

SCHOOL OF MEDICINE - GRADUATE STUDIES

Program in Biomedical Sciences

2023-24 Academic Guidelines



Contents

| | |
|--|----|
| Checklist..... | 3 |
| General Timeline..... | 4 |
| Required PBMS Graduate Courses for year one..... | 5 |
| Academic Mentors..... | 6 |
| First Year Lab Rotations..... | 6 |
| Dissertation lab selection/ Hub Selection..... | 7 |
| First Year Rotation Presentations..... | 7 |
| PBMS/ PBMS Hub Seminars..... | 8 |
| PBMS Hub Journal Clubs..... | 8 |
| Yearly Retreat..... | 8 |
| Hub Specific Suggestions..... | 9 |
| Dissertation Advisory Committee..... | 10 |
| PBMS Qualifying Exam..... | 11 |
| MD-PhD Requirements..... | 17 |
| Academic Progress..... | 17 |
| GPA and Academic Probation..... | 18 |
| Training in the Responsible Conduct of Research..... | 18 |
| Finalizing Ph.D. Requirements..... | 18 |
| Ethical and Professional Behavior..... | 20 |
| Funding..... | 20 |
| Time Limit for Completing Degree Requirements..... | 21 |
| Dismissal..... | 21 |
| Grievances..... | 21 |
| Exceptions..... | 21 |
| PBMS Admissions Policy..... | 21 |
| Additional Policies..... | 21 |
| Helpful Links..... | 22 |
| Program Contacts..... | 22 |

The following guidelines apply to all students who enter the Program in Biomedical Sciences (PBMS) and comply with the guidelines and policies set forth by the School of Medicine Graduate Studies, and PBMS By-Laws.

Checklist

- Earn a Minimum of 135 program specific credit hours that include:
 - Minimum of 27 credits of dissertation research
 - Research Methods, Scientific Logic and Ethics
 - Pass a minimum of 3 credits in quantitative skills – eg. Biostatistics
 - Minimum of 8 Credits in Basic Biomedical Content courses
 - Minimum of 9 credits in Communication and Professional Development, suggested to include:
 - Data Rigor and Reproducibility
 - Short Scientific Talks
 - Scientific Writing
 - Introductory Scientific Writing
 - Scientific Writing
 - Pass all milestones
 - 2 research critique papers
 - Qualifying exam
 - Submit a paper
 - Write and defend a dissertation
 - Participate in a research community or T32 sponsored seminar series except the last enrolled term
 - Minimum of 11 credits for Journal club
 - Attend 3 seminars a year outside their current research community seminar/ journal club
 - Complete all activities and pass any course identified in the educational plan that is created with the research and academic mentors and approved by the dissertation advisory committee. Advanced electives can include any 500- or 600-level course with prefix BCMB, BEHN, BEST, BME, BMI, BMSC, CANB, CELL, CONJ, MBIM, MGEN, NEUS, PHPH.
 - Write and defend a dissertation

General Timeline

Year 1:

- Register for a minimum of 9 and maximum of 16 credits per term
- Meet with Academic Advisors a minimum of 5 times
 - 2x Fall- for onboarding, and to discuss course selections and possible rotations
 - 2x Winter- to review rotation experiences
 - 1x Spring- to discuss PBMS Research Hub choice.
- Fall Term: Complete PBMS Core Course requirements
- Winter Term: Complete three laboratory rotations and attend program seminars and journal clubs that align with lab rotation
- Spring: Choose a dissertation advisor and attend Research Hub affiliated seminars, events, and journal clubs. Complete BMSC 611 Introductory Scientific Writing
- Summer: Give one presentation based on a rotation in the Short Scientific Talks course

Year 2:

- Register for a minimum of 9 and maximum of 16 credits per term
- Fall term: Meet with Academic Mentor and Research Mentor to form a Dissertation Advisory Committee (DAC). At least one DAC meeting should occur before the Qualifying Exam, and an additional meeting may be scheduled as needed
- Complete PBMS advanced electives
- Attend all PBMS sponsored seminars
- Attend Research Hub affiliated seminars
- Complete BMSC 610 Data Rigor and Reproducibility
- Complete BMSC 620 Biostatistics or comparable
- Complete BMSC 612 Writing a Fellowship Proposal Scientific Writing (Spring Term)
- Pass the Qualifying Exam (Summer Term)

Year 3 and up:

- Meet with the DAC every six months to report on academic progress
- Continue educational training and research leading to the Ph.D. dissertation
- Complete PBMS Hub communication and professional development work
- Register for and attend the chosen PBMS Hub seminar series and journal club

Required PBMS Graduate Courses for year one

It is imperative that students discuss their academic plan with their Academic Mentor before registering for classes.

