
**THE COMPARATIVE AND MOLECULAR BIOSCIENCES GRADUATE PROGRAM
STATEMENT OF POLICY AND GUIDELINES
(for first term enrollment in Fall 2020, Spring 2021)**

The purpose of this handbook is to provide faculty and students with the necessary information for successfully completing the requirements and expectations of the Comparative and Molecular Biosciences (CMB) graduate program. Included are specific program requirements and advice for students in the M.S., Ph.D., and combined D.V.M./Ph.D.

**COMPARATIVE
AND
MOLECULAR BIOSCIENCES
GRADUATE PROGRAM**



UNIVERSITY OF MINNESOTA

College of Veterinary Medicine

Driven to DiscoverSM

Additional sources of information for CMB graduate students include:

- 1) The Graduate Education Catalog for the University of Minnesota, contains the primary information that students need for their graduate studies. The catalog provides information on financial assistance, housing, and registration. Access online at <http://www.catalogs.umn.edu/grad>
- 2) General information for students is also available on the Graduate Education website at <http://www.grad.umn.edu/>
- 3) The CMB program website at <http://www.vetmed.umn.edu/education-training/ms-phd-programs/ms-phd-comparative-and-molecular-biosciences>

The information in this handbook and other University catalogs, publications, or announcements is subject to change without notice. University offices can provide current information about possible changes. This document is available in alternative formats on request.

THE GRADUATE PROGRAM IN COMPARATIVE AND MOLECULAR BIOSCIENCES

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A. OBJECTIVES

The mission of the CMB program is to train outstanding scientists in the basic mechanisms of animal and human health and disease.

The CMB program is transdisciplinary, bringing together basic, applied and clinical scientists from across the University to provide students with individualized, cutting-edge biomedical research training. Areas of emphasis include genetic and infectious diseases and comparative aspects of biology and pathology across animal species and humans. Students will receive scientific training that prepares them for careers as independent investigators and educators in academia, industry, and government. The CMB program is unique within the University of Minnesota and focuses on One Health; spanning a wide range of species, from laboratory animal, companion animal, to livestock species and humans.

The primary emphasis of the CMB program is the training of doctoral students; however, a small number of individuals complete a master's degree. The purpose of the master's degree is to provide technical training and scientific competence in the basic mechanisms of animal and human health and disease.

CMB students will be provided with:

- ✓ Scientific skills for laboratory and field-based research and creative approaches to problem solving.
- ✓ Basic skills in hypothesis testing and quantitative data analysis.
- ✓ Fundamental knowledge in mechanisms of health and disease.
- ✓ A broad knowledge base in biomedical sciences to complete a program of advanced study.
- ✓ Effective skills in presentation and dissemination of scientific knowledge.
- ✓ Relevant teaching opportunities to reinforce and further develop effective scientific communication skills.

The CMB Program faculty are responsible for maintaining standards of the CMB Graduate Program and providing the best advice and training that can be offered. Faculty members who serve as major advisers have direct responsibilities in administering the programs of their students, and at the same time allowing the students abundant opportunity to develop initiative and self-reliance.

B. ADMINISTRATIVE STRUCTURE

B.1 Director of Graduate Studies (DGS)

Primary administrative responsibility for the program is vested in the Director of Graduate Studies (DGS). The DGS must be a tenured or tenure-track faculty member of the CMB Graduate Program, and must hold a Ph.D. degree in a relevant field from an accredited university. The selection of the DGS is made via a nomination and election process by the CMB faculty. The DGS is elected by a simple majority of the votes received. The DGS appointment is approved by the Dean of the College of Veterinary Medicine on the recommendation of the Associate Dean for Graduate Programs (ADGP). The DGS term is three to five years, with annual review by the faculty as conducted by the Program Advisory Committee (PAC) and by the ADGP. The DGS cannot serve more than two consecutive terms. The DGS will be reviewed annually by the ADGP.

The specific responsibilities of the DGS include:

- 1) Communicate with the Associate Dean for Graduate Programs (ADGP) regarding decisions to accept new students or terminate existing students.
- 2) Administrative responsibility for the program.
- 3) Lead student recruitment efforts and facilitate review of student applications by the PAC and advise first year students.
- 4) Hold CMB faculty meetings at the minimum of one per semester.

