



THE OHIO STATE UNIVERSITY

COLLEGE OF MEDICINE

**Masters in Immunology and Microbial
Pathogenesis Program**

Table of Contents

1. INTRODUCTION	4
2. PROSPECTIVE STUDENTS	5
2.2. Application Guidelines	5
3. INCOMING STUDENTS	6
3.1. Upon Arrival.....	6
3.2. Rotations	6
3.3. What to Expect Your First Week.....	6
3.4. Course Registration	6
3.5. ID Card Processing and Replacement.....	6
4. FINANCIAL SUPPORT	6
4.1. Funding.....	7
4.2. Residency.....	7
4.3. Financial Aid.....	7
5. CURRICULUM	7
5.1. Degree Requirements.....	7
5.2. Core Curriculum and Required Courses – Thesis Track	7
MSIMP Curriculum – Thesis Track	7
MSIMP Curriculum – Non-Thesis Track.....	9
5.4. Credit Hour Requirements.....	10
5.5. Timetable – Thesis Track	10
6. LABORATORY ROTATIONS (Thesis Track).....	11
7. DISSERTATION DEFENSE (Thesis Track).....	12
8. CHANGE OF DISSERTATION ADVISOR (Thesis Track)	13
9. ACADEMIC STANDARDS AND ACADEMIC MISCONDUCT	14
10. PETITIONS AND GRIEVANCE PROCEDURES AND GUIDELINES	15
11. GRADUATE FACULTY AND GRADUATE TEACHING FACULTY.....	17
11.1. Mission	17
11.2. Expectations of the MSIMP Graduate Faculty.....	17
11.3. Requirements to Recruit and Mentor New Graduate Students	17
11.4. Appointments to the MSIMP Graduate Faculty	17
11.5. Category P and Category M Membership	18

11.6. Qualifications for P and M Membership (<i>from the Graduate Student Handbook</i>)	18
12. STUDENT ORGANIZATIONS.....	19
13. MEMORANDUM OF UNDERSTANDING (MOU) BETWEEN STUDENT, DISSERTATION ADVISOR, AND THE MASTERS IN IMMUNOLOGY AND MICROBIAL PATHOGENESIS PROGRAM (MSIMP)	20
14. CHECKLIST FOR STUDENT MEETINGS	21
14.1. Student Responsibility.....	21
14.2. Year One Checklist	21
14.3. Year Two Checklist	21
15. MSIMP GUIDELINES FOR AUTHORSHIP ORDER AND INCLUSION IN SCIENTIFIC PUBLICATIONS.....	22
16. DISABILITY.....	24
17. HEALTH AND WELLNESS	25
18. OTHER SERVICES.....	26
19. Appendix I	30

1. INTRODUCTION

The Master of Science in Immunology and Microbial Pathogenesis is a graduate program in the Ohio State College of Medicine. The focus of the program is to educate and train students in the areas of immunology and microbial pathogenesis with a particular focus on becoming proficient at working within a laboratory-based setting. Two Program tracks are offered: a research-focused thesis track, and a non-thesis track. For the thesis track, students will have the option to concentrate their curriculum in one of the two focus areas by selection of advanced core courses and electives in immunology or microbial pathogenesis. The mission of the program is to prepare graduates to enter the workforce in academic, pharmaceutical, biotech, government, and public health fields.

The Council of Research and Graduate Studies is the principal legislative body of the Graduate School that initiates policies and rules governing graduate programs. The Council sets the minimum standards as published in the Graduate School Handbook and serves as a primary reference for policies, rules, and general information.

In addition to these policies and rules, the MSIMP student handbook provides additional policies, rules, and general information specific to students in the Master of Science in Immunology and Microbial Pathogenesis Graduate Program.

The Ohio State University graduate school handbook can be found at:

<https://gradsch.osu.edu/handbook>

Questions can be directed to MSIMP Leadership and/or Staff:

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2. PROSPECTIVE STUDENTS

2.1. Requirements

Admission to the graduate program students hold a bachelor's degree in biological sciences and earned cumulative grade-point average (GPA) equivalent to at least 3.0 out of 4.0 in all previous undergraduate and/or graduate college-level course work is required. If the student's undergraduate GPA is below the minimum, the student may be eligible for admission only in demonstrated cases of exemplary research experience and motivation.

2.2. Application Guidelines

Students apply to the program via the OSU Graduate School admissions portal (<https://gpadmissions.osu.edu/index.html>). Applications are evaluated by the MSIMP graduate studies committee (GSC), and decisions on which students to interview are based on academic record, personal statement, statement of research experience and interests, three letters of recommendation, and a personal interview. Interviews may be conducted in person, via telephone, or video conference. To be competitive with the best applicants, early application by December 1 is encouraged, although applications are accepted through February 1. A special effort is made to recruit students from underrepresented minority groups.

International Applicants: All international applications are required to submit Test of English as a Foreign Language (TOEFL) scores. International applicants must document that they have arranged for financial support for themselves, such as from a home government or from an MSIMP faculty member with whom they have communicated personally.

3. INCOMING STUDENTS

3.1. Upon Arrival

Within the first two weeks of the autumn semester, the student and the Program Director will meet to discuss the student's career and educational goals, their track's core curriculum, and other courses that may be needed by the student. The minutes of this meeting will be recorded on the MSIMP Advising Sheet which will be signed by both the student and Program Director and filed by the Program Coordinator.