| Term | Course | Completed | |
|---------------|--|-----------|--|
| Fall | Faculty Auditions | _____ | |
| | BMSC 665 Scientific Logic | _____ | |
| | BMSC 664 Research Models and Methods | _____ | |
| | MGRD 650 The Practice and Ethics of Science | _____ | |
| | <i>Choose Two of Three (see Academic Mentor):</i> | | |
| | BMSC 661 Structure & Function Of Bio Molecules | _____ | |
| | BMSC 662 Genetic Mechanisms and Bioregulation | _____ | |
| | BMSC 663 Cellular Biology | _____ | |
| | <i>Introductory courses (see Academic Mentor)</i> | | |
| | BMSC 666 Chemical Biology Innovators | _____ | |
| | BMSC 667 Principles of Physiology | _____ | |
| | BMSC 668 Molecular Biophysics and Structural Bioinformatics | _____ | |
| | BMSC 669 Fundamentals of Immunology | _____ | |
| Winter | BMSC 601 Research Rotations (variable credits) | _____ | |
| | BMSC 607 Seminars within Research Community | _____ | |
| | DEPT 605 Journal Club within Research Community | _____ | |
| Spring | BMSC 601 Research (variable credits) | _____ | |
| | BMSC 611 Introductory Scientific Writing | _____ | |
| | DEPT 605: Journal Club (variable credits, see Academic Mentor) | _____ | |
| | DEPT 607: Seminar (variable credits, see) | _____ | |
| Summer | BMSC 601 Research (variable credits) | _____ | |
| | BMSC 660 Short Scientific Talks (1) | _____ | |

NOTES TO COURSE REQUIREMENTS

1. Students choose a journal club offered by one of the PBMS affiliated research hubs during Spring term of Year 1. You are encouraged to register for a journal club in the hub which best aligns with your research and professional goals.
2. Students choose a seminar series offered by one of the PBMS affiliated research hubs during Spring term of Year 1. You are encouraged to register for a seminar series in the hub which best aligns with your research and professional goals.

Academic Mentors

Academic Mentors are a critical resource for our students. Academic Mentors contribute formally and informally to graduate student training. They advise first year students on their Fall core courses, rotation lab choices and transitioning into their chosen research lab. They develop an individualized educational plan in conjunction with the student and their Research Mentor. They track student progress through individual meetings with the student and review of DAC reports.

First Year Lab Rotations

All PBMS students undertake research rotations in three different laboratories during the Winter term. Students are eligible to rotate in PBMS member faculty labs only. Information used to identify labs of interest for research rotations can be obtained by attending faculty auditions in the Fall term, speaking with potential mentors, Academic Mentors, faculty and students, and by viewing faculty profiles online. Rotation arrangements are made by the student directly with the mentor, but all students must comply with the following requirements when arranging rotations.

Requirements for Requesting a Research Rotation:

1. PBMS faculty status for the potential research mentor must be confirmed by the PBMS office prior to arranging a rotation. It is the student's responsibility to inquire about PBMS faculty status in advance of arranging a rotation.
2. Ideally two rotations are identified by the end of Fall term.
3. Proposed rotations must be approved in advance by the Academic Mentor and the PBMS Director.
4. The PBMS Pre-Rotation form must be completed by the prospective faculty mentor. This is initiated by the student.
5. The completed Pre-Rotation form must be submitted to PBMS via email (pbs@ohsu.edu) or appropriate online form by the first day of the rotation.

Students are strongly encouraged to consider options for rotations in advance. Students should discuss the specifics of their rotation project with the research mentor prior to rotating. The ultimate purpose of lab rotations is for the student to identify a dissertation mentor. Rotations should be chosen carefully and should only be undertaken with faculty who are able to support the student during their dissertation study, and who can provide a well-defined project as the basis of the dissertation.

Students are expected to spend a minimum of three hours per week in the lab for every research credit hour. For example, if a student is registered for 8 credits of research they should spend a

minimum of 24 hours per week engaged in lab activities to familiarize themselves with research projects and the laboratory environments of PBMS faculty. In consultation with rotation mentors, students are strongly encouraged to establish expectations prior to each rotation.

Each student and faculty rotation mentor will complete a written evaluation of the rotation that will be shared with student advisors, program directors, and Qualifying Exam committees. Students and their rotation mentors are required to meet to discuss the evaluation of the student's performance at the end of the rotation. Students' evaluations of mentors will be sent to the student's Academic Mentor, but held by the PBMS office for one year prior to release to mentors. This is to encourage an honest and constructive evaluation of the mentor and the rotation experience. Evaluations will be kept in the student file by the PBMS Coordinator.

Dissertation lab selection/ Hub Selection

After successful completion of three research rotations, the decision of a student to enter into a laboratory to pursue dissertation research is dependent upon a joint agreement between the faculty member and the graduate student, and is subject to approval by the Chair/Director of the PI's department/institute and the PBMS Director. Conditional approval based on an agreement that there will be a co-mentor will be at the discretion of the dissertation advisor and the PBMS Director. The Research Mentors must be members of both School of Medicine Graduate Faculty and PBMS faculty.

PBMS faculty may recruit up to two students in an academic year. Recruitment of the second student must be approved by the Chair/Director of the PI's department/institute and the PBMS Director.

