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# Molecular and Cell Biology Graduate Handbook

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Department of Biological Sciences



# Table of Contents

<b>Overview of the MCB Program .....</b>	<b>3</b>
Welcome .....	3
Biology Department Overview .....	3
MCB Program Overview.....	3
Program Level Outcomes .....	4
<b>Curriculum &amp; Requirements .....</b>	<b>4</b>
Curriculum .....	4
Registering for Courses & Creating a Plan of Study .....	5
Full-Time Status and Part-Time Status .....	6
Satisfactory Academic Progress .....	6
Challenge Exam.....	6
Non-Thesis track with Comprehensive Exam .....	6
The Master’s Thesis and Thesis Defense .....	7
Degree Conferral .....	7
<b>Graduation &amp; beyond .....</b>	<b>8</b>
<b>Additional information .....</b>	<b>8</b>
<b>Department of Biological Sciences Faculty Researchers .....</b>	<b>10</b>
<b>Contact Information.....</b>	<b>10</b>

# Overview of the MCB Program

## **Welcome**

Welcome to Quinnipiac University and the Department of Biological Sciences. You are now part of a distinguished group of scholars who have chosen to pursue a Master's degree in Molecular and Cell Biology. We are thrilled you have chosen the MCB program at Quinnipiac University for your graduate training. We wish you much success during your graduate education experience!

## **Biology Department Overview**

The Department of Biological Sciences faculty have a wide breadth of expertise, spanning molecular and cell biology, physiology, zoology, ecology and genetics. Together, we strive to promote a culture of inquiry, critical thinking, problem solving and collegiality.

## **MCB Program Overview**

Students study cell composition and function with an eye toward working in the burgeoning field of biotechnology, where they might develop new treatments, medications and detection methods for a range of debilitating illnesses. This multidisciplinary degree also prepares students for doctoral study in fields such as bioengineering, as well as for entrance to medical, dental and veterinary school.

Course work blends advanced biochemistry, cell biology, molecular genetics and other sub-fields with training in lab techniques and research methods. Experienced faculty teach you the theory and practical skills necessary for employment in hospital research labs, R&D departments and universities.

Our program gives students the flexibility of two distinct paths to graduation. In the traditional thesis track, students carry out significant laboratory research under the guidance of faculty in an on-campus, industrial or hospital lab setting. The second

option enables students to take additional course work, culminating in a comprehensive written exam.

The 34 credits required for the Master's Degree in Molecular and Cell Biology include five courses (20 credits) in the science core, elective courses chosen in consultation with your advisor and a thesis or non-thesis option (the non-thesis option requires the successful completion of a comprehensive examination; the thesis option requires two additional credits, for a total of 36 credits).

For students in accelerated dual-degree programs, such as the 4+1 BS/MCB and 3+1 BS/MCB program, a minimum of 18 graduate credits must be obtained after conferral of the undergraduate degree.

## **Program Level Outcomes**

A Master's in Molecular and Cellular Biology (MCB) enables students to

- Acquire a fundamental understanding of Molecular Biology, Cell Biology and Biochemistry.
- Establish laboratory and critical thinking skills.
- Effectively communicate science in written and oral formats.

## **Curriculum & Requirements**

### **Curriculum**

The M.S. degree in MCB requires that students complete a minimum of 34 graduate credits with a minimum GPA of 3.0. Only grades of C or better in graduate course work satisfy the requirements for the degree. In addition, in order to graduate, students who choose the non-Thesis track must earn a minimum grade of B- in the Comprehensive Exam course (Bio 675). Students who choose the Thesis track must successfully write a Master's thesis and defend their thesis in an oral presentation. A Master's degree is easily completed within 4 semesters when a full course load is carried each semester. The required core courses are offered either Fall or Spring

semester of each academic year. Some courses have a pre-requisite; the order of class work typically follows the schedule below:

**Typical 2-year MCB Schedule:**

<b>Fall (Semester 1)</b>	<b>Spring (Semester 2)</b>
BIO 568 Cell Biology (Core)	BIO 615 Biochemistry (Core)
BIO 571 Molecular Genetics (Core)	BIO 605 Protein Methods Laboratory (Core)
Elective	Elective
<b>Summer (between Semesters 2-3)</b>	
BIO 649 Independent Study for Thesis	
<b>Fall (Semester 3)</b>	<b>Spring (Semester 4)</b>
BIO 606 DNA Methods Laboratory (Core)	Elective
Elective and/or BIO 650 (Thesis I)	BIO 651 (Thesis II) or BIO 675 Comprehensive Exam

Note: Non-thesis track requires the 5 Core Courses, 4 graduate electives and the Comprehensive Exam. The Thesis track requires the 5 Core courses, 2 graduate electives and 3 thesis courses (Bio 649, Bio 650 and Bio 651).