At the end of each subsequent semester, the student will meet with the Program Director and/or the research advisor to conduct a comprehensive review of their progress, discuss advancements in research, and plan the courses for the upcoming semester. Should the Program Director or research advisor deem it necessary to address any concerns regarding the student's progress, they may convene a meeting of the MSIMP Graduate Studies Committee, with or without the student present. The outcomes of this meeting will be documented and submitted to the Master of Immunology and Microbial Pathogenesis Program Director for inclusion in the student's academic file.

3.2. Rotations

Students in the MSIMP Program's thesis track will complete three four-week research rotations during their entering semester as a means to identify their dissertation laboratory. These rotations will be scheduled based on the interest of the student and laboratory availability. The Program Director and Program Coordinator will work closely with each student to determine their rotation schedule. Although not required, once accepted into the MSIMP Program, students may reach out to participating faculty to enquire about potential rotation opportunities.

3.3. What to Expect Your First Week

3.4. Course Registration

The Program Coordinator will assist students with registration for their first semester. All subsequent registrations should be completed through the Buckeye Link Student Information System (SIS): <https://buckeyelink.osu.edu/collection/all/enrollment-center>.

Please be sure to monitor registration deadlines carefully, as late fees may be assessed. The program is not responsible for covering any late registration fees.

3.5. ID Card Processing and Replacement

Medical Center I.D. badges may be obtained and coded from the Hospital Security Department (614-293-4452), located on the first floor of Rhodes Hall. Please report lost or stolen I.D. cards immediately. Student Buck I.D. may be obtained from the University ID Card Services in the Ohio Union.

4. FINANCIAL SUPPORT

4.1. Funding

The Master of Science in Immunology and Microbial Pathogenies Program is student funded program and no offsetting of supplementary funding is provided.

4.2. Residency

Fees and tuition are based on a student's residency status. See the OSU Registrar's site for residency requirements and process: <https://registrar.osu.edu/residency/>

4.3. Financial Aid

You can find the forms and information for scholarships, student loans, and grants at the OSU Office of Financial Aid: <https://sfa.osu.edu/>.

5. CURRICULUM

5.1. Degree Requirements

To receive the Master of Science degree, students must complete all the required coursework, a minimum of 40 credit-hour requirements, and successfully defend their dissertation.

5.2. Core Curriculum and Required Courses – Thesis Track

Total Credit Hours: A minimum of 40 semester credit hours will be required to earn the Master of Science in Immunology and Microbial Pathogenesis. These credit hours consist of 30 hours core courses (including 15 from laboratory research practicum) and 10 hours of elective courses.

Length of Time for Completion: The curriculum is designed to be completed in five terms, initiating in Autumn of Year 1 and culminating with Spring of Year 2. Students can elect to begin early by enrolling in their research laboratory rotation course during the summer term prior to Autumn of Year 1.

Students will complete the entire core curriculum of the Immunology and Microbial Pathogenesis Program to earn a Master of Science degree. Modifications to this curriculum require a formal petition to the Graduate Studies Committee. In line with the Graduate School's requirements, students must register for at least 40 graduate credit hours to be eligible for the M.S. degree.

Students must complete at least **two** laboratory rotations before selecting a dissertation advisor by the end of the first year. For each credit hour of MEDMCIM 7998, students should spend at least 4 hours per week in the lab. By the end of the spring semester, students must have a dissertation advisor and register for MEDMCIM 7998 under their advisor's section.

MSIMP Curriculum – Thesis Track

Autumn Year 1 (Minimum requirement: 8 credits)

MEDMCIM 7010 - Cellular and Molecular Immunology (3)

MEDMCIM 7050 – Laboratory Scientific and Management Skills (2)

MEDMCIM 7500 - Departmental Seminar - Recent Discoveries in Immunology and Microbial Pathogenesis (1)

MEDMCIM 7998 – Laboratory Rotation, Graduate Research in Microbial Infection and Immunity (2)

Spring Year 1 (Minimum requirement: 8 credits)

BSGP 7240 – Molecular Pathogenesis (3)

MEDMCIM 7500 - Departmental Seminar - Recent Discoveries in Immunology and Microbial Pathogenesis (1)

MEDMCIM 7998 – Graduate Research in Microbial Infection and Immunity (≥2)

MEDMCIM 8010- Selected Topics in Advanced Immunology (3) (Immunology-track) **OR**
Elective (≥3)

Summer Year 1 (Minimum requirement: 8 credits)

MEDMCIM 7998 – Graduate Research in Microbial Infection and Immunity (≥5 credits)

Elective (≥3)

Autumn Year 2 (Minimum requirement: 8 credits)

MEDMCIM 7500 - Departmental Seminar - Recent Discoveries in Immunology and Microbial Pathogenesis (1)

MEDMCIM 7550 - Departmental Journal Club - Recent Discoveries in Immunology and Microbial Pathogenesis (1)

MEDMCIM 7990 – MS Thesis Writing (1 credit)

MEDMCIM 7998 – Graduate Research in Microbial Infection and Immunity (≥3 credits)