Students and Research Mentors must discuss mutual expectations around mentorship per the [Policy on Mentor – Student Discussions](#).

It is the student's responsibility to secure a position with a research mentor, selected from one of the three rotations. A fourth rotation is discouraged, but under very rare situations can be allowed at the discretion of the Program Director. Once a mentor has agreed to accept a student into their lab the PI and/or their Department take over funding responsibilities and the student notifies the Program Coordinator to initiate the Mentor Assignment Form. This process should be completed at least two weeks prior to the Summer term.

First Year Rotation Presentations

In Summer term first year students take the required Short Scientific Talks course, BMSC 660, which provides guidance on giving short scientific talks and offers them the opportunity to

present their laboratory rotation experience in a formal setting. This course provides students with a speaking opportunity among their peers and a forum in which to ask probing questions during presentations. Presentations will be ten minutes in length followed by a five minute question and answer period. Students are strongly encouraged to practice their presentations with lab mates and seek input from their rotation mentors.

PBMS/ PBMS Hub Seminars

Students are required to attend PBMS Research Hub Seminars from Spring Term of Year 1 onwards. PBMS requires students to attend 3 seminars per year from various hubs. A wide variety of experts in the field visit campus throughout the year giving seminars that are open to all students. Flyers announcing visiting seminar speakers can be found posted campus-wide and member program coordinators and websites also have information about schedules for visitors. These seminars provide excellent opportunities for interaction with leading researchers and educators. Small groups of students are also invited to luncheons and dinners with visiting speakers.

PBMS Hub Journal Clubs

First year students are required to attend a PBMS Hub Journal Club beginning Spring Term of Year 1. Students are encouraged to choose a Journal Club in the Research Hub they are most interested in.

Yearly Retreat

Each Summer PBMS holds a yearly retreat for PBMS students and faculty. Activities during the retreat include: student presentations, awards presentations, workshops, guest lecturers, and social activities. Retreat attendance is required by first year students and strongly encouraged for advanced students.

Research Hubs

There are 6 research hubs in which students may participate and take coursework. Information on those hubs can be found on the PBMS website. Students are free to choose more than one hub or change hubs at any point.

The PBMS educational training plan is custom-built for each student based on their research project and trajectory. Students can take advanced electives from any 500- or 600 level course with the prefix BCMB, BEHN, BEST, BME, BMI, BMSC, CANB, CELL, CONJ, MBIM, MGEN, NEUS, PHPH.

The table below has courses recommended by the Hub Directors that would be most beneficial in preparing students to engage in research and work in that field of study. Additionally, the courses will help prepare students for Qualifying Exams in that field. We expect students to engage in conversation with their Academic Mentors and Research mentors about advanced electives that would be appropriate.

Hub Related Coursework

| Hub Suggestions Fall Year One | | | | | |
|---|--|---|---|--|--|
| D3 | IDI | ICB | GS | CP | BMSB |
| 661 Biochem | 661 Biochem | 662 Genetics | 662 Genetics | 661 Biochem | 661 Biochem |
| 663 Cell Bio | 663 Cell Bio | 663 Cell Bio | 661 Biochem | 663 Cell Bio | 663 Cell Bio |
| 662 Genetics | 669 Immunology | 669 Immunology | 663 Cell Bio | 666 Chem Bio or 667 Physiology | 668 Molecular Biophysics/Structural Informatics |
| alt: 669 Immunology | alt: 662 Genetics | | alt: 666, 667, or 668 | alt: 662 Genetics | alt: 662 Genetics |
| Recommended Hub coursework | | | | | |
| CELL 665 Development, Differentiation and Disease | At least one, preferably two: MBIM 608, 612, 615 | CANB/CELL 616-0 Advanced Topics in Cancer Biology | MGEN 622-0 Advanced Topics in Genome Sciences | BMSC 666-0 Chemical Biology Innovators | |
| | | Cell/CANB616-0 Advanced Topics in Cancer Biology | | PHPH 667-0 Organ Systems | |
| Other suggested Hub coursework | | | | | |
| CELL/CANB 613A-O Tissue Biology | BMSC 669-0 Fundamentals of Immunology | CELL 665-0 Development, Differentiation and Disease | MGEN 623-0 Genetic Basis of Human Disease | PHPH 669-0 Interface of Chemistry and Physiology | BCMB 618-0 Biomolecular Design: How Structure is related to Function |
| CELL 615/NEUS 637 Advanced Topics in Developmental Neuroscience | MBIM 608-0 Advanced Virology | BMSC 669-0 Fundamentals of Immunology | MGEN 624-0 Gene and Cell Therapy | NEUS 624-0 Cellular Neurophysiology | BCMB 620-0 Biochemical & Biophysical Properties of Membranes |