- 5) Hold annual meetings with CMB graduate students to discuss matters of governance and curriculum.
- 6) Conduct an annual review of the program, including its policy and guidelines. Faculty will be asked to assess the current status of the graduate program and recommend plans for its continued development. Recommendations will also be solicited from graduate students. Results of the program evaluation will be communicated to the faculty and students and maintained on file.
- 7) Conduct, in concert with the PAC, annual reviews of individual graduate student progress within the program. With the aid of tracking forms maintained for each student, progress toward completion of his/her degree will be assessed. Problems identified during the review process will be addressed in consultation with the graduate adviser.
- 8) Establish short-term and long-term goals for the program and plans for achieving them.
- 9) Conduct, together with the PAC, reviews for faculty with graduate education responsibilities. Individual faculty will be reviewed every five years.
- 10) Provide leadership in developing and maintaining the CMB curriculum.
- 11) Disseminate information concerning fellowship and training opportunities for graduate students and assist in the selection of program nominees for Graduate School Fellowships and Awards.

B.2 Program Advisory Committee (PAC)

The Program Advisory Committee (PAC) consists of at least five CMB faculty members. These include the current DGS, and elected faculty (three-year terms). In addition, the PAC includes one student representative elected by the graduate student body and the previous DGS (one year term). As recommended by the Graduate School, the student representative's participation in PAC meetings is confined to matters of general administrative and educational policy and does not extend to matters that relate to the progress of individual graduate students, or to the applications of prospective graduate students.

The faculty establishes the general policies of the CMB graduate program. The PAC administers these policies, evaluates student and faculty applications, and facilitates the selection process. The PAC serves both faculty and students in the maintenance of academic standards, without impinging on the adviser/advisee relationship, through periodic reviews of the progress of all CMB graduate students and faculty. The PAC will present recommendations to the CMB faculty on matters such as changes in program policy and major issues or problems as needed.

Specific responsibilities of the PAC include:

- 1) Recruitment, review and ranking of new student applications.
- 2) Approval of individual student graduate degree plans and examining committees.
- 3) Review of graduate student progress in conjunction with the DGS.
- 4) Review of faculty with graduate education responsibilities appointment.
- 5) Review of curriculum and graduate program policies.
- 6) Annual review of DGS.

B.3 Associate Dean for Graduate Programs (ADGP)

The Associate Dean for Graduate Programs is appointed by, reports to, and serves at the discretion of the Dean of the College of Veterinary Medicine, in consultation with CVM leadership. The Associate Dean is to be reviewed annually by the Dean, DGSs, and other CVM Leadership as determined by the Dean. The Associate Dean provides support and strategic direction for the College, seeking to enhance the vision and vitality of its graduate degree training programs. In collaboration with College leadership, DGS and faculty, develops and implements the strategic plan for the College's graduate programs.

Specific responsibilities of the Associate Dean for Graduate Programs:

- 1) Develop strategic plan to ensure growth and excellence of the CVM graduate programs.
- 2) Increase awareness and visibility of graduate programs at the University, AHC, and Collegiate levels.
- 3) Represent graduate programs at collegiate level; liaison with College leadership and DGS.
- 4) Represent graduate programs interests in collegiate budget process.
- 5) Facilitate graduate programs reviews to provide effective assessment of graduate programs.
- 6) Oversee collegiate training grant programs to increase funding opportunities.
- 7) Provide leadership in the recruitment and retention of high quality graduate students.
- 8) Identify sources of funding for Ph.D. trainees, including emergency or bridge funding.

B.4 Office of Graduate Programs (OGP)

The College of Veterinary Medicine is the administrative home for the CMB graduate program. The Office of Graduate Programs oversees the graduate programs housed within the college. It functions as the student services office for all students enrolled in the graduate programs of the college. Further, this office provides leadership and support in new training initiatives and coordinates interactions between graduate programs within the College.

The office is staffed by a Graduate Program Coordinator and a Graduate Program Specialist who report to the Associate Dean for Graduate Programs. The responsibilities of the Graduate Program Office staff are identified in collaboration with the DGS and the Associate Dean for Graduate Programs.