Elective (≥2) **OR**

MEDMCIM 7450 - Select Topics in Microbial Pathogenesis (2) (Microbial Pathogenesis - track)

Spring Year 2 (Minimum requirement: 8 credits)

MEDMCIM 7500 - Departmental Seminar - Recent Discoveries in Immunology and Microbial Pathogenesis (1 credit)

MEDMCIM 7550 - Departmental Journal Club - Recent Discoveries in Immunology and Microbial Pathogenesis (1)

MEDMCIM 7998 – Graduate Research in Microbial Infection and Immunity (≥3 credits)

MEDMCIM 8100 - Advanced Immunotherapeutics (3), (Immunology-track) **OR**

MEDMCIM 6600 - Pathobiology of Cystic Fibrosis (3), (Microbial Pathogenesis-track)

MSIMP Curriculum – Non-Thesis Track

Autumn Year 1 (Minimum requirement: 8 credits)

MEDMCIM 7010 - Cellular and Molecular Immunology (3)

MEDMCIM 7500 - Departmental Seminar - Recent Discoveries in Immunology and Microbial Pathogenesis (1)

MEDMCIM 7550 - Departmental Journal Club - Recent Discoveries in Immunology and Microbial Pathogenesis (1)

Elective (≥3)

Spring Year 1 (Minimum requirement: 8 credits)

BSGP 7240 – Molecular Pathogenesis (3)

MEDMCIM 7500 - Departmental Seminar - Recent Discoveries in Immunology and Microbial Pathogenesis (1)

MEDMCIM 7550 - Departmental Journal Club - Recent Discoveries in Immunology and Microbial Pathogenesis (1)

MEDMCIM 8010- Selected Topics in Advanced Immunology (3) (Immunology-track) **OR**
Elective (≥3)

Summer Year 1 (Minimum requirement: 8 credits)

Electives (≥8)

Autumn Year 2 (Minimum requirement: 8 credits)

MEDMCIM 7500 - Departmental Seminar - Recent Discoveries in Immunology and Microbial Pathogenesis (1)

MEDMCIM 7550 - Departmental Journal Club - Recent Discoveries in Immunology and Microbial Pathogenesis (1)

Electives - (≥6)

Spring Year 2 (Minimum requirement: 8 credits)

MEDMCIM 7500 - Departmental Seminar - Recent Discoveries in Immunology and Microbial Pathogenesis (1 credit)

MEDMCIM 7550 - Departmental Journal Club - Recent Discoveries in Immunology and Microbial Pathogenesis (1)

MEDMCIM 8100 - Advanced Immunotherapeutics (3), (Immunology-track) **OR**

MEDMCIM 6600 - Pathobiology of Cystic Fibrosis (3), (Microbial Pathogenesis-track)

Elective - (≥ 2)

5.3. Elective Courses

Elective courses may be selected from MEDMCIM or other departments across Ohio State. Recommended options are listed in Appendix I. Consult with Program Director for approval of elective choices.

5.4. Credit Hour Requirements

To maintain full-time status, students must register for a minimum of 8 credit hours per semester, except during the summer session, when the minimum is 4 credit hours.

International Students

International students must also meet the minimum enrollment requirement of 8 credit hours per semester (4 credit hours in summer), unless they hold fellow or trainee appointments. Post-candidacy international students are required to register for at least 3 credit hours per semester. These hours may include research credit.

5.5. Timetable – Thesis Track

Lab rotations will be assigned during the Autumn semester of year 1. The rotations will count for MEDMCIM 7998 course credit.

A Dissertation Committee will be established during Spring of year 1 which will meet with the student at the start of SuY1, and SpY2. This committee must meet the same requirements for composition as the candidacy exam committee described above. At these meetings, there will be a review of the general progress in the student's classes and research. This committee should comment on the validity and feasibility of the proposed project. They will also suggest courses, seminars, etc., that the student should either take for credit or audit.

During Autumn semester of year 2, in conjunction with the Thesis Writing Course, the student will draft their thesis dissertation.

During Autumn semester of year 2, a target date for the dissertation defense should be set.

The entire MS program should be completed in 5 consecutive semesters (AuY1-SpY2); Exceptions to this schedule will be at the discretion of the MSIMP GSC.

6. LABORATORY ROTATIONS (Thesis Track)

During the student's first semester of study (Autumn, year 1), the student, in conjunction with the Program Director, will rotate through no less than two laboratories. Three four-week rotations will be scheduled within the first week of the semester.

7. DISSERTATION DEFENSE (Thesis Track)

THE STUDENT IS RESPONSIBLE FOR MAKING SURE THAT ALL REQUIREMENTS FOR GRADUATION HAVE BEEN FULFILLED.

Students must send an email reminder to their committee members to complete an evaluation form for the candidacy exam ([MS Defense Evaluation Form for MSIMP](#)).