| | | | | | |
|---|--|---------------------------------|---|--|--|
| CELL/CANB 613B-0 Current Topics in Tissue Biology | MBIM 612-0 Advanced Immunology | CELL/CANB 613A-0 Tissue Biology | MGEN 625-0 Epigenetics & Reprogramming | NEUS 625-0 Cellular and Molecular Neurobiology | BCMB 630/PDX W4-0 Advanced Molecular Biophysics |
| CELL 618-0 Mechanisms of Development | MBIM 615-0 Dynamic Interface Between Pathogen and Host | | MGEN 620-0 Genetic Counseling (course being updated & title may change) | NEUS 627-0 Systems neuroscience | BMSC 668-0 Molecular Biophysics and Bioinformatics |
| BMSC 662-0 Genetic Mechanisms and Bioregulation | | | MGEN 611-0 Departmental Grand Rounds | NEUS 626-0 Neurobiology of Disease | |
| | | | Cell/CANB616-0 Advanced Topics in Cancer Biology | PHPH 617 Drug Discovery & Development | |
| | | | | PHPH621-0 The Visual System | |
| | | | | PHPH 614-0 Neurophysiology /Pharma Pain | |
| | | | | NEUS 643-0 Stat Image Analysis Neuro | |
| | | | | NEUS 623-0 Neurobiology of Disease | |

Dissertation Advisory Committee

DAC Formation: A DAC should be assembled and begin meeting at the beginning of a student's second year (preferably in September or October). The rationale for this is to give the student advice earlier in their graduate career concerning research, coursework, and preparing for the Ph.D. Candidacy Exams. Students should assemble their DACs, keeping in mind that the committee should be composed of four faculty members (including their mentor), and should include as diverse a faculty membership as possible, so as to get advice from a multidisciplinary committee. Specific OHSU rules for the composition of DACs are listed below.

DAC membership requires approval from the PBMS Graduate Program Director and Associate Dean of Graduate Studies, and will include:

- At least four faculty members (including the student's Research Mentor) with expertise in one or more aspects of the student's project and who are familiar with the requirements of the graduate program for completion of a Ph.D. Students (in consultation with their Research Mentor and Academic Mentor) may request specific faculty to serve on their DAC.
- A majority of DAC members must be members of the School of Medicine Graduate Faculty. OHSU faculty from outside the Graduate Faculty may be included.
- One member may be from outside the university, but their appointment requires approval by the Associate Dean for Graduate Studies (the Program Director should include a brief CV and short explanation of non OHSU-faculty expertise on the committee to the Associate Dean).
- No more than two DAC members may lack any DAC experience and at least one member must have been on a DAC for a graduate student.
- DAC Chair: One DAC member, not the mentor, with significant experience in mentoring graduate students, who has served on a DAC before.
- DAC members may be added or removed with the approval of the Academic Mentor, Program Director and Associate Dean of Graduate Studies. Following the change, the DAC composition will still adhere to the above requirements.

Typically, DAC members will be invited to serve as part of the student's Oral Exam Committee.

Student Responsibilities: The student must meet every six months with their Dissertation Advisory Committee. Following completion of the third year, the student may meet more frequently on the recommendation of his/her committee.

- It is the responsibility of the student to schedule and coordinate the meetings.
- The student must prepare a written report of progress, on the appropriate form, to be submitted a week before the meeting to their DAC Chair and committee members.
- The student is expected to present a PowerPoint presentation summarizing goals, progress, and future plans.
- The student is expected to write a summary of the meeting and the plans for future training and research on the appropriate form, following discussion with the committee chair.
- The student will submit the completed form through the SOM Graduate Studies link.

PBMS Qualifying Exam

Overview and Mission:

The QE tests the student's readiness to conduct dissertation-level research. The QE will evaluate a student's ability to apply their knowledge to critically review literature, identify gaps in knowledge, craft a testable hypothesis and apply the scientific process. It serves as a unique

experience for the student to improve their ability to initiate and prepare an independent research proposal. Most importantly, the QE is an opportunity to dive deep into an area of research closely aligned with the student's main project with the freedom to explore new directions.

Eligibility: To be eligible to take the PBMS Qualifying Examination (QE), students must have successfully completed all coursework required in the first two years of the PBMS curriculum. Students may not take the qualifying examination if they are on academic probation or if an incomplete grade remains on their transcript.

Format: The QE consists of a written and oral component and is conducted by a Qualifying Exam Committee (QEC). The candidate must pass both the written and oral portions of the examination in order to pass. The written component will be in the format of an NIH-style NRSA grant proposal on a topic aligned with their dissertation research. The oral component will consist of a 20-30 minute presentation by the student on the topic of the written proposal. Members of the student's QEC will ask the student a series of questions on the proposal and related scientific areas.

Guidelines for the PBMS Qualifying Exam topic:

The topic should be related to the student's thesis research, so that the student becomes immersed in literature relevant to his or her dissertation project early in graduate training.

The proposed project should be an original idea that is innovative and significant to research in the field.

The proposed project should not be a project that has been proposed for funding by the Research Mentor or other lab members. **If the project is an extension of ongoing studies in the lab, it should be a significant and meaningful departure into new areas initiated by the student.** Students and their Research mentors should consult with the Program Director in these cases.

