and clearly communicated to faculty and TAC members in order to shorten program completion times.

Student Experience and Governance

Recommendation 6: In view of student feedback, the GPEC recommends that program officials consider strategies that would give students more flexibility and support their career transition while they are completing their program requirements.

Recommendation 7: The GPEC recommends that students be given more opportunities to interact with faculty in order to promote a sense of community in the program.

SPACE AND RESOURCES

Recommendation 1: the GPEC recommends that steps be taken to provide timely service at the Office of Graduate and Postdoctoral Studies. Such service would aim to accelerate the planning for thesis defences and to respond more quickly to questions in student emails.

Recommendation 5: The GPEC recommends that program officials consider ways by which the Office of the Vice-Dean, Research can provide additional support for technology platform maintenance on the medical campus.

GPEC recommendations

Recommendation 9: The GPEC recommends that program funding be reviewed periodically against funding for students in graduate programs at other universities. Students could also be better informed about financial counselling services available from the University of Ottawa's Financial Aid and Awards Service.

Recommendation 10: The GPEC recommends that student satisfaction, and staff workloads and procedures, be periodically reviewed in conjunction with the administrative support provided by the Office of Graduate and Postdoctoral Studies with a view to the continuous improvement of the program.

Recommendation not acted on

Recommendation 8: Engage in discussions with faculty members regarding the one-year master's program to give them an opportunity to voice their concerns and make changes to the program if necessary. The GPEC did not act on the recommendation because the program was not included in this periodic review. Nonetheless, the GPEC acknowledges the importance of the recommendation and suggests that program officials closely monitor student and research supervisor satisfaction with the one-year master's program.

V. List of Courses Not Offered for More Than Three Years and Reasons

All the courses have been offered at least once in the previous three years.

VI. Conclusion

The Department of Biochemistry, Microbiology and Immunology offers high-quality master's and PhD programs that meet the standards of the discipline. The greatest strengths of the program are: the high level of student satisfaction; student mentorship and supervision quality; exceptional faculty member expertise (including research); and excellent ratio of students to full-time professors.

The evaluation exercise confirmed the strength and stability of the graduate programs offered. It also identified recommendations for their continuous improvement. The committee members would like to thank: the external evaluators for conducting such a detailed evaluation; the program officials for producing a self-study brief that meets the requirements of the Office of Quality Assurance; and all the stakeholders for taking part in this periodic academic evaluation process.

Schedule and Timelines

The Office of Quality Assurance will schedule a meeting with program officials and the Faculty Dean's Office following receipt of this report in order to prepare an action plan and to set timelines for each recommendation. A progress report outlining actions taken and results obtained will be submitted to the GPEC at a date to be established when the action plan is finalized.

The next self-assessment cycle will take place in 2026–2027, with the self-study brief to be submitted no later than June 2026.

Unit Response to the External Review Report and Action Plan

Faculty: Medicine

Department: Biochemistry, Microbiology and Immunology

Programs evaluated: Master of Science, Microbiology and Immunology, Doctorate in Philosophy, Microbiology and Immunology

Cyclical review period: 2019-2020

Date: April 21, 2021

General comments:

On Friday, Sept 25, 2020, the Microbiology and Immunology (MIC) Graduate program was made aware of the External Reviewers' Report produced in the context of the cyclical program review. We were extremely pleased with the positive evaluation of our graduate program. Given that the MIC Graduate Program has committed to providing an outstanding training and research experience, we were gratified to see that the external reviewers found that "MIC MSc and MIC PhD programs were of excellent quality", that "student satisfaction was high" and that "no major issues with the program, the learning objectives, courses or management of the programs were discovered". A summary of the recommendations and our response to address each, produced jointly by the unit and the Faculty, is included herein.

FOCUS AREA #1: PROGRAM OBJECTIVES, LEARNING OUTCOMES, MANDATE AND UNIVERSITY PLAN

Recommendation 4: The GPEC recommends that all master’s and PhD learning outcomes be communicated to students, supervisors, and TAC members.

Define the actions to undertake: the MIC Graduate Program Director will communicate the MSc and PhD learning outcomes to all stakeholders (faculty members and students) by holding presentations, by sending the presentation to MIC students, professors and TAC members by email and by posting the presentation on the MIC Graduate Program website. The Program Director will hold a Town Hall to discuss the learning outcomes.