8. CHANGE OF DISSERTATION ADVISOR (Thesis Track)

Should a situation arise in which either the student or advisor believes that the student should be under the direction of a different dissertation advisor, the following steps should be taken:

- 1) Prior to seeking another advisor, the student, advisor, and Program Director should hold discussions to determine if the problems or situation can be satisfactorily resolved in another manner.
- 2) If a resolution between the student and advisor cannot be obtained, such that the student will remain with the advisor, a formal meeting of the student's dissertation advisory committee should be arranged by the student at which both the student and advisor will be present. Prior to this meeting both the advisor and student will submit to the committee members a summary of the situation from both points of view. The issues and any reasonable alternatives should be thoroughly discussed at the meeting. Minutes will be kept by a faculty committee member who is other than the advisor or new advisor. The minutes will be distributed to the committee members for approval of content, and the approved minutes will be sent to the Immunology and Microbial Pathogenesis Graduate Program Director. A copy of the minutes will be placed in the student's permanent file. If a resolution to change labs is agreed upon, then the Graduate School will be notified for further recommendations.
- 3) If a resolution that is agreeable to both the student and advisor cannot be reached at the meeting of the Dissertation Advisory Committee, so that the student can remain with the advisor, there should be a meeting of the student, advisor, and the MSIMP Director. The issues should be discussed, and a resolution of the problems obtained, if possible. The Immunology and Microbial Pathogenesis Master's Program Director will be present and write minutes of this meeting, which will be sent to the student, the advisor, the advisory committee, and the IMSIMP Program Director. A copy of the minutes will be placed in the student's permanent file.
- 4) If a resolution that is agreeable to the student, advisor cannot be reached at the meeting with the Immunology and Microbial Pathogenesis Graduate Program Director, so that the student can remain with the advisor, the issues will then be discussed by the Immunology and Microbial Pathogenesis Graduate Program Graduate Studies Committee. Prior to this meeting, all written materials related to this issue will be provided to the committee members, and both the student and advisor will be given the opportunity to supplement these materials. The issues will be discussed at a meeting of the Graduate Studies Committee. The student and advisor may be asked to be present at this meeting. After discussing these issues, the committee will make a recommendation concerning whether the student can transfer to a different dissertation advisor.

9. ACADEMIC STANDARDS AND ACADEMIC MISCONDUCT

The MS in Immunology and Microbial Pathogenesis Graduate Program requires all students to adhere to the rules and intent of The Ohio State University Graduate School and the University Code of Student Conduct.

The MS in Immunology and Microbial Pathogenesis Graduate Program Academic Standards
The Graduate School requires all students enrolled in graduate programs at The Ohio State University to maintain a grade point average of 3.0 or above to be in good standing. Students who fail to do so are placed on academic probation until they raise their GPA to 3.0 or above within a maximum of 2 academic semesters or sessions. As per university rules, students whose GPA remains below 3.0 following two semesters of academic probation will be denied future registration in the MS in Immunology and Microbial Pathogenesis Graduate Program.

Academic Misconduct

All students are expected to follow the Ohio State Code of Student Conduct. The code applies to on-campus and off-campus conduct of students. All students are informed that copying or paraphrasing paragraphs, sentences, or phrases directly from textbooks, journal publications, or any form of written or electronic document, and then submitting them as answers for any examination or fulfillment of other academic assignment is an act of plagiarism. Plagiarism includes the use of someone else's words or ideas as your own, without proper documentation. In no instance will any form of academic misconduct be tolerated. Students found violating the codes of academic honesty will receive a failing grade and be reported to the Office of Academic Affairs according to University policy. Sanction may include expulsion from the program.

10. PETITIONS AND GRIEVANCE PROCEDURES AND GUIDELINES

Petitions

A student may petition for relaxation of, or modification to, any rules in the MS in Immunology and Microbial Pathogenesis Graduate Program handbook by submitting a written petition to the MS in Immunology and Microbial Pathogenesis Graduate Studies Committee (GSC). Such a petition by a student should be accompanied by a letter of support from the first-year advisor or dissertation advisor.

Grievance Procedures

Occasionally, conflicts may arise either between graduate students or between students and faculty and/or staff members. Sincere attempts should be made to resolve conflicts among the involved parties before any grievance policy is activated. Conflicts between a student and the dissertation advisor that cause either party to seek a change in the student's advisor must follow the Procedure for a Student to Change Dissertation Advisor.

If a grievance remains after exhausting the informal process between the involved parties, the person having the unresolved complaint may file a written grievance with the MS in Immunology and Microbial Pathogenesis Graduate Program GSC. The following protocol will be used:

- The MS in Immunology and Microbial Pathogenesis Graduate Program GSC will act as the Graduate Student Grievance Committee (GSGC).
- The MSIMP Program Director will chair the GSGC, unless personally involved, in which case the Chair will be excluded from all deliberations on the matter and the GSC will select a Chair from among the remaining MSIMP GSC members.
- Members of the MSIMP GSC directly involved in the case will also be disqualified from sitting on the panel for that specific case. In such circumstances, the Chair will designate an alternate, when possible, from the same area of expertise as the disqualified member.
- The Chair of the MSIMP GSGC will set a hearing date no later than two weeks after the grievance statement is received.
- At least 72 working hours prior to the hearing, the chair of the GSGC will provide to all parties a written statement of the specific grievance, a notification of the time and place of the hearing, and copies of documents relevant to the grievance hearing.
- Each party will appear in person to present his or her case.
- The Chair will preside over the hearing and determine all procedural matters. This is an administrative proceeding and, therefore, the formal rules of legal procedures do not apply.
- All parties will be entitled to an expeditious hearing.
- The final decision of the GSGC will be reported in writing to the parties involved no later than two weeks after the hearing. The report on this decision will also include a statement concerning the validity of the complaint.
- Throughout this process the GSGC will attempt to mediate a resolution.