Students should bear in mind that this is an academic exercise, and specifically an exam that will determine advancement to Ph.D. candidacy. **Since it is independent of their research project, the hypothesis tested can be based on work previously published in the field.** Based on the literature, the student can identify the gap in prior knowledge and key supporting papers that underly the hypothesis tested.

Examples:

Student A is studying the host response to Salmonella infection, in particular looking at the role of autophagy. The student's QE proposal investigates how a different intracellular

pathogen, M. tuberculosis modulates the endosomal network. (Theme – cellular microbiology)

Student B is studying the structure and function of a GPCR involved in cannabinoid sensing. The student's QE exam investigates the function of an arrestin in a separate signal transduction pathway eg photosensing. (Theme – Signal transduction)

Student C is studying acute myeloid leukemia. For the QE, the student tests a hypothesis based upon an AML RNAseq dataset from another lab that an immune sensing pathway identified as upregulated in an correlates with increased disease. (Theme- cancer biology)

Qualifying Examination Committee involved in the administration of PBMS Qualifying Examinations (QEC - 5 members): This committee is responsible for administering a specific qualifying examination and is appointed by the Program Director. All panel members will be members of PBMS. Each of the five members of the QEC will participate in the examination process and vote on the outcome. The student's Research Mentor may NOT be appointed to the panel and may NOT attend the qualifying examination. The Research Mentor may NOT attend sessions when the panel privately discusses the student's performance, except at the unanimous invitation of the panel. The QEC will be responsible for evaluating the written and oral components of the examination, for determining the outcome, and for identifying any requirements that a student must complete in the case of a conditional pass. Each student will have their own QEC, though PBMS faculty may serve on multiple panels.

Role of Research Mentor and Other Faculty:

The PBMS Program expects that students will continue to perform research and make academic progress while preparing for the Qualifying Exam (QE), to include participation in lab meetings, journal clubs, and seminars. That being said, Students and Research Mentors are encouraged to have a frank conversation about expectations for any reductions in time spent in lab.

To facilitate an objective examination, the student's Research Mentor is not permitted to edit or comment on the written proposal. Neither is the Research Mentor, nor any other faculty member, permitted to coach the student in a rehearsal of their oral presentation.

The Research Mentor will receive a copy of the exam one week before the oral exam. They must provide a letter indicating whether the ideas presented are original and will describe in specific detail the role of the advisor and of the student in the development of the hypothesis and research plan in this proposal. The Research Mentor must confirm that they have NOT contributed to the written portion of the exam, and that the student has NOT used any of the Research Mentor's prose within the proposal. The QEC has two weeks from receipt of the written

proposal and Research Mentor letter to request more information from the Research Mentor if deemed necessary.

The Research Mentor should not attend the QE.

Responsibilities of the student:

Students are expected to develop their project ideas independently. Students may discuss topics and proposed experiments with all sources (fellow students, post-doctoral fellows, faculty other than their Research Mentor, and visiting scientists). This will be particularly useful in assessing the feasibility of proposed studies.

Students may also seek general assistance in scientific writing and proofreading. However, it must be remembered that the written proposal is an examination, and must represent the student's original prose and development of the research topic.

Students are expected to adhere to established guidelines for professional ethical conduct in the preparation of their QE proposal topics.

Timeline and description: The following steps are required prior to completing the QE during Summer term of Year 2. Extension of deadlines for any reason will only be considered by written request to the PBMS Director.

1. April 15 - Students submit a one-page, Specific Aims page to their Academic Mentor and the Program Director. Students should also submit a short paragraph describing their current research project. The Program Director in consultation with the Academic Mentor will select the QEC for each student.
2. May 15 – Students will be informed by the PBMS Program Director who their QEC members are. The Academic Coordinator organizes a date within July and room reservation for the oral examination in consultation with student and his/her QEC.
3. The QEC Chair sends the Specific Aims page to the QEC committee and obtains input. The QEC Chair then notifies the student in writing by June 1 of any weaknesses or specific suggestions for improvement to their proposal. This feedback will also be sent to the Program Director.
4. July – QE occur.
5. **At least one week prior to the Oral Exam** – Student submits a final written proposal to the QEC and their Research Mentor.
6. **Prior to the Oral Exam** – The Research Mentor reviews the submission and submits a letter to the QEC indicating whether the proposal is the work of the student and describing their role during preparation of the proposal (see “Role of Research Mentor and Other Faculty” above).

7. **At least ten days before the beginning of Fall term** – Qualifying examinations completed.

Missing any of the QE deadlines will impact the scoring and outcome of the QE.

Format of Written Proposal: The proposal shall be written following current general guidelines of a NRSA application. It is the student's responsibility to check on the guidelines, which are available on the NIH website. It shall consist of a hypothesis-driven series of experiments bearing directly on the question or hypothesis of the proposal, with a discussion of probable outcomes, interpretations and alternative approaches. The proposal shall be no longer than 7 pages, including figures, and References (single-spaced; 1 page for the specific aims section and 6 pages for the Research strategy, no limit for References).

