Cellular, Molecular and Biomedical Sciences Ph.D.

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

Overview

The 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 two opportunities to serve as teaching assistants, typically in undergraduate laboratory-based courses.

During the first year, CMB students complete three 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 two.

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:

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<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOC 301</td>
<td>General Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 302</td>
<td>General Biochemistry</td>
<td>3</td>
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Genetics Requirement:

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MMG 211</td>
<td>Prokaryotic Molecular Genetics</td>
<td>3</td>
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Ethics Requirement:

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<th>Credits</th>
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<tr>
<td>NSCI 327</td>
<td>Resp Conduct in Biomed Rsch</td>
<td>1</td>
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<tr>
<td>or MMG 295</td>
<td>Advanced Special Topics</td>
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<tr>
<td>or PBIO 295</td>
<td>Advanced Special Topics</td>
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Students must complete a minimum of twenty research credits (CLBI 491) and thirty course credits, and an additional twenty-five 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 first 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 second 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 two 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 31st of the first year. Phase II is a written grant proposal based on the student’s thesis research project that
must be completed by August 31st of the second 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.