Priority Level*	Assigned Person or Persons	Deadline to attain the objective	Expected results	Implementation Indicators	Progress on the actions taken: accomplished, to be sustained, to be continued, to be developed
1	Program Director	September 2021	Improved understanding of the program objectives and learning outcomes.	1. Adoption of learning outcomes in curriculum review and development of course syllabi. 2. Adoption of standard for achievement in the context of the program.	<i>To be completed by the Evaluation Committee when reviewing the progress report</i>

FOCUS AREA #2: CURRICULUM AND STRUCTURE

Recommendation 3: The GPEC recommends that pedagogical approaches and methods for evaluating learning outcomes in courses, including in MIC5100, be diversified.

Define the actions to undertake: The Assistant Director of the MIC Graduate Program organized a meeting with all the course coordinators in November 2019. The goal was to review course offerings, learning objectives and the evaluation methods used. Given that varied learning activities and evaluation methods better support the learning outcomes of the program, we also discussed the need to expand the way we evaluate students in MIC courses. To improve our courses moving forward, the MIC Graduate Program Director and the MIC Graduate Program Committee will undertake a curriculum review every 3 years, effective immediately. All course coordinators will be required to submit a course syllabus (including course content and evaluation methods) prior to each session. This curriculum review will also allow us to ensure that MIC5100 equally balances the course material between bacteriology, immunology and virology, thereby fulfilling its role as a foundational course.

Priority Level*	Assigned Person or Persons	Deadline to attain the objective	Expected results	Implementation Indicators	Progress on the actions taken: accomplished, to be sustained, to be continued, to be developed
2	Program Assistant Director	Preliminary meeting with course coordinators – November 2019 Submission of the course syllabi to Program Director: September 2021 Curriculum review: Nov 2021	Reduced redundancy in course offerings and balanced exposure to bacteriology, immunology and virology Improved student satisfaction Increased program cohesion	1. Adoption of regular curriculum review 2. Implementation of regular student surveys 3. Presentation of results of survey and curricular review to the Vice-Dean, Graduate and Postdoctoral Studies	<i>To be completed by the Evaluation Committee when reviewing the progress report</i>

* PRIORITY LEVEL : 1. URGENT-IMMEDIATE ACTION REQUIRED 2. IMPORTANT-ACTION REQUIRED WITHIN 18 MONTHS (MAXIMUM) 3. ADVISED: DEVELOPMENT AND STRATEGY-ACTION TO BE DISCUSSED AND MUST BE IN PLACE BY MID-CYCLE (WITHIN 4 YEARS)

FOCUS AREA #3: TEACHING AND EVALUATION

Recommendation 2: The GPEC recommends that the amount and nature of research required for master’s theses be discussed, agreed upon, and clearly communicated to faculty and TAC members in order to reduce the time to program completion.

Define the actions to undertake: To address the goal of reducing the time to completion for MSc students, the MIC Graduate Program Director will:
 (i) create a presentation clearly listing the MSc program learning objectives and outcomes. This presentation will be given to MIC professors, students and TAC members and will be sent by email to these same groups as well as posted on the MIC Graduate Program website.
 (ii) hold MIC Town Halls once a year to discuss issues related to these learning outcomes and any other issues related to the MIC Graduate Program. These efforts are expected to standardize the benchmarks for completion of the MSc degree. The program intends to watch times to completion after implementation of these measures to evaluate whether they are having the desired impact of reducing completion times.

Priority Level*	Assigned Person or Persons	Deadline to attain the objective	Expected results	Implementation Indicators	Progress on the actions taken: accomplished, to be sustained, to be continued, to be developed
1	Program Director	Sharing of program objectives and learning outcomes with professorship: September 2021 Town Hall meetings: October 2021 Survey of times to completion: Annually beginning September 2021	Improved time to completion through clear communication of standards for completion of the MSc.	1. Adoption of learning outcomes in the context of determining the benchmark for attributing permission to write for MSc students. 2. Attendance at Town Hall meetings 3. Longitudinal data on times to completion collected	<i>To be completed by the Evaluation Committee when reviewing the progress report</i>

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FOCUS AREA #4: STUDENT EXPERIENCE AND GOVERNANCE

Recommendation 6: In view of student feedback, the GPEC recommends that program officials consider strategies that would give students more flexibility and support their career transition while they are completing their program requirements.

