

# BIOCHEMISTRY AND MOLECULAR BIOLOGY, SCM

## The Master of Science (ScM) Program Overview

The Department of Biochemistry and Molecular Biology (<https://publichealth.jhu.edu/departments/biochemistry-and-molecular-biology/>) offers two different master's degrees: The Master of Health Science (MHS) and the Master of Science (<https://publichealth.jhu.edu/academics/scm-dept-of-biochemistry-and-molecular-biology/>) (ScM). There are two ways to earn the ScM degree. Students can be admitted directly to the ScM program. Also, MHS students have the opportunity to transfer to the ScM program and continue in the second year after completion of the first-year coursework. In the second year, after the first year of coursework, students conduct laboratory research with one of the BMB primary appointment faculty members. The active labs with available space and appropriate projects for ScM students will vary from year to year but can include Drs. Bailey, Cai, Culotta, Kavan, Leung, Matunis, Nayar, Rebecca, Wan, Wang, and Weeraratna as well as BMB preceptors (i.e., non-BMB faculty with training privileges). The ScM degree work culminates in the writing of an ScM thesis (literature review and research report). Students start their research in June after their first year of coursework and then complete their research and thesis in the next spring-summer (~12-13 months). Questions about the ScM program can be directed to BMB-academics@jhu.edu. (BMB-academics@jhu.edu)

## Program Requirements

### Year 1

Code	Title	Credits
<b>Council on Education for Public Health Accreditation Required Courses</b>		
All of the following <b>must</b> be taken:		
PH.552.601	Foundational Principles of Public Health (1st & 3rd term)	0.5
PH.552.602	The Role of Quantitative Methods in Public Health (2nd term)	0.5
PH.552.603	The Role of Qualitative Methods and Science in Describing and Assessing a Population's Health (1st & 3rd term)	0.5
PH.552.604	Causes and Trends in Morbidity and Mortality (2nd term)	0.5
PH.552.605	The Science of Primary Secondary and Tertiary Prevention in Population Health (2nd term)	0.5
PH.552.606	The Critical Importance of Evidence in Advancing Public Health Knowledge (2nd term)	0.5
PH.552.607	Essentials of Environmental Health (1st term)	0.5
PH.552.609	Psychological and Behavioral Factors That Affect A Population's Health (1st & 3rd term)	0.5
PH.552.610	The Social Determinants of Health (2nd & 4th term)	0.5
PH.552.611	Globalization and Population Health (2nd & 4th term)	0.5
PH.552.612	Essentials of One Health (1st term)	0.5
<b>Departmental Required Courses</b>		

PH.120.600	Biochemistry I: Protein Structure and Enzyme Catalysis	3
PH.120.601	Biochemistry II: Major Metabolic Pathways	5
PH.120.602	Concepts of Molecular Biology (1st term)	4
PH.120.616	Advanced Concepts in Biochemistry, Cell and Molecular Biology (terms 1-4)	1
PH.120.624	Cancer Biology (4th term)	3
PH.120.872	Special Studies-Current Topics in BMB (pass/fail)	1
Select at least five of the following upper-level BMB courses:		15-18
PH.120.605	Genome Integrity (4th term)	
PH.120.606	Cellular Stress in Physiology and Disease (4th term)	
PH.120.608	Gene Editing, Therapy and Manipulation (3rd term)	
PH.120.612	The Chemical Biology of Drugs that Shape Public Health	
PH.120.613	Nucleic Acid Chemistry (3rd term)	
PH.120.614	Genetic Engineering for the Public's Health	
PH.120.620	Fundamentals of Reproductive Biology (1st term)	
PH.120.626	Principles of Cell Biology (2nd term)	
<b>Thesis Requirement</b>		
PH.120.860	Thesis Preparation (3rd term, pass/fail)	2
PH.120.870	Thesis in Biochemistry and Molecular Biology (4th term)	5
<b>Total Credits</b>		<b>44.5-47.5</b>

### Year 2

Code	Title	Credits
<b>Take all courses below in each term (1-4)</b>		
PH.120.820	Thesis Research Biochemistry	15
PH.120.822	Seminars in Research in Biochemistry and Molecular Biology	1

Course location and modality is found on the BSPH website (<https://publichealth.jhu.edu/courses/>).