- Cases not resolved at this level will be referred to the Graduate School, and formal grievance procedures shall be activated as defined by the Graduate Associate Grievance Procedures Guidelines (available from the Graduate School).

11. GRADUATE FACULTY AND GRADUATE TEACHING FACULTY

11.1. Mission

The mission of the MSIMP is to provide advanced post-graduate education and training to aspiring scientists for them to be leaders in the biomedical workforce. Faculty with >30% appointment in the Department of Microbial Infection and Immunity are eligible to serve as thesis advisor.

11.2. Expectations of the MSIMP Graduate Faculty

It is fully expected that all Graduate Faculty will contribute in a substantive way to the program. Faculty members who do not make a substantive contribution to the program will have their Graduate Faculty status with the MS in Immunology and Microbial Pathogenesis Graduate Program revoked. Examples include:

- Mentor students and faculty in the MS in Immunology and Microbial Pathogenesis Graduate Program.
- Teach in the core MS in Immunology and Microbial Pathogenesis Graduate Program curriculum or other MEDMCIM course.
- Serve the MSIMP through participation on student mentoring/development committees, lead core course modules, aid in graduate admissions and recruiting.

11.3. Requirements to Recruit and Mentor New Graduate Students

Faculty seeking to mentor MSIMP graduate students must meet the following criteria:

- Faculty must have P status in the MSIMP program (See definition of M and P status below)
 - Regular tenure track faculty with >30% appointment in the Department of Microbial Infection and Immunity may be granted P-status by the Director of the program.
 - Research track faculty may be eligible for P status but require a strong record of mentoring, scholarship and independent research support. Applications will require a full review and vote by the MSIMP GSC.
- Faculty must demonstrate a strong desire to be a good mentor. Evidence of active engagement in mentoring include:
 - A sustained track record of successful graduation and placement of students.
 - Completion of an Ohio State sponsored course on implicit bias.
 - Completion of the Ohio State UITL Teaching Practices Inventory survey.
 - Completion of available mentor training.
 - Honors and recognition by students for teaching and mentoring.
 - Junior faculty with limited experience may have an experienced co-mentor appointed to the graduate student's mentoring committee.
- Faculty member must have sufficient research space to support the research needs of the student.

11.4. Appointments to the MSIMP Graduate Faculty

Appointments to the MSIMP graduate Faculty are made jointly by the Director of the Program and the Graduate Studies Committee. Appointments consist of a two-year term with renewal dependent upon Faculty's continued contribution to the MSIMP program in the form of mentoring, teaching and service on committees. Faculty may apply for membership in the graduate program using the online form provided on the [MSIMP website](#). The Program Director will review all applications and approve faculty applications that comply with the policy above. Exceptions to the

policy or challenges to the Director's decision will be reviewed by the Graduate Studies Committee (GSC). The GSC may request further documentation and conduct interviews with Faculty applicants. The GSC will render a decision via majority vote to approve or deny the request. The Director of the MSIMP will prepare the required forms for the Graduate School and inform the applicant of the decision.

11.5. Category P and Category M Membership

The Graduate School Handbook describes the criteria for appointment and responsibilities of graduate faculty with Category M or P status (see below). Briefly, Category P faculty advise Ph.D. and MS students; category M faculty advise MS students only. Category M faculty may serve on dissertation exam and advisory committees of Ph.D. students only upon the approval of the Graduate Studies Committee. Please see guidelines below, as described in Graduate School Handbook.

11.6. Qualifications for P and M Membership (*from the Graduate Student Handbook*)

Qualifications, Rights and Responsibilities SECTION 12.4

Minimum Category P Qualifications.

The faculty member:

- holds a tenure-track or research faculty appointment
- holds an earned PhD, DMA, or petitions the Graduate School for an equivalent degree
- is engaged and primarily directs an active program of research, scholarship, or creative activity, or demonstrates significant promise of establishing such a program has engaged and demonstrated experience in mentoring graduate students

Rights and Responsibilities of Category P Graduate Faculty:

- acts as the primary advisor for master's and doctoral students
- participates in the governance of graduate education at all levels within the University
- serves on doctoral examination committees
- serves as a GFR on second candidacy examinations and final oral examinations

Minimum Category M Qualifications.

The faculty member:

- holds a tenure-track or clinical faculty appointment
- Holds a master's degree or higher, or equivalent

Rights and Responsibilities of Category M Graduate Faculty:

- acts as the primary advisor for master's students
- participates in the governance of graduate education at all levels within the University
- serves on doctoral examination committees at the discretion of the Graduate Studies Committee

12. STUDENT ORGANIZATIONS

Bennett Society

The Bennett Society was founded in 1984 in the College of Medicine and was named in honor of the Bennett Foundation. The goals of the Bennett Society are to promote and recognize excellence in graduate research and education, as well as to enhance communication between graduate students and the faculty within the College of Medicine. The Bennett Society extends an open invitation to all graduate students in the College of Medicine to join the society to promote graduate student education and research.