Format of Oral Examination: The oral examination will probe the breadth of the student's knowledge and also the depth of the student's understanding of his/her research proposal. Students are expected to begin the oral examination by giving a short (20-30 minute), formal presentation summarizing the written proposal. Audio-visual aids may be used during the summary of the proposal. During the oral examination by the panel, the use of prepared visual aids, textbooks, or other reference material is not permitted. Slides and figures from the oral summary may be referred to if they are the subject of a question from the exam panel.

Questions from the Examination Panel should focus primarily on issues pertaining to the proposal; however, the student is responsible for all areas of coursework that have been covered during the first two years of graduate study. Therefore, students also should expect questions on general knowledge in addition to questions relating to the scientific background pertinent to their areas of specialization, as well as more general issues related to the proposed experiments. Students may be asked about the choice of methodologies, their relative advantages and disadvantages, and potential alternative strategies (when appropriate). Students will be expected to understand and be ready to explain the scientific basis of technical methods they intend to employ. The student should be prepared to discuss the rationale for the proposed study, the strengths and limitations of the proposed experimental strategies, and potential pitfalls and alternatives.

Preparation for the Oral Examination: Students should be thoroughly familiar with key historical and background publications that provide the foundation for their proposal, as well as any current literature that directly pertains to their specific aims. In addition, students are encouraged to review the more general areas of cellular and molecular biology that provide the conceptual framework for their proposal. Once a student has submitted their final written proposal to their QEC, they may contact panel members for guidance in preparing their oral exam presentation.

Outcomes: The outcome will be decided by majority vote of the QEC and be recorded on the PBMS Qualifying Examination form. The form shall be signed by all voting members of the examination panel and returned promptly to the PBMS office. PBMS will inform students of the outcome immediately after the results are received. Possible outcomes include:

Pass –The student passes both the written and oral examination. In certain circumstances, the QEC may identify specific areas of weakness that the student needs to address during subsequent dissertation effort. This information will be communicated in writing to the student, Research Mentor, and PBMS by the chair of the examination panel.

Conditional Pass – A conditional pass may be given for either the written or oral components of the examination if significant deficits are identified. In this case, the student will be provided with specific requirements that must be met within a prescribed time frame. A variety of requirements may be assigned at the discretion of the QEC to correct a perceived deficit, including (but not limited to) additional coursework; revision of some or the entire written proposal; assignment of additional directed reading; preparation of a written review of a particular topic; or presentations in journal club formats. In the case of assigned additional coursework, the student must complete the assigned course(s) with a grade of “B” or better. Within one week of the oral examination, the Chair of the QEC will prepare a written statement to the student describing the conditions required to remove the conditional pass.

The Chair of the student’s QEC will be responsible for notifying the student, the student’s Research Mentor, and the PBMS office when the student has successfully completed the requirements of the conditional pass. Failure on the part of the student to complete the requirements within the prescribed time frame will be considered unsatisfactory progress, and the student may be subject to dismissal from the PBMS.

Fail – If substantial deficits are identified in either the written proposal or oral examination, the student fails the Qualifying Examination. Within one week of the examination, the chair of the Examination Panel will provide a written statement to the student, the Research Mentor and the PBMS office, describing the deficiencies that led to failing the qualifying examination. The student may petition the QEC to take the QE (written and oral) again as outlined above within the subsequent three months. Alternatively, the student may resign from the graduate program. The QEC may elect to offer the student the option to complete a Master’s Degree rather than re-taking the QE. In such a case, students will be obligated to complete and defend a thesis within 1 year.

Timeline and outcomes for re-examination: The re-examination procedure must be completed within three months of the original examination, and no later than the end of Fall term of Year 3.

Students will be assigned a “pass,” “conditional pass,” or “fail” by the same criteria as summarized above. Failure to pass the QE after two attempts will automatically result in dismissal from the graduate program.

Advancement to Candidacy: Upon successful completion of the QE, students will become eligible for recommendation for advancement to candidacy. The PBMS Director will sign the QE form indicating successful completion of all PBMS academic requirements will recommend students to the Associate Dean for Graduate Studies for advancement to Ph.D. candidacy.

MD-Ph.D. Requirements

Students coming into the PBMS Program through the MD-Ph.D. program will be required to complete the following:

- BMSC 665 Scientific Logic
- BMSC 664 Research Models and Methods
- BMSC 650 The Practice and Ethics of Science
- One PBMS Core Course:
 - BMSC 661 Structure & Function Of Bio Molecules
 - BMSC 662 Genetic Mechanisms and Bioregulation
 - BMSC 663 Cellular Biology
- Advanced electives – 6 credits
- MD-Ph.D. Journal Club – for the entirety of the program
- MD-Ph.D. Professional Development Fundamentals – Year 2 (1st term of Ph.D. years)
- MD-Ph.D. Longitudinal Clinical Clerkship – Years 1 and 2 of their Ph.D. years, audited afterward, but clinical experiences are expected throughout

Academic Progress

Students training for a Ph.D. degree are expected to make progress toward the research objectives and completion of required coursework. Students are expected to take the Qualifying Examination for advancement to candidacy by the end of their 12th term of graduate study; or they will be recommended for dismissal for failure to progress academically. Academic progress will be considered by the student’s Research Mentor and DAC when they meet every six months. Failure to make satisfactory academic progress can and will result in academic probation and possible dismissal from the graduate program.

