CELLULAR AND MOLECULAR BIOLOGY, PH.D.

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (http://guide.wisc.edu/graduate/#policiesandrequirementstext), in addition to the program requirements listed below.

MAJOR REQUIREMENTS

MODE OF INSTRUCTION

Face to Face	Evening/ Weekend	Online	Hybrid	Accelerated
Yes	No	No	No	No

Mode of Instruction Definitions

Accelerated: Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

Evening/Weekend: Courses meet on the UW–Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

Face-to-Face: Courses typically meet during weekdays on the UW-Madison Campus.

Hybrid: These programs combine face-to-face and online learning formats. Contact the program for more specific information.

Online: These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

CURRICULAR REQUIREMENTS

Requirement	Detail
Minimum Credit Requirement	51 credits
Minimum Residence Credit Requirement	32 credits
Minimum Graduate Coursework Requirement	26 credits credits must be graduate-level coursework. Details can be found in the Graduate School's Minimum Graduate Coursework (50%) policy (https://policy.wisc.edu/library/UW-1244 (https://policy.wisc.edu/library/UW-1244/)).
Overall Graduate GPA Requirement	3.00 GPA required. This program follows the Graduate School's GPA Requirement policy (https://policy.wisc.edu/library/UW-1203 (https://policy.wisc.edu/library/UW-1203/)).
Other Grade Requirements	n/a
Assessments and Examinations	Doctoral students are required to take a comprehensive preliminary/oral examination at the end of their second year. In order to complete their preliminary exam, students must have cleared their record of all Incomplete and Progress grades (other than research and thesis). Deposit of the doctoral dissertation in the Graduate School is required.
Language Requirements	No language requirements.
Graduate School Breadth Requirement	Doctoral students in the CMB program are not required to complete a doctoral minor or graduate/professional certificate, but may choose to.

REQUIRED COURSES

Eleven credits of coursework, not including 990 research credits, are required to complete the CMB course requirements. One course must be taken from the "core" list of molecular biology courses and one course must be taken from the "core" list of cell biology courses. The remaining credits can come from either the "core" or "elective" list of classes to bring the total number of credits to ten. In addition, one credit must be fulfilled through the required ethics course. All CMB course requirements must be completed by the end of the student's second year, before completing the preliminary exam and obtaining dissertator status.

Code	Title	Credits
Course Requirements [1]		
Molecular Biology Core		*3*
Choose one of the following:		
BIOCHEM/ GENETICS/ MD GENET 620	Eukaryotic Molecular Biology	
BIOCHEM/ GENETICS/ MICROBIO 612	Prokaryotic Molecular Biology	
ONCOLOGY/ PL PATH 640	General Virology-Multiplication of Viruses	
Cell Biology Core		*2-3*
Choose one of the following:		
BOTANY 860	Plant Cell Biology	
ZOOLOGY/ NEURODPT/ NTP 765	Developmental Neuroscience	
PATH 750	Cellular and Molecular Biology/ Pathology	
ONCOLOGY 703	Carcinogenesis and Tumor Cell Biology	
GENETICS/ CRB 710	Developmental Genetics	
GENETICS/ BOTANY/M M & I/ PL PATH 655	Biology and Genetics of Fungi	
Ethics Core		*1*

BIOCHEM 729	Advanced Topics	
ONCOLOGY 715	Ethics in Science	
SURG SCI 812	Research Ethics and Career Development	
Remaining credits can come from either the core or elective list of classes to bring the total number of credits to eleven.		
Elective Courses		*4-5*
B M E 510	Introduction to Tissue Engineering	
B M E 520	Stem Cell Bioengineering	
B M E/CBE 783	Design of Biological Molecules	
B M E/CRB 670	Biology of Heart Disease and Regeneration	
B M E 545	Engineering Extracellular Matrices	
B M E 556	Systems Biology: Mammalian Signaling Networks	
B M I/ COMP SCI 576	Introduction to Bioinformatics	
B M I/STAT 541	Introduction to Biostatistics	
B M I/STAT 877	Statistical Methods for Molecular Biology	
B M I 826	Special Topics in Biostatistics and Biomedical Informatics	
BIOCHEM/B M I/ BMOLCHEM/ MATH 609	Mathematical Methods for Systems Biology	
BOTANY/ BIOCHEM/ GENETICS 840	Regulatory Mechanisms in Plant Development	
BIOCHEM/ BOTANY 621	Plant Biochemistry	
BIOCHEM/ CHEM 665	Biophysical Chemistry	
BIOCHEM/ NUTR SCI 619	Advanced Nutrition: Intermediary Metabolism of Macronutrients	
BIOCHEM 630		
BIOCHEM 570	Computational Modeling of Biological Systems	
BIOCHEM 601	Protein and Enzyme Structure and Function	
BMOLCHEM 675	Advanced or Special Topics in Biomolecular Chemistry	
BOTANY/ ENTOM/ PL PATH 505	Plant-Microbe Interactions: Molecular and Ecological Aspects	
BOTANY/ PL PATH 563	Phylogenetic Analysis of Molecular Data	
CRB/ MEDICINE 701	Cell Signaling and Human Disease	
CRB 640	Fundamentals of Stem Cell and Regenerative Biology	
CRB 650	Molecular and Cellular Organogenesis	
F&W ECOL/ HORT/STAT 571	Statistical Methods for Bioscience I	
GENETICS/ HORT 550	Molecular Approaches for Potential Crop Improvement	
GENETICS/ CHEM 626	Genomic Science	
GENETICS/ BIOCHEM 631	Plant Genetics and Development	
GENETICS 633	Population Genetics	
GENETICS/ MD GENET 677	Advanced Topics in Genetics	
GENETICS 885	Advanced Genomic and Proteomic Analysis	
M M & I/PATH-BIO 528	Immunology	
M M & I 677	Advanced Topics in Medical Microbiology	
M M & I 740	Mechanisms of Microbial Pathogenesis	
MICROBIO 657	Bioinformatics for Microbiologists	
NEURODPT/NTP/ PSYCH 611	Systems Neuroscience	
NTP 670	Stem Cells and the Central Nervous System	
M M & I/PATH-BIO 750	Host-Parasite Relationships in Vertebrate Viral Disease	
MED PHYS 671	Selected Topics in Medical Physics	
MICROBIO/ BMOLCHEM 668	Microbiology at Atomic Resolution	
MICROBIO 607	Advanced Microbial Genetics	
NEURODPT/ NTP 610	Cellular and Molecular Neuroscience	
ONCOLOGY 675	Advanced or Special Topics in Cancer Research	
ONCOLOGY 778	Bioinformatics for Biologists	
OPHTHALM 750	Ocular Diseases of the Mammalian Vision System	
PATH 751	Biology of Aging	
PATH 803	Pathogenesis of Major Human Diseases	
PATH 807	Immunopathology: The Immune System in Health and Disease	
PATH-BIO 675	Special Topics	
ZOOLOGY 604	Computer-based Gene and Disease/Disorder Research Lab	
Research Credits		
A minimum of 51 credits taken in graduate level courses are required: the 11 above, and the remaining credits can be 990 research credits.		41
Total Credits		**51-53**

[1]

EXCEPTION: M.D./Ph.D. students are only required to take 3 credits from the Core Curriculum or the Elective Courses list.

[2]

EXCEPTION: M.D./Ph.D. students are not required to take an ethics course because they received this training in their M.D. courses.