OSUMC Research Day

For many years there have been several different events in the College of Medicine (COM) at which students presented results of their research. While this showcased some organizations, and it gave a few students multiple opportunities to gain experience in scientific presentations and also resulted in smaller audiences. In 2002, for the first time, the COM combined a number of events, which previously had been held individually, into one Ohio State Medical Center Trainee Research Day. This event is held annually. This is also a forum for Postdoctoral Trainees, Clinical Fellows, and Residents to present their work. MSIMP students are strongly encouraged to present a poster at this event each year after their first year of study.

14. CHECKLIST FOR STUDENT MEETINGS

14.1. Student Responsibility

The student will arrange all meetings. For each meeting with the First Year Advisor (FYA), the student is responsible for completing the appropriate online form. This is an important mechanism for us to track a student's progress.

Student forms can be found at:

14.2. Year One Checklist

MEETING TIME	FACULTY	MEETING DISCUSSIONS
Before first semester	First Year Advisor	•E-mail introduction
Orientation Day within two weeks of the start of the Autumn Semester	Program Director	•Career & Educational Goals •Discuss Core curriculum & courses •Confirm or discuss rotation choices •Completion of MSIMP Advising Form •Lab Rotation Proposal Form
Spring	First Year Advisor and Program Director	•Review academic performance •Discuss choice of Dissertation Lab and Mentor •Discuss dissertation research plans and progress •Faculty Lab Rotation Evaluation Form(s)

14.3. Year Two Checklist

MEETING TIME	FACULTY	MEETING GOALS
Beginning of Autumn	Dissertation Advisor	•Discuss dissertation project •Choose courses for coming year
Mid-Autumn	Dissertation Advisor	•Review progress •Discuss research grant proposal •Choose courses for Spring
Beginning of Spring	Dissertation Advisor	•Discuss research grant proposal •Review progress •Discuss courses •Assemble and meet with Candidacy exam Committee
Mid-Spring	Candidacy/Dissertation Advisory Committee	•General review & choice of courses •Set date for Candidacy exam •Discuss written Candidacy exam

15. MSIMP GUIDELINES FOR AUTHORSHIP ORDER AND INCLUSION IN SCIENTIFIC PUBLICATIONS

Almost uniformly, guidelines for authorship from the NIH or journals cover whether an individual merits inclusion as an author and how these disputes are mediated.

See below for examples:

<https://jme.bmj.com/content/42/3/199.long>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2544445/>

Very few guidelines or scholarly articles address issues of authorship order. This lapse in enumerating common practice in authorship has potentially important consequences for the careers of trainees since authorship and authorship order are the currencies by which the trainee is judged and advanced in the next level. This document should complement other policies, such as the Ohio State policy on publications in document [Ohio State Research Data Policy](#).

Proposed guidelines

The Ohio State publication policy is recommended to include a new section:

IV. Publication

C. Order of authorship in publications is guided by (in order of importance): 1) experimental results; 2) analysis. Generally, the first author leads the experimental findings and writes the first draft of the manuscript. It is the responsibility of the PI to consult with all authors in open discussion to appropriately assign order of authorship prior to submission of the manuscript. Details of the guidelines:

1. Research disciplines differ on the placement of authors. In the biomedical sciences, the most common practice is for the senior scientist acting as responsible/corresponding author to be the last author in the list, and the experimenter who led the project as first.
2. Authorship in a potential publication is best discussed at the onset of a project and openly discussed as new scientists join the project and as the manuscript is drafted.
3. It is general practice that the first author is the individual who is primarily responsible for the completion of laboratory experiments that are used as figures in a manuscript to be submitted for publication. When multiple individuals contribute experimental data, then authorship order can be guided by: a) the number of figures; b) the impact of figures; c) the preliminary work that established the initial finding; and d) the concept or idea that has led to the experimental rationale. In practice, it is generally clear which individual has led a project from idea to completed results, and this author is listed first.
4. Completion of research projects can sometimes be complicated by, for example, if the prime mover for a project leaves the laboratory. In such a case, there must be a reasonable incentive to recruit another individual to complete the manuscript, and co-first authorship is a useful mechanism.
5. Data analytics have increasingly become important in the interpretation of experimental results, and often a second individual is the prime mover behind the analytics. In such circumstances in which the analyst applies standard approaches that may elevate the conclusions of a study, they

are often listed as second author. If they have created novel algorithms and completed a high level of analysis, as may be found typically in genomics research, then the analyst may be listed as co-first. If the analytics preceded the experimental data, then the lead analyst may be first.

6. The order of authorship of other contributing scientists from second to penultimate positions on the author list should reflect the relative contributions to the study and are based on discussions between the first and senior authors.

7. It is important that all authors have the opportunity to discuss their relative contributions with the other authors during the preparation of the manuscript and the design of the figures, and certainly prior to submission of the manuscript. Ultimately, the senior author decides the final order on the manuscript.

8. Collaborations between laboratories are common, and an open discussion of authorship is essential in these cases. Co-first authorship and co-senior authorship are often appropriate in such a study.

9. The first author generally writes the first draft of the manuscript, and commonly the first author controls all drafts as the paper is edited and prepared for submission.

16. DISABILITY

[Office of Disability Services Website](#)

The Office for Disability Services exists to improve all aspects of campus life for disabled persons by providing and coordinating academic accommodations and support services to any member of the Ohio State community.