GPA and Academic Probation

(For more information, see the Graduate Studies By-Laws)

The School of Medicine requires students to **maintain a grade point average of 3.0**. A student receiving a cumulative GPA below 3.0 is automatically put on academic probation. The grade of **Incomplete** is reserved for circumstances beyond control of the student (i.e., illness) preventing completion of course requirements by the end of term AND where it is possible to complete requirements within one subsequent term.

Students **failing a quarter of research** credits (i.e. receives a NP-No Pass) are immediately placed on academic probation. To return to good standing, the student must obtain a passing grade on the next term of the Research (and all subsequent terms). Failure to do so constitutes grounds for termination from the program.

A student placed on academic probation because of grades must obtain a cumulative grade point average of at least 3.0 within one academic term. A student that fails to do so may be recommended for dismissal for inadequate scholarship.

Students placed on academic probation will be required to meet with the PBMS Steering Committee to discuss their remediation plans for removing themselves from probation.

Training in the Responsible Conduct of Research

The National Institutes of Health requires continued ethics training for all trainees, fellows, participants, and scholars receiving support through any NIH training, career development, research education, and dissertation research grant ([NOT-OD-10-019](#)). To meet this requirement, all graduate students are required to complete MGRD 650 The Practice and Ethics in Science during Year 1.

Finalizing Ph.D. Requirements

OHSU awards diplomas each term, based on the completion of final paperwork and thesis binding. The following requirements must be completed within six months following the completion of the Oral Examination. However, students must complete all requirements before May 20th in order to participate in the graduation ceremonies in June of the same year.

- a) Corrections to Dissertation. If necessary, make corrections to the dissertation.
 - All members of the Examination Committee who recorded a satisfactory vote for the oral examination must sign the CERTIFICATE OF APPROVAL page. Signing of the approval page indicates that all required corrections have been completed.

- All required corrections must be completed and approved by the Examination Committee within 6 months after the oral exam. Programs may impose a stricter deadline. Graduate Studies will defer to program.
- Failure to submit an approved dissertation within this time limit will void the oral exam and the oral examination will need to be retaken.

b) Electronic Submission of Dissertation. The Library requires OHSU students to submit an electronic copy of their doctoral dissertation. Additionally, students are required to submit an electronic copy to the MMI graduate program coordinator for program records.

- Students should email their electronic copy in PDF format along with required forms to ethesis@ohsu.edu at least two weeks before signed forms are due in the Graduate Office.
- The page containing your committee members' signatures should not be filled out for the copy you submit to the library.
- Workstations in the library are set up with all necessary applications. Limited support can be arranged prior to submission.
- Review Theses, Dissertations, Capstones, & Portfolios on the [OHSU library website](#) for required forms, more detail on submission requirements and options for electronic publishing.
- The OHSU LIBRARY DOCUMENT SUBMISSION FORM & RECEIPT is required by the Graduate Studies Office. The Library will copy the Graduate Studies Office when they email their signature acknowledging receipt to you for your thesis/dissertation. In addition, you may forward the signed librarian receipt to somgrad@ohsu.edu. If you receive a hard copy receipt, please deliver the original receipt to the Graduate Studies Office. A copy of the credit card or payment receipt is not required.

c) Application for Degree. The Office of the Registrar requires that the APPLICATION FOR DEGREE form be completed and is required in the Registrar's Office one term prior to completing degree requirements. Exit contact information will be collected on the 'Application for Degree' form.

d) Survey of Earned Doctorates. The required Survey of Earned Doctorates can be found at <https://sed-nces.org/>. Student responses are confidential, except for the postgraduate placement information (institution and job title), which may be shared with the programs.

e) After all of the preceding requirements have been completed, the Associate Dean for Graduate Studies will review all paperwork and sign the Oral Exam Certification form.

- The original form will be forwarded to the Registrar as final approval of the thesis and acceptance for graduation.

Graduation. Information regarding graduation will be posted to the Graduate Studies website at www.ohsu.edu/som/graduate

School of Medicine Commencement Ceremony. This is a special event when graduate degrees are formally conferred for those who received a degree from the School of Medicine during the prior academic year. Family and friends are encouraged to attend and no ticket is required. Degrees will not be awarded until all academic requirements have been met and the student pays all debts and discharges all other obligations he or she has to the University, including the Registrar's graduation fee.