Define the actions to undertake: The Faculty of Medicine is invested in supporting career-building opportunities for its learners. In particular, all incoming graduate students must complete *MED8166 – Professional Skills and Professionalism* course, which introduce and reinforce the development of transferable skills through workshop attendance and course work. Further, the Faculty hosts an annual career day as well as numerous workshops offered through the University’s Professional Development Institute and the Career Development Centre free of charge to graduate students and postdoctoral fellows. These programs have promoted the development of professional skills and career-building throughout the program. These programs are continuously evolving to reflect the current state of the job market in our discipline. As such, while we are committed to supporting career-building and professional development, we believe the mechanisms are already in place to support this aspect of training.

Priority Level*	Assigned Person or Persons	Deadline to attain the objective	Expected results	Implementation Indicators	Progress on the actions taken: accomplished, to be sustained, to be continued, to be developed
3	Program Director and Vice-Dean, Graduate and Postdoctoral Studies	Program is already in place. Annual renewal of workshop and career week offerings.	Enhanced confidence in professional skill self-assessment Increased opportunity to develop professional and career-building skills among graduate students.	1. Alumni success 2. Attendance at workshops	<i>To be completed by the Evaluation Committee when reviewing the progress report</i>

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FOCUS AREA #4: STUDENT EXPERIENCE AND GOVERNANCE

Recommendation 7: The GPEC recommends that students be given more opportunities to interact with faculty in order to promote a sense of community in the program.

Define the actions to undertake: The Department formed a Student Experience Committee in the Fall of 2019, made up of faculty and students from both the BCH and MIC Graduate Programs. The goal is to improve and expand the overall sense of belonging of our graduate students. The MIC program is in close dialog with this committee to review current events and proposed new activities which could include a program Research Day, student organized conferences, career fairs and Student Wellness activities both virtually and in person when possible.

Priority Level*	Assigned Person or Persons	Deadline to attain the objective	Expected results	Implementation Indicators	Progress on the actions taken: accomplished, to be sustained, to be continued, to be developed
1	Program Director	Establishment of a Student Experience Committee: Fall 2019	Development of activities that support student engagement and academic community building.	1. Adoption of regular Student Experience Committee meetings 2. Feedback to relevant departmental and faculty-level leadership committees	<i>To be completed by the Evaluation Committee when reviewing the progress report</i>

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FOCUS AREA #4: STUDENT EXPERIENCE AND GOVERNANCE

Recommendation 9: The GPEC recommends that program funding be reviewed periodically against funding for students in graduate programs at other universities. Students could also be better informed about financial counselling services available from the University of Ottawa’s Financial Aid and Awards Service.

Define the actions to undertake:

The program has implemented an increase in graduate stipends from \$17,500 to \$19,000 for the MSc and from \$19, 000 to \$21,000 for the PhD effective September 1st, 2020. The stipends for graduate studies are harmonized for several programs requiring broad consultations of the Faculty of Medicine’s professorship.

Priority Level*	Assigned Person or Persons	Deadline to attain the objective	Expected results	Implementation Indicators	Progress on the actions taken: accomplished, to be sustained, to be continued, to be developed
3	Vice-Dean, Graduate and Postdoctoral Studies	September 1, 2020	New stipend rates are implemented.	<p>New stipend policy had been adopted.</p> <p>Reduced financial stress among graduate students, to be captured by student surveys conducted every 2 years.</p>	<p><i>To be completed by the Evaluation Committee when reviewing the progress report</i></p>

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FOCUS AREA #4: STUDENT EXPERIENCE AND GOVERNANCE

Recommendation 10: The GPEC recommends that student satisfaction, as well as staff workloads and procedures, be periodically reviewed with reference to the administrative support provided by the Office of Graduate and Postdoctoral Studies in order to continuously improve the program.

Define the actions to undertake: The Faculty of Medicine has committed to conduct student surveys every 2 years for all programs to assess student satisfaction, program quality and workload. The data collected will be assessed to inform program development, student experience and resource appropriateness.