17. HEALTH AND WELLNESS

Student Health Insurance Program

[Student Health Insurance](#)

All students are eligible for health insurance. The option to enroll appears when registering for classes and students must be enrolled for at least half time (6 hours undergrad, 5 hours graduate) to be eligible; however, exceptions may be granted.

Recreational & Physical Activity Center (RPAC)

[Recreational Sports](#)

Students may use the RPAC facilities by presenting a University I.D. card at the Recreational and Intramural Sports Office. Some of the activities offered by Ohio State at RPAC, ARC, and Jesse Owens Centers are: badminton, basketball, conditioning, golf, handball, racquetball, ice skating, intramural sports, jogging, platform tennis, swimming, tennis, volleyball, and wallyball.

Student Wellness Center

[Student Wellness Center](#)

A comprehensive center for all dimensions of wellness (emotional, career, social, spiritual, financial, intellectual, physical, creative, and environmental).

Dental

[Ohio State Dental clinic](#)

The Dental Clinic provides complete high quality dental care. All services provided by student dentists and student dental hygienists, are supervised by dentists and dental hygienists who are members of the college faculty.

18. OTHER SERVICES

Athletic Tickets

[Buckeye Tickets](#)

The Ohio State University's Department of Athletics offers intercollegiate competition in 31 varsity sports. Students may purchase tickets by contacting the Athletic Ticket Office.

Transportation

Campus PARC

[Campus Parking](#)

Campus PARC issues parking permits to faculty, staff, students and guests. Campus traffic violations are resolved through this office. Other services offered are jump-starts and unlock locked vehicles.

CABS (Campus Area Bus Service)

You can find the routes mapped out, service schedules, and how to get access to the Handivan and charter services on this web page. [Campus Area Bus Service](#)

COTA Buses Bus passes are included with fees and tuition each semester. Bus schedule information can be obtained on the COTA website. [Central Ohio Bus routes Off Campus Commuting Services](#)

Credit Union

All employees of Ohio State are eligible to join the Credit Union of Ohio, which is a non-profit full-service organization. This organization provides checking and savings accounts, loans, IRA accounts, and a variety of other professional financial services to university employees. In addition, Entertainment Books, Money Orders, Travelers Checks, and discounted tickets to local amusement parks are available for sale. A Notary Public is also available.

Council of Graduate Students

The pamphlet will be in your orientation packets and the CGS will send you a packet of material in August. [Council of Graduate Students](#)

Environmental Health and Safety (EHS)

[Environmental Health and Safety](#)

The Office of Environmental Health and Safety formerly the Division of Environmental and Occupation Health and Safety, was established in 1979 to assist the university community to maintain a safe, healthful work environment and to comply with federal, state and local regulations. EHS is organized into eight program areas. All Ohio State paid personnel are expected to receive risk management training proper to their assigned work.

Food Services

[Food Services](#)

BistrOH Cafeteria, Panera Bread, Caffeine Element, Mirror Lake Café, Marketplace, and Wendy's Old-Fashioned Hamburgers are a few areas that offer food services nearby. Visit [Food Service Locations](#) for a complete listing of campus dining service locations where cash, Buck-ID, and major credit cards are accepted. Up-to-date hours are posted here as well.

Graduate School

The Graduate School Handbook can be accessed at the following web address: <https://gradsch.osu.edu/handbook/all>. The phone number to the Graduate School is (614) 292-6031.

Lantern

[The Lantern](#)

The Lantern publishes a student newspaper Monday-Friday during the school year, and is one of the largest college papers in the country. It is written by the students and is available at various locations throughout the Ohio State campus. It includes editorials, national and local news items, information regarding activities on campus, and classified ads.

Libraries

[Ohio State Library](#)

Students may borrow books with a valid University I.D. card. Individuals with a current Ohio State I.D. card who need material that is not available on the Ohio State campus may request it through the Interlibrary Loan Department. The libraries offer many services like photocopying, workshops, searches, etc.

Lost and Found

Anyone finding lost items should contact the Hospitals Security Department (293-8500). Every attempt is made to return items to the owner(s). Anyone inquiring about a specific item may contact this office twenty-four hours a day and an officer will check to determine whether a specific item has been collected or released.

Name Change Procedure

In the event that a name change is made contact offices with updated information: MS in Immunology and Microbial Pathogenesis Graduate Program: MSIMP Link College of Medicine Human Resources: (614) 688-6696 Registrar's Office: Ohio State Registrar.

Ohio Union

[Ohio Union](#)

The Ohio Union offers a variety of recreational, dining, social, educational, and cultural activities for faculty, staff, students, alumni, and guests of the University. The one-stop area includes billiards, video games and pinball machines, a number of fast food restaurants, meeting rooms, computer labs and more.

Ohio State Internet Access

Students are provided with an Ohio State username and address, which can be activated from the Office of Information Technology's website: [Ohio State Office of Information Technology](#)

Postal Services

There are collection boxes throughout campus. However, the post office on campus is located at 242 W 18th Avenue in the Journalism Building.

Security/Campus Police

[The Ohio State University Police and Security](#)

The Hospitals Department of Security (293-8500) and University Campus Police (292-2121) are committed to crime prevention and faculty, staff, student, and visitor protection. Officers patrol the Hospitals 24 hours a day, resolving patient and visitor disturbances and recording and investigating criminal reports. Security officers are also available to escort staff at night and to assist with minor car problems.