**Registering for Courses & Creating a Plan of Study**

New students will either be placed into required and open courses or they will register on their own using Self Service (students can access Self Service through MyQ). Students will be assigned a faculty advisor who will work with them to plan their graduate course work and ensure that the required courses are taken.

## **Full-Time Status and Part-Time Status**

Full-time status as a graduate student is defined by taking at least 9 units of graduate credit.

Part-time status as a graduate student is defined as any student taking between 5-8 units of graduate credit.

## **Satisfactory Academic Progress**

In order to remain in good academic standing, students must maintain a cumulative GPA of 3.0 or higher. If a student's cumulative GPA falls below a 3.0, they will be placed on academic probation. If, in the following semester, the student is not able to regain a 3.0 or higher GPA, they will be dismissed from the program. If there are mitigating circumstances, a student may appeal their dismissal.

## **Challenge Exam**

In unique circumstances, a student may be able to test out of BIO 605 or BIO 606 by taking a challenge exam to demonstrate mastery of the subject matter. Challenge exams must be discussed with the Director of the MCB program and scheduled at the convince of the MCB program. There is a fee associated with taking a challenge exam.

## **Non-Thesis track with Comprehensive Exam**

The written comprehensive exam (BIO 675) is a requirement of the non-thesis option for the MS in Molecular and Cell Biology. Students must demonstrate both breadth and depth of knowledge by illustrating a command of the subject matter obtained from individual courses into unified concepts, which link the student's own specialization to other fields of study. Completion of a minimum of four of the five core curriculum courses is required to register for the comprehensive examination. Students must meet with their academic advisor before registering for the comprehensive exam. The comprehensive exam is typically taken towards the end of the semester and includes a 2 credit online student-led preparatory course. A student must achieve a grade of at least a B- in BIO 675 in order to graduate from the MCB program.

## **The Master's Thesis and Thesis Defense**

Students may choose to undergo a thesis project as part of their Master's degree requirement. Students must take the initiative to find a potential thesis mentor. The thesis mentor may be a Quinnipiac faculty member, supervisor at a local industrial or hospital setting or other individual who is engaged in scientific research related to molecular and cellular biology. If a student works at a company, the thesis project must be separate from their employment project.

Individuals who wish to complete a thesis project should ideally seek out a thesis mentor during their first or second semester of graduate work so that they can begin an independent study during their second semester or the summer session. Thesis-track research takes place over 3 semesters. The thesis involves original laboratory research performed under the guidance of a thesis mentor and a Thesis Advisory Committee. The Thesis Advisory Committee is composed of your thesis advisor, one tenure-track Biology Department faculty member and one other Quinnipiac faculty member. The Thesis Advisory Committee evaluates a student's progress, approves the research project and subsequently advises the student whenever the need arises.

As students approach the conclusion of their Master's program, students should meet with their research advisor to discuss the completion of the Master's thesis and the upcoming thesis defense. Students are responsible for making all arrangements for the defense, including finding a time when all committee members can be present. The thesis advisor or MCB Program Coordinator will secure a room assignment once a date and time is set.

The thesis defense will consist of a public oral presentation of the student's research project and results, followed by a closed-door defense of the thesis project with the student and Thesis Advisory Committee.

## **Degree Conferral**

Upon completion of all course work and an acceptable thesis defense or comprehensive exam, Quinnipiac will confer the Master's degree. Students are encouraged to participate in the College of Arts & Sciences Commencement

Ceremony held each Spring. Students will be sent information directly from the University regarding commencement.

## Graduation & beyond

As students begin to explore their options for employment or further education beyond a Master's degree, use of the College of Arts and Sciences Career Development center is encouraged. Students may view current job postings and obtain guidance on interview skills and resume writing. The academic advisor is another source of information when planning for the future.

Any student who plans to apply to a Ph.D. program, medical, dental or veterinary school should identify professors who can write strong letters of recommendation. Students should ask a professor if they are willing to write a letter before listing them as a reference on any application. It is recommended that students provide any referee with an updated CV and an explanation for their chosen path at least 3 weeks before any application deadline to allow an appropriate letter to be written on behalf of the student.