Specific responsibilities of the Office of Graduate Programs:

- 1) Respond to program inquiries and requests.
- 2) Maintain current recruitment materials.
- 3) Maintain a database of prospective students.
- 4) Process new applications, prepare applicant files for evaluation by the PAC, and store a record of applicants for each academic year.
- 5) Coordinate Recruitment Day for prospective students.
- 6) Organize New Student Orientation prior to the start of Fall semester.
- 7) Coordinate course schedule and online registration process.
- 8) Provide general student services specific for graduate student population.
- 9) Liaison between students and the Graduate Student Services and Progress Office.
- 10) Oversight of student academic program and progress, including annual progress reports and annual thesis committee meetings
- 11) Resource for all students and faculty on university policies impacting graduate programs.
- 12) Complete exit interviews with students leaving the CMB program.
- 13) Maintain an up-to-date website describing the CMB program.
- 14) Maintain e-mail lists for graduate students and faculty.
- 15) Maintain student and faculty files and database.
- 16) Maintain database of alumni and create quarterly alumni newsletter.
- 17) Record and maintain notes of PAC and graduate faculty meetings.
- 18) Represent needs of graduate programs and students on university committees for graduate education.

C. FACULTY with GRADUATE EDUCATION RESPONSIBILITIES

Faculty with Graduate Education Responsibilities represent the establishment of an academic community in which the commitment to scientific discovery is coupled with the desire to train, advise and nurture graduate students. The goal of the faculty is to provide graduate students with training, which will equip them for careers in academia, industry, specialty practice or government service, and at the same time allow ample opportunity to develop initiative and self-reliance. Graduate education is fundamentally a dynamic process between faculty and students. Faculty should be committed to teaching the skills and

techniques necessary for graduate students to generate new knowledge. Faculty should also assist graduate students in maintaining focus on degree completion. Faculty members who serve as major advisers have direct responsibilities in administering the programs of their graduate students. In addition, faculty assume responsibility for championing faculty development and for maintaining the standards of the graduate programs.

The responsibilities of the CMB faculty with graduate education responsibilities include:

- 1) Serve as thesis adviser for CMB graduate students.
- 2) Serve on examining and thesis committees.
- 3) Teach CMB courses.
- 4) Participate in the CMB graduate program seminar series via regular attendance, presenting seminars and by providing evaluations of student seminars.
- 5) Serve on the PAC if elected and ad hoc CMB graduate program committees as requested.
- 6) Attend CMB faculty meetings.
- 7) Promote the CMB graduate program.
- 8) Maintain an active research program as demonstrated by the publication of at least five primary authorship (as determined by discipline) papers of original research in a peer-reviewed journal in the five-year period preceding the evaluation.
- 9) Conduct themselves in a professional manner in accordance with University of Minnesota Policies regarding student-mentor relationships and scientific ethics.

C.1 Faculty with Graduate Education Responsibilities Appointment

CMB Faculty may be appointed to either the Tenure/Senior Member (SM) or the Tenure-track/Member-Advising (TENURE-TRACK/M2) level. Regular established or tenure-track faculty who have previously advised graduate students may be considered for appointment at the TENURE/SM level. Term or junior faculty, who have not previously advised graduate students, may be considered for initial appointment at the TENURE-TRACK/M2 level. Promotion of TENURE-TRACK/M2 faculty to the TENURE/SM level can occur at any time by petition of the PAC. All individuals must be classified as University faculty or adjunct faculty or have an exception granted by the ADGP.

New faculty members are elected to the program by the CMB PAC. Applicants submit a C.V. and brief statement on their views on graduate education and how they plan to contribute to the CMB program. This information is reviewed by the PAC and voted on. To be admitted to the program, the applicant must be approved by a majority vote of the PAC. The decision to admit the applicant is based on the quality of the applicant's research program, written statement on graduate education, and training record or potential for training graduate students. The successful applicant will be invited to present a seminar in either the CMB graduate program seminar series (CMB/VMED8550) or the CVM Research seminar series. Program faculty are expected to conduct themselves in accordance with University policies especially those pertaining to graduate education <http://www.grad.umn.edu/about/policiesgovernance>

To be appointed at the Member/Advising (TENURE-TRACK/M2) level, faculty must hold an earned doctorate or equivalent from an accredited institution. Faculty appointed at the TENURE-TRACK/M2 level can:

- advise M.S. students
- advise PhD students with a senior member as co-adviser
- chair and sit on M.S. examining committees as well as be a reviewer for the M.S. thesis
- sit on Ph.D. preliminary examination committees
- sit on Ph.D. final examining committees as well as be a reviewer for the Ph.D. thesis

To be appointed as a Tenure/Senior Member, faculty must be tenure or tenure track, hold a Ph.D., D.V.M. or M.D. degree in a relevant field from an accredited university. Faculty appointed at the Senior Member (TENURE/SM) level can:

- Advise M.S. or Ph.D. students
- Chair and sit on Ph.D. preliminary examination committees

- Chair and sit on M.S. and Ph.D. final examining committees
- Serve as reviewer for M.S. and Ph.D. thesis

Faculty will be re-appointed every five years provided that they have carried out their responsibilities in a satisfactory manner as determined by an evaluation by the PAC. The objective of the review process is to ensure that faculty members meet the criteria for continued membership.

It is expected that graduate faculty will contribute meaningfully to the success of our students and program. All renewal applications will be reviewed by the PAC and will include assessment of prior mentorship outcomes. Graduate faculty members who have not fulfilled the minimum requirements will be asked to change their membership status or submit plans for increased participation. Continued faculty status in this graduate program must be evidenced in the following ways:

1) Presence of an active research program as demonstrated by the publication of at least five primary or senior authorship (based on discipline) research or original data papers in peer-reviewed journals in the five-year period preceding the evaluation,

AND

2) Successful completion of a Ph.D. or M.S. student thesis and degree in the CMB program under their tutelage within the previous 5-year period, or be in the process of training a Ph.D. student or M.S. student in the CMB program at the time of evaluation,

OR

3) Evidence of significant and regular contribution to the delivery of new or existing CMB graduate program courses, and/or hosting of rotation students when solicited, participation in CMB program activities, and/or regular and diligent service on PhD and MS committees within the CMB graduate program.

C.2 Considerations for Terminating Faculty Membership

- Faculty who have retired or resigned from the University of Minnesota will lose their faculty appointment. They may continue to advise students and serve on committees which were approved prior to their departure, but they may not advise new students or participate in new committee activities.
- Faculty may voluntarily resign.
- Faculty members who do not adhere to criteria for continued membership may be asked to relinquish membership.

C.3 Faculty as Co-advisers

The term co-adviser is used for a more experienced graduate faculty member who works with a new graduate faculty member to assist in the advising of a PhD graduate student. The new graduate faculty member is considered the primary adviser and is responsible for the student's support and thesis research topic. The co-adviser has no financial responsibility for the student, as that rests with the primary adviser, but rather is a resource for the student and primary adviser in terms of program requirements, graduate education policies and examining committees.

C.4 Faculty as Student Advisers

Each CMB student has a faculty adviser. The adviser must be a member of the CMB faculty and advisers of Ph.D. students must be at senior member level. Faculty at the Tenure-track/M2 level can advise M.S. students or have a co-adviser when advising Ph.D. students.

The responsibilities of graduate student advisers include:

- 1) Helping the student identify a novel and testable hypothesis and providing an experimental system with which to test the hypothesis.

- 2) Ensuring that adequate funds are available to support the student's stipend and fringe benefits and the purchase of supplies required for the student's thesis project.
- 3) Consulting with the student on design and interpretation of experiments.
- 4) Consulting with the student on coursework.
- 5) Assembling the thesis committee in accordance with guidelines and convening the thesis committee no less than once every 12 months to review advisee's achievements and to set goals for the coming year. The adviser will ensure a [Thesis committee meeting summary form](#) is completed by the committee chair.
- 6) Assisting in preparation and attending the student's seminar presentations.
- 7) Working with the student to identify, read, and critically evaluate scientific literature relevant to the thesis project.
- 8) Critically and expeditiously reviewing the student's thesis.
- 9) Assisting the student in submitting and publishing original research in peer-reviewed journals.
- 10) Assisting the student in making professional contacts outside of the University and in obtaining subsequent employment.
- 11) Ensuring that all research and academic activities of the advisee are conducted in agreement with current ethical standards.

D. GRADUATE STUDENTS

The recruitment of new graduate students is the combined responsibility of the DGS, the PAC, and all faculty within the program. The graduate program should strive continually to obtain training grants, graduate fellowships and scholarships by maintaining the highest standards of quality for both its faculty and students. The program should also strive for increased opportunities and competitiveness in the D.V.M./Ph.D. combined degree program.