The majority of ScM students who start their research in June will finish their degree work in May of the next year. However, sometimes students continue their research for an additional month or two (i.e., until June or July). This is because it takes 12-13 months to accumulate enough data for the ScM thesis, write the thesis, and have it approved by the adviser and thesis reader.

## Academic Year 2025-26

### Due Dates for Summer Conferral (August 22, 2025)

#### JUNE 6, 2025

- All academic requirements for the degree (except for submission of the thesis) have been fulfilled

#### JUNE 13, 2025

- Appointment of Thesis Readers form has been submitted to BSPHExams@jhu.edu

#### AUGUST 22, 2025

- Thesis Acceptance Letters have been submitted to BSPHExams@jhu.edu

- BSPHExams@jhu.edu has received approval of a submitted electronic copy of the dissertation has received from the Sheridan Library

## Due Dates for Fall Conferral (December 31, 2025)

### OCTOBER 10, 2025

- All academic requirements for the degree (except for submission of the thesis) have been fulfilled

### OCTOBER 24, 2025

- Appointment of Thesis Readers form has been submitted to BSPHExams@jhu.edu

### DECEMBER 12, 2025

- Thesis Acceptance Letters have been submitted to the BSPHExams@jhu.edu
- BSPHExams@jhu.edu has received approval of the submitted electronic copy of the dissertation has received from the Sheridan Library

## Due Dates for Spring Conferral (May 21, 2026)

### FEBRUARY 6, 2026

- All academic requirements for the degree (except for submission of the thesis) have been fulfilled

### march 13, 2026

- Appointment of Thesis Readers form has been submitted to BSPHExams@jhu.edu

### May 1, 2026

- Thesis Acceptance Letters have been submitted to BSPHExams@jhu.edu
- BSPHExams@jhu.edu has received approval of the submitted electronic copy of the dissertation has received from the Sheridan Library

Course location and modality is found on the BSPH website (<https://publichealth.jhu.edu/courses/>).

## Presentation of Work at Departmental Retreat and Other Venues

ScM students are *required to present their work at the spring BMB ScM Research Day*. ScM students are also encouraged to present their work at other venues, including the departmental colloquium, multi-lab group meetings, and regional/national scientific meetings.

## Appointment of Thesis Readers

The ScM thesis must be read and approved by a committee of two readers. **Be advised that the appointment of readers for an ScM thesis is more formal than that of the MHS thesis** and includes a form (<https://my.jhsph.edu/Offices/StudentAffairs/RecordsRegistration/MastersCandidateInformation/Documents/ScM%20-%20MBe%20Appointment%20of%20Thesis%20Readers%20Form.pdf>) that must be submitted to the Office of Records and Registration by a specific deadline.

Or visit the website ([https://my.publichealth.jhu.edu/\\_login/Wsb.Jhsph.Login.aspx?ReturnUrl=%2f\\_layouts%2f15%2fAuthenticate.aspx%3fSource%3d%252F&Source=%2F](https://my.publichealth.jhu.edu/_login/Wsb.Jhsph.Login.aspx?ReturnUrl=%2f_layouts%2f15%2fAuthenticate.aspx%3fSource%3d%252F&Source=%2F)).

- At the main page, select the *Offices* tab,
- pull down to *Student Affairs*

- On the main Student Affairs page, select *Records and Registration* (under the heading "Offices")
- Scroll the bottom of this next page to "Other Areas" and select "*Masters Candidate Information*"
- Look for the document, "**ScM - MBe Appointment of Thesis Readers Form**"  
*Regardless of anticipated degree completion, all ScM students are encouraged to submit the Appointment of Thesis Readers Form in mid-February.*
- The ScM thesis reader committee consists of two members, one of whom is the student's adviser. The second member **must** be a full-time (professor, scientist, lecturer, instructor of any rank), emeriti, or adjunct faculty from any BSPH or JHU department, including the student's sponsoring department. However, only one adjunct may serve on the committee of thesis readers. Visiting faculty, Affiliate/Senior Affiliate, and Public Health Practitioners may not serve on the committee.

The deadlines for Academic Year 2025-2026 will be made available here (<https://my.jhsph.edu/Offices/StudentAffairs/RecordsRegistration/MastersCandidateInformation/Pages/default.aspx>).