## Additional information

Each student will be assigned an [@quinnipiac.edu](mailto:@quinnipiac.edu) email address. This email address will be used by Quinnipiac University and Professors to communicate important information so students should check email daily.

Most instructors use Blackboard exclusively to disseminate course information. Students should check their blackboard courses daily for important information and course materials.

Support for students with disabilities is coordinated through the Office of Student Accessibility (OSA) which is located in the Learning Commons on both the Mount Carmel and North Haven campus. If you require an accommodation, please contact the OSA as soon as possible at [access@quinnipiac.edu](mailto:access@quinnipiac.edu) or 203-582-7600.

Students should obtain a Q card once they enroll at Quinnipiac University. The Q Card is your student ID and Q cards can be obtained in person in the South administrative



wing of the Arnold Bernhard Library from 8 am - 5 pm (M-Th) and 8 am - 4 pm (F). Students can add funds to their Q card online using the Quick Link- "Qcard" located in MyQ. Funds deposited on the Qcard can be used in the copy machines, cafeterias and vending machines located on both the Mount Carmel and North Haven campuses.

Students should request a parking pass using the Quick Link "My Parking" in MyQ. Students who commute to the Mt. Carmel campus can park in the North Lot. Overflow parking is available in the Hogan Road lot or the West Woods Road lot. Parking at the North Haven campus is available in the student lot located in front of the MNH building.

Students have access to a multitude of online research journals and other resources through the Arnold Bernhard Library and the Frank H. Netter libraries. Databases can be accessed through the "IT & Libraries" link in MyQ (select either Library-Arnold Bernhard or Library-Edward & Barbara Netter).

Cafe Q on the Mount Carmel campus is the main cafeteria for the QU community. It is located at the end of Tator Hall, near the Student Center and the bookstore. Cafe Q offers many different food stations and is open until 8 pm on M-Th and until 7 pm on F-Sun. Students can pay for food using cash, credit cards or their MyQ card. The cafeteria on the North Haven campus is open from 7:30 am- 2 pm. More information on cafeteria hours, menus etc, can be found at <https://www.dineoncampus.com/quinnipiac/hours-and-locations>.

Shuttle service is provided between the Mount Carmel Campus and the North Haven campus, with shuttles running every 7 minutes.

Students should register for emergency alerts through MyQ using the Quick Link "Emergency Text Alert System". The alert system is used to inform the community about school closings (weather and non-weather related) and other important information. Alerts are sent via text message to your cell phone.

Students should read and understand the university policies, which can be found at <https://www.qu.edu/student-resources/university-policies.html>. A general graduate student handbook can also be found using the same website link.

# Department of Biological Sciences Faculty Researchers

You can perform thesis research with Quinnipiac University faculty who are not in the Department of Biology as well as researchers outside of the Quinnipiac community.

Please contact individual professors to inquire about doing a Master's thesis project in their laboratory. For research opportunities outside of Quinnipiac please contact the MCB program director.

## Research Faculty in Biological Sciences:

**Dr. Scott Davies** - Physiological ecology of animals such as wrens in urban and rural environments.

**Dr. Alex de Lencastre** - Roles of non-coding RNAs in aging, stress resistance and neurodegeneration in *C. elegans*.

**Dr. Caitlin Hanlon** - Developmental biology, cell biology, genetics of *Drosophila*.

**Dr. Lisa Kaplan** - animal behavior, environmental toxicology.

**Dr. Sarah Lawson** - Pollinator health and ecology and evolution of social behavior.

**Dr. Craig Magie** - Cellular and molecular mechanisms underlying morphogenesis in *Nematostella*.

**Dr. Courtney McGinnis** - aquatic toxicology, zebrafish

**Dr. Nils Pilotte** - Diagnosis and surveillance for neglected tropical diseases, parasites of veterinary and agricultural importance, roles of repetitive DNA elements in parasitic organisms.

**Dr. Dennis Richardson** - invertebrate zoology

**Dr. Lise Thomas** - Structure and function of ion channel proteins using yeast and bacteria as model organisms.

Information about research currently being carried out by all Biological Science faculty can be found on the following weblink:

<https://cas360.qu.edu/department-of-biological-sciences-research/>.