Student Advocacy Center

[Student Advocacy Center](#)

Provides answers to students' questions, directs you to appropriate staff and departments, and gives general guidance on university policies and procedures.

University Laboratory Animal Resources (ULAR):

[ULAR website](#)

As mandated by the Animal Welfare Act, it is the responsibility of the research institution to ensure that all individuals using animals in research or teaching are qualified and appropriately trained. As such, Ohio State's Institutional Animal Care and Use Committee (IACUC) requires that all personnel complete the following mandatory courses/registries:

- Online Animal Care and Use Course
- Occupational Health Registry Occupational Health and Safety Course
- Ohio State Financial Conflict of Interest
- Screening/Disclosure Experience
- Training Narrative

If your animals are to be housed in the Biomedical Research Tower (BRT), you must also complete Facility Training.

Veteran and Military Students

[Ohio State Military and Veterans Services](#)

In order to provide quality human resource services to faculty and staff, the Office of Human Resources supports our nation's veterans with goals to provide affirmative action assistance to covered veterans; to provide employee relations support to all faculty and staff veterans; to provide enrollment certification for student veterans participating in the GI Bill program; to serve as a focal point for all campus veteran activities; and to foster a positive campus and community atmosphere.

Wexner Center

[Wexner Center for Arts](#)

The Wexner Center for the Arts is a multidisciplinary contemporary arts center with programs in Exhibitions, Media Arts, Performing Arts, and Education. Performing arts programs are held at Mershon Auditorium and coordinated through the Wexner Center complex. Wilce Student Health Center Student Health Center Provides medical services to students. Wilce Student Health Center is located at 1875 Milliken Rd. Younkin Success Center The Younkin Success Center is a unique collaboration between the Offices of Academic Affairs, Student Life, Department of Athletics, and the College of Education and Human Ecology that brings together learning and teaching, students and faculty, career and holistic undergraduate and graduate students and student athletes. Each of these services has information on their website as well as online pamphlets, questionnaires, and service options. Help, as always, is confidential. Several counseling services, and offices are involved in this collaboration: Career Counseling and Support Services Provides students with relevant on and off campus career resources for the career decision making process. Walk-ins are first come first served and sign-up for walk-ins begin 15 minutes before the period. Resources, links, forms, and handouts are available on the Career Connection Website.

Counseling and Consultation Services:

[Counseling and Therapy Services](#) Provides counseling and therapy to address personal, academic, and career concerns. There is no fee for the first 10 sessions per academic year for Ohio State students. If you have student health insurance and are eligible to continue in counseling, there is a \$15 co-pay per session after the 10th session. Call 614.292.5766 to

schedule an appointment. Walter E Dennis Learning Center Dennis Learning Center Provides academic learning support to students of all levels and backgrounds. All services are free to Ohio State students.

19. Appendix I

Recommended Electives

Department of Microbiology, OSU College of Arts and Sciences:

MICRBIOL 5147 (3 credits): Eukaryotic Pathogens
MICRBIOL 5161 (3 credits): Bioinformatics and Molecular Microbiology MICRBIOL 5270 (3 credits): Antibiotics and Natural Products
MICRBIOL 6010 (2 credits): Principles of Microbiology
MICRBIOL 6020 (3 credits): Microbial Physiology and Biochemistry MICRBIOL 6080 (3 credits): Advanced Microbial Genetics
MICRBIOL 6155 (3 credits): Microbial Ecology and Evolution
MICRBIOL 7536 (2 credits): Advanced Food Microbiology

Division of Biostatistics, OSU College of Public Health:

PUBHBIO 6210 (3 credits) - Applied Biostatistics I

Department of Microbial Infection and Immunity, OSU College of Medicine:

MEDMCIM 6600 (3 credits) – Pathobiology of Cystic Fibrosis
MEDMCIM 7100 (2 credits) – Foundational Discoveries: Pillars in Immunology and Microbial Pathogenesis
MEDMCIM 7400 (1 credit) - Current Topics in Virus-Host Interactions
MEDMCIM 7402 (2 credits) – Microbial Pathogenesis Journal Club
MEDMCIM 7452 (2 credits) - Microbial Pathogenesis Journal Club
MEDMCIM 7550 (1 credit) - Departmental Journal Club - Recent Discoveries in Immunology and Microbial Pathogenesis
MEDMCIM 7998 (up to 6 credits/term) Graduate Research in Microbial Infection and Immunity
MEDMCIM 8100 (3 credits) - Advanced Immunotherapeutics
MEDMCIM 8200 (3 credits) - Current Topics in Immune Informatics

Department of Biological Chemistry and Pharmacology, OSU College of Medicine

BIOPHRM 5510 (1-2 credits) - Responsible Conduct in Biomedical Research
BIOPHRM 5600 (3 credits) - Introduction to General Pharmacology

Department of Biomedical Informatics, OSU College of Medicine

BMI 5710 (3 credits): Introduction to Biomedical Informatics
BMI 5750 (3 credits): Methods in Biomedical Informatics
BMI 5760 (3 credits): Public Health Informatics
BMI 5770 (3 credits): Health Analytics: Data to Discovery to Dissemination