Priority Level*	Assigned Person or Persons	Deadline to attain the objective	Expected results	Implementation Indicators	Progress on the actions taken: accomplished, to be sustained, to be continued, to be developed
2	Vice-Dean, Graduate and Postdoctoral Studies	First survey will be conducted in the Spring/Summer semester of 2021	More timely program modifications in response to student experience Enhanced student experience	1. Adoption of regular student surveys 2. Use of data in strategic planning at the Faculty and Program levels.	<i>To be completed by the Evaluation Committee when reviewing the progress report</i>

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FOCUS AREA #5: RESOURCES

Recommendation 1: the GPEC recommends that steps be taken to provide timely service at the Office of Graduate and Postdoctoral Studies. Such service would aim to accelerate the planning for thesis defence and more quickly respond to emails containing questions from students

Define the actions to undertake: To improve response times and access to timely information, the Graduate Office has recently hired 2 new members, which will alleviate individual workloads and is expected to greatly facilitate customer service to both students and faculty members. The Graduate Office has also prioritized updating information on the website as well as restructuring web pages to increase user friendliness. The Graduate Studies Office remains committed to periodically reviewing procedures and workloads with the objective of identifying areas where innovative approaches could further improve access to information with the optic of continual improvement, including the development of key performance indicators for tasks and response times. In addition, we recently implemented a new procedure that empowers thesis supervisors to organize the date and time of thesis defenses, which reduces the workload in the Graduate Studies Office and better reflects the student timeline for completion.

Priority Level*	Assigned Person or Persons	Deadline to attain the objective	Expected results	Implementation Indicators	Progress on the actions taken: accomplished, to be sustained, to be continued, to be developed
1	Vice-Dean, Graduate and Postdoctoral Studies And Assistant Dean, Graduate and Postdoctoral Studies And Administrator, Graduate Programs	Hiring of new staff to the Graduate Studies Office is complete Update of webpages, beginning in May 2021 including FAQs. Establishment of key performance indicators and procedures for response times completed in Winter 2021.	Improved response times and streamlining of workflow in the Graduate Studies Office. Reduced requests by email though improved access to information on the Graduate and Postdoctoral Studies website.	1. Satisfaction survey 2. Key performance indicators are met for response times	<i>To be completed by the Evaluation Committee when reviewing the progress report</i>

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FOCUS AREA #5: RESOURCES

Recommendation 5: The GPEC recommends that program officials consider ways by which the Office of the Vice-Dean, Research can provide additional support for technology platform maintenance on the medical campus.

Define the actions to undertake: We agree that funding of core facilities is essential to ensure a vibrant state-of-the art research environment for our trainees. We are grateful to have benefitted from stable funding for the maintenance and purchase of equipment and highly qualified personnel from the Faculty of Medicine. We will continue to work with the Vice-Dean Research, Dr. Jocelyn Côté to ensure core facilities are maintained.

Priority Level*	Assigned Person or Persons	Deadline to attain the objective	Expected results	Implementation Indicators	Progress on the actions taken: accomplished, to be sustained, to be continued, to be developed
1	Vice-Dean, Research And Vice-Dean, Graduate and Postdoctoral Studies	Ongoing investment to mutually support research and training objectives.	Maintained high quality research facilities to support program objectives.	1. High quality core facilities to support research initiatives 2. Training opportunities for graduate students to learn new technologies.	<i>To be completed by the Evaluation Committee when reviewing the progress report</i>

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Faculté / Faculty : Medicine

Programme(s) évalué(s) / Program(s) evaluated:

Master of Science, Microbiology and Immunology; Doctorate in Philosophy, Microbiology and Immunology

Cyclical review period: 2019-2020

Program / Department Chair :

Dr. Jean-François Couture

Chair

Department of Biochemistry, Microbiology and Immunology

**Jean-Francois
Couture**

Digitally signed by Jean-Francois Couture
DN: cn=Jean-Francois Couture, o=University
of Ottawa, ou=Biochemistry, Microbiology
and Immunology, email=jean-
francois.couture@uottawa.ca, c=CA
Date: 2021.05.12 13:15:56 -04'00'

Signature

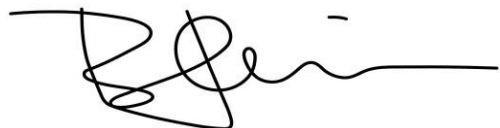
Date

Faculty Dean :

Dr. Bernard Jasmin

Dean and Professor

Faculty of Medicine



Signature

2021-05-14

Date