## Contact Information

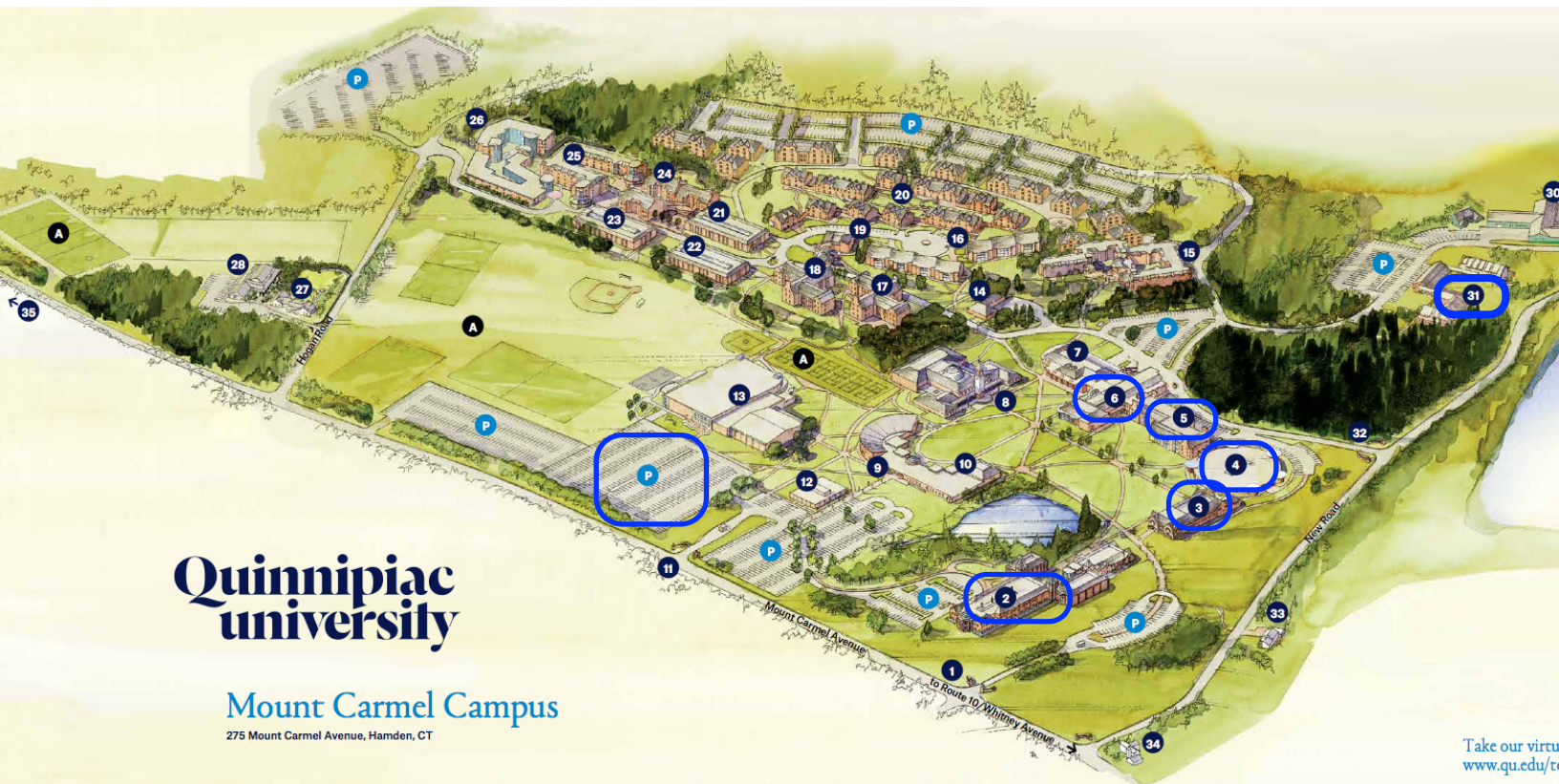
Dr. Alex de Lencastre, Ph.D.

Director of MCB Program

alexandre.deLencastre@quinnipiac.edu

203.582.5024

# Campus Maps



## Important locations on Mount Carmel & North Haven campuses

2= Center for Communication & Engineering (CCE)

3= Echlin Center (EC)

4 = Buckman Center (BC)

5= Tator Hall (TH)

6= Cafeteria

31= College of Arts & Sciences 1,2 or 3 (CAS)

P= Commuter Parking Lot/ North Lot

# North Haven Campus

370 Bassett Road, North Haven, CT



1 & 2= Classrooms

QU-P= Student parking