Ethical and Professional Behavior

In compliance with federal regulation and OHSU institutional policy, all investigators, research staff, and other relevant personnel (those reasonably involved in the design and/or conduct of human, animal, applied and/or basic science research) must complete OHSU's Responsible Conduct of Research (RCR) education.

All Doctoral and Master's students are required to successfully complete at least one course in ethics and professional conduct or be exposed to equivalent content.

In general, students are expected to complete assignments, exams, and milestones with work that reflects their efforts rather than another human or AI source. Such resources may be used as specified by the individual course director and appropriately cited.

Refer to [Graduate Studies Policies and Guidelines](#) for more on behavior and conduct policies.

Funding

PBMS students are funded by PBMS during the first 9 months of graduate studies. At the start of Spring term, students select a faculty member to serve as their Research Mentor and join one of the PBMS hubs. Funding responsibility is transferred to the student's PI at the end of Spring term.

Financial responsibilities include:

- Tuition
- Health & Dental Insurance
- University Fees
- Annual Stipend

Should the PI lose funding, the default is as follows: 1) PI's primary administrative unit, 2) School of Medicine (SoM).

Refer to [Graduate Studies Policies and Guidelines](#) for more PhD Student Stipend Information.

Time Limit for Completing Degree Requirements

For the Ph.D. degree, 135 approved graduate credits are required. Graduate credit toward Ph.D. degree requirements shall be granted only for coursework completed during the 7 calendar years (28 terms) prior to completing all degree requirements.

Dismissal

Refer to the Academic Bylaws, which can be found on the SOM [Graduate Studies Forms and Policies](#) page.

Grievances

The procedure for handling grievances is outlined in the Academic Bylaws, which can be found on the SOM [Graduate Studies Forms and Policies](#) page.

Exceptions

In matters related to coursework, exceptions must first be approved by the Course Director and the Program Director. Other exceptions must first be approved by the Program Director

PBMS Admissions Policy

- PBMS will accept applications once a year for admissions into the graduate program. The application window will open September 1, and will close by the end of November.
- Applications will be reviewed administratively to ensure all required application materials including transcripts and letters of reference are present.
- The PBMS Admissions Committee will be responsible for evaluating applications using a holistic review process and will make recommendations to interview a subset of students. All members of the admissions committee must be PBMS graduate faculty.
- The PBMS Admissions Committee and PBMS faculty will conduct interviews and evaluate students using a prescribed rubric. Based on this evaluation, the PBMS Admissions Committee will recommend admission of students into the graduate program.

Additional Policies

PBMS follows all academic, student and GRU policies laid out in the student handbook, which include but are not limited to the following:

- Vacation sick leave policy
- Academic adjustment policy for new parents
- Continuous enrollment policy

- Mentor-Student Discussion policy
- School of Medicine technical standards

The Student Handbook will be emailed to you once a year, and can always be found on the [SOM Graduate Studies Forms and Policies](#) page.

Helpful Links

[OHSU Registrar](#)

- Registration Information
- Academic Calendar
- General Registrar Forms

[School of Medicine Graduate Studies](#)

- Graduate Council Bylaws
- Academic Bylaws
- Student Forms
- Faculty Forms
- Student Handbook

- Faculty Handbook

[PBMS](#)

- Program specific Forms
- Program Guidelines
- Student Resources

Other Helpful Links

- [Student Central](#) (requires login)
- [Student Health & Wellness Center](#)
- [OHSU Graduate Student Organization](#)
- [Sakai](#)

Program Contacts

Program Director:

Georgiana Purdy, Ph.D. (purdyg@ohsu.edu)

Admissions Director:

Ujwal Shinde, Ph.D. (shindeu@ohsu.edu)

Curriculum Director:

Alex Nechiporuk, Ph.D. (nechipor@ohsu.edu)

Academic Mentors:

Matt Thayer, Ph.D. (thayerm@ohsu.edu)

Michael Cohen, Ph.D. (cohenmic@ohsu.edu)

Catherine Morgans, Ph.D. (morgansc@ohsu.edu)

Tim Nice, Ph.D. (nice@ohsu.edu)

Hub Directors:

Biochemical, Molecular and Structural Biology (BMSB)

David L. Farrens, Ph.D. (farrensd@ohsu.edu)

Chemical Physiology (CP)

Robert M. Duvoisin, Ph.D. (duvoisin@ohsu.edu)

Development, Differentiation and Disease (D3)

Philip F. Copenhagen, Ph.D. (copenhav@ohsu.edu)

Genome Sciences (GS)

Amanda K. McCullough, Ph.D. (mcculloa@ohsu.edu)

Integrated Cancer Biology (ICB)

Jeffrey W. Tyner, Ph.D. (tynerj@ohsu.edu)

Sudarshan Anand, Ph.D. (anands@ohsu.edu)

Infectious Disease and Immunology (IDI)

Timothy J. Nice, Ph.D. (nice@ohsu.edu)

Academic Program Coordinator:

pbs@ohsu.edu