## Completion and Submission of the ScM Thesis

**Be advised that submission of the ScM thesis is a more structured and formalized process than is submission of the MHS thesis.**

Students must remain registered until their final thesis is submitted and until all of their committee members' letters are on file in the Office of Records and Registration. Students also must be registered for at least *two consecutive terms* leading up to submission of the thesis and completion of the ScM degree.

**Non-US citizens/permanent residents:** It must be ensured that student visas will be current throughout the completion of the degree. If students will not be completing the program as originally scheduled and their visa is expiring, please note that it is crucial to be in contact with the Office of International Services (<https://ois.jhu.edu/>) (OIS) to stay on top of any impending deadlines regarding the visa, potential application for Optional Practical Training (OPT), etc. It is essential for students to keep their supervisor and BMB administration informed.

## Thesis Preparation and Submission Process

- The thesis must be formatted according to University specifications:
  - Basic information (<https://www.library.jhu.edu/library-services/electronic-theses-dissertations/>)
  - Formatting the thesis (<https://www.library.jhu.edu/library-services/electronic-theses-dissertations/formatting-requirements/>)
  - It will also be helpful to look at past ScM theses. The BMB McCollum Reading Room (W8017) has copies of past students' theses. Students' advisers may have copies from past students as well.
- ScM students work closely with their advisers to write the ScM thesis. The ScM adviser will read drafts, and ultimately, the ScM adviser must approve the version that is distributed to the other thesis reader.
- Once the thesis is acceptable to the adviser and approved by the adviser for distribution, the student then provides a copy of the ScM thesis to the other thesis reader.
  - It is recommended that students give their readers this near-final, adviser-approved version of their thesis *approximately three*

*weeks before the date needed to submit the final copy.* This gives the readers plenty of time to read the thesis, provide critique, and for students to revise their thesis in response to the feedback as necessary.

- The student must incorporate recommended thesis revisions from the thesis readers.
- The final thesis, incorporating the thesis readers' revisions, is then submitted by the student electronically to JHU Sheridan libraries through the ETD process (ETD = Electronic Thesis and Dissertation (<https://www.library.jhu.edu/library-services/electronic-theses-dissertations/>)).
- The final thesis must be submitted and verified by the indicated deadlines for degree conferral. ***Be advised that sometimes verification can take a couple of days, so students do not want to wait right up to the very last day.***
- The two members of the thesis reader committee must submit thesis acceptance letters to the Office of Records and Registration by the indicated deadlines for degree conferral.
- **For exact deadlines for each of the documents, be sure to check the** Office of Records and Registration site ([https://my.publichealth.jhu.edu/\\_login/Wsb.Jhsph.Login.aspx?ReturnUrl=%2f\\_layouts%2f15%2fAuthenticate.aspx%3fSource%3d%252F&Source=%2F](https://my.publichealth.jhu.edu/_login/Wsb.Jhsph.Login.aspx?ReturnUrl=%2f_layouts%2f15%2fAuthenticate.aspx%3fSource%3d%252F&Source=%2F)) **for the dates.**

View the Academic Calendar (<https://e-catalogue.jhu.edu/public-health/academic-calendar/>).

## Program Policies

For a full list of program policies, please visit the Department of Biochemistry and Molecular Biology's For Current Students (<https://publichealth.jhu.edu/departments/biochemistry-and-molecular-biology/info-for-current-students/>) page. Here, students can find the link to the most recent ScM in Biochemistry and Molecular Biology Student Handbook.

Upon successful completion of the Master of Science in Biochemistry and Molecular Biology, students will have mastered the following competencies:

- Examine current and future issues in public health by characterizing the fundamental concepts in biology with emphasis on energy needs at the cellular level and metabolism.
- Examine current and future issues in public health related to molecular biology and biotechnology.
- Examine current and future issues in public health related to one of the leading causes of death, cancer.
- Examine current and future issues in public health related to current research and careers in the 21st-century biomedical field.
- Demonstrate examples of current research, policy, or practice in the field of biochemistry and molecular biology

According to the requirements of the Council on Education for Public Health (CEPH), all BSPH degree students must be grounded in foundational public health knowledge. Please view the list of specific CEPH requirements by degree type (<https://e-catalogue.jhu.edu/public-health/ceph-requirements/>).