D.1 Admission Evaluation Procedures

The preferred performance standards prescribed by university policy, with several graduate faculty approved modifications, will be utilized in the selection of CMB students. The graduate program has the responsibility for the formal notification of admission decisions.

- 1) B.S. or B.A. in biological sciences, a D.V.M., or an M.D. Our niche is the training of students in mechanisms of animal and human health and disease. Opportunities to train veterinary professionals as principal investigators in biological science are a unique strength of the CMB graduate program to be emphasized.
- 2) GRE scores obtained within the previous 5 years. This increases the ability of the PAC to evaluate applicants, allows future applications for fellowships within the University of Minnesota, and fulfills expectations of high quality applicants for evidence of a competitive program.
- 3) A minimum preferred performance level of 3.25 undergraduate GPA (on a 4 point scale).
- 4) Statement of applicant's experience and goals indicating research interests, career goals, and previous research experience. This will help the PAC evaluate strengths and weaknesses of applicants, ensure that the program is appropriate for their career goals, and provide students the opportunity to promote themselves.
- 5) Three letters of reference from individuals knowledgeable of the applicant's academic and research performance.
- 6) TOEFL score preferred performance level obtained within the previous two years; total score minimum of 79, writing section score minimum of 21, and reading section score minimum of 19.
- 7) Prior research experience is expected but not required. Any previous research or laboratory experience enhances the application by demonstrating the applicant's commitment to a work ethic and a general understanding of the true nature of laboratory investigations.
- 8) Curriculum Vitae

Applicants whose credentials are borderline may be offered admission on a conditional basis. The CMB PAC will outline the specific conditions that need to be met and a timeframe for meeting those conditions. If the specified conditions are not satisfied before the expiration of the timeframe, the admission is revoked.

D.2 Timetable for Application and Admission Process

To enable the administration of an efficient, cohesive, competitive, and successful Graduate Program, a single admission for fall semester is recommended for all students. The approximate timetable for the entire process of application and admission is as follows:

Application deadline:	December 1
Decision letter:	March 1
Commitment by student:	April 15
Students enter program:	Fall Semester

There will be flexibility on this issue to allow the recruitment of outstanding or exceptional students. There are a variety of mechanisms by which prospective students may join the University Community throughout the year and enter the Graduate Program in the fall. However, it is expected that such students will complete core courses and laboratory rotation requirements.

D.3 Financial Support for Students

In some cases, the program will support students entering the CMB Ph.D. program during the first academic year. Support during subsequent years in the program is the responsibility of the student and adviser. The **minimum** stipend for students is adjusted annually to meet the NIH recommendations or Graduate School Fellowships, whichever is higher, plus fringe benefits as determined by the university. Candidates who have passed their oral prelims may receive \$1,000 additional stipend support. Students entering the M.S. program will be supported by a faculty adviser immediately upon entering the program. Under normal circumstances the CMB graduate program does not provide financial support to M.S. students during the first year. Note that all students must be registered in both the Spring and Fall semesters in order to maintain active status.

D.4 Transfer of Credits

The University policy on Application of Credits for Students Earning Graduate Degrees (<http://www.policy.umn.edu/Policies/Education/Education/GRADCREDITDEGREE.html>) should be consulted for questions regarding transfer of credits. Credits to be transferred must be graduate level. Students request the transfer of course credits by including the courses on their GPAS (graduate planning and audit system). In all cases, official transcripts of the graded work must be included in the student's graduate admission office application file.

A limited number of credits of graduate level coursework taken as a non-degree seeking or non-admitted student may be considered for transfer. Transfer of graduate credits is not allowed for courses completed through independent (correspondence) study, completed through extension or special categories at other institutions, or taken before the awarding of a baccalaureate degree. Transfer of thesis credits is not allowed.

D.5 Professional Development

All students need to engage in activities that enrich their graduate experience and help them identify and prepare for their post-graduate career. A personalized individual plan will assist the student and advisor in identifying appropriate activities. Activities that qualify include (but are not limited to), mentored teaching, professional externships, and outreach activities designed to advance the career goals as identified in the students' Individual Development Plan (IDP).

Individual Development Plan

Students are required to develop an IDP and to complete meaningful professional development activities prior to graduating from the CMB graduate program. IDPs provide a planning process that identifies professional development needs in the context of career objectives.

There are several resources for completing the IDP, the program recommends the online AAAS version (<https://myidp.sciencecareers.org>). Each student is expected to complete an IDP, discuss goals with their advisor and committee during regular and mandated meetings, and update it regularly as goals are achieved and new ones added. Completion of this process is to be reported each year in conjunction with the Annual Progress Report.

D.6 Professional Conduct and Science Ethics

Students in the CMB program are expected to conduct themselves in a professional manner at all times, including personal interactions outside of University structures and events. A respectful workplace is to be maintained at all times. Incoming students are required to attend a Respectful Workplace discussion held at regular intervals within the College of Veterinary Medicine. It is also of utmost importance that the highest quality of academic integrity be maintained. Finally, all research and learning is to be conducted in agreement with current ethical standards, particularly when the research involves the use of human and/or animal subjects. Students found in violation of these codes of conduct will be brought before the PAC and/or University Review Panels, with possible dismissal from the program. Students have the right to file grievances against CMB program students, faculty, and staff (<http://www.sos.umn.edu/>) and the execution of this right shall not impede the academic progress of the student.

The Graduate School describes the mutual rights and responsibilities for graduate students and their mentors, and these are used as the model for student and mentor conduct by the CMB program. Standards of Student Conduct Enforceable by University Agencies and the actions defined as disciplinary offenses actionable by the University can be found at <http://www1.umn.edu/oscai>. Expectations for behavior concerning Graduate Students in Research, Scholarship, and Professional Education are described at <https://www.research.umn.edu/ethics-compliance/overview>. Information regarding approval of animal use protocols is available at <http://www.research.umn.edu/iacuc/>. Related policies are described at <http://www1.umn.edu/ohr/gae> or through the College of Veterinary Medicine Office of Human Resources, 416 VMC.

E. Ph.D. DEGREE PROGRAM

The Doctor of Philosophy degree is granted not on the basis of successful completion of a definite amount of prescribed work, but chiefly as a result of recognition of the candidate's research attainments. This is determined by completing the required coursework, passing the required written and oral preliminary examinations covering the candidate's thesis proposal, and successful completion of a thesis. It is expected that the completed thesis will contain data sufficient for at least one publication in a referred journal. **All requirements of the Ph.D. program must be completed within eight calendar years after initial term of enrollment in the graduate program.**

E.1 Degree Requirements

Formal coursework for the Ph.D. degree varies according to the field of study, interests, and career goals of the individual graduate student. Courses may be taken in disciplines other than CMB.

- At least 12 course credits and 24 doctoral thesis credits must be completed while enrolled in the CMB graduate program.
- Approved transfer coursework may include a maximum of 12 graduate credits taken as a non-degree or non-admitted student.
- Transfer of thesis credits is not allowed.
- As per Graduate Education requirements, at least 2/3 of course credits must be taken with grades A-F.

Course Credit Requirements: Students typically take a minimum of 24 course credits in CMB and related fields. If students choose to have an official minor, those required course credits must be outside of CMB and can be a subset of the 24 course credits.

Thesis credits: 24 thesis credits are required. Thesis credits may be taken at any time and it is suggested that students add thesis credits each semester until they have the maximum of 14 credits per term. Pre-thesis credits (CMB 8666) may be taken but do not count toward the required course credits, or the 24 thesis credits (CMB 8888) requirement.

Required Courses:

The following are required courses.

	<u>Credits/Semester</u>
CMB 5910 Grantwriting	2 cr/Spring
CMB 5915 Essential Statistics for Life Sciences	3 cr. Fall+
CMB 8100 Research Rotation in CMB	1 cr/Fall and 1cr/Spring
CMB 8134 Ethical Conduct of Animal Research	3 cr/Fall
CMB 8202* Mech. of Animal Health & Disease II	3 cr/Fall
CMB 8303* Comparative Models of Disease	2 cr/Spring
CMB 8550 CMB Seminar	1 cr/Fall and 1 cr/Spring
<i>(Required to be attended every semester, but only need to register twice, for a total of 2 credits)</i>	
CMB 8560 Research and Literature Reports	1 cr/Fall or Spring
<i>(one credit is required; a second credit may also be completed)</i>	

