CELLULAR, MOLECULAR AND BIOMEDICAL SCIENCES PH.D.

All students must meet the Requirements for the Doctor of Philosophy Degree (http://catalogue.uvm.edu/graduate/degreerequirements/requirementsforthedoctorofphilosophydegree/)

OVERVIEW

The Cellular, Molecular and Biomedical Sciences (CMB) program trains students to:

- Become scholars in their field
- Conduct hypothesis-based research in an ethically responsible manner
- Think independently, creatively, and critically
- Effectively communicate as teachers, researchers, and scholars

The curriculum of the Cellular, Molecular and Biomedical Sciences program is designed to give students fundamental and applied skills to prepare them for future positions in scientific research and related fields. The core curriculum includes course work in biochemistry, cell biology, genetics, ethics, data analysis, and scientific communications. Students also enhance their writing skills through a grant-writing course and improve their presentation skills through participation in the CMB seminar series. Students are provided with at least 2 opportunities to serve as teaching assistants, typically in undergraduate laboratory-based courses.

During the 1st year, CMB students complete 3 research rotations with potential advisors, while taking the required core course work in Cell Biology and Biochemistry. Students generally fulfill their core course and comprehensive exam requirements in year 2.

SPECIFIC REQUIREMENTS

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Competitive applicants typically have evidence of strong course preparation and an undergraduate GPA of 3.00 or better. Foreign applicants to the CMB Program are required to have a satisfactory score on either the TOEFL (100 or higher) or the IELTS (7.0 or better). Prior research experience and strong letters of recommendation are expected of all competitive applicants.

Minimum Degree Requirements

Completion of course and research credits totaling 75 credits is required for the Ph.D. Maintaining a GPA of 3.00 or better in core courses and advanced electives is required.

Required core courses for all CMB students:

BIOC 301	General Biochemistry	3
BIOC 496	Advanced Special Topics (Critical Reading and Analysis)	2
CLBI 301	Cell Biology	3
CLBI 401	Critical Reading & Analysis	2
CLBI 394	Science Communication	3
CLBI 402	Biomedical Data Analysis	2
MPBP 330	Biomedical Grantsmanship	2
Genetics Requirement:		
MMG 211	Prokaryotic Molecular Genetics	3
or MMG 233	Genetics and Genomics	
or MMG 296	Advanced Special Topics	
Ethics Requirement:		
NSCI 327	Resp Conduct in Biomed Rsch	1
or MMG 396	Advanced Special Topics	
or PBIO 395	Graduate Special Topics	

Students must complete a minimum of 20 research credits (CLBI 491) and 30 course credits, and an additional 25 course or research credits. Once students have earned 75 credits, they register for continuous registration GRAD 901, GRAD 902 or GRAD 903, as appropriate.

Additional program requirements include service as a graduate teaching assistant (GTA) twice during the 1st two years, weekly attendance at the CMB seminar series, annual presentation of research progress within the CMB seminar program starting in the second year, and annual meetings with the student's dissertation studies committee beginning in the 2nd year.

Comprehensive Examination

The comprehensive examination is a tool to evaluate the progress of each student and ensure that they are prepared to proceed toward the doctorate degree. All parts of the qualifying examination will be evaluated in a manner to avoid bias and maintain uniformity of assessment. The examination will determine whether the candidate:

1. Has acquired an adequate academic background through required course work and electives
2. Can analyze and interpret data and scientific ideas
3. Can apply logical thought to synthesize diverse facts and concepts
4. Understands and meets the intellectual demands of the degree program

The comprehensive examination is structured to provide assessment in oral and written formats. The 2 phases of the exam occur at distinct times during training, and both must be satisfactorily completed to advance to doctoral candidacy.

Phase I is an oral examination that tests students on their ability to synthesize and integrate scientific knowledge learned from first-year

laboratory rotations, CMB seminar and core courses. The oral exam must be completed by June 30 of the 1st year. Phase II is a written grant proposal based on the student's thesis research project that must be completed by August 31 of the 2nd year. The Phase II exam will provide the student with a detailed plan for conducting their dissertation research. The comprehensive exam is organized and conducted by the CMB Education Committee.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Maintain a 3.00 GPA and successful completion of the comprehensive exam, as outlined in the CMB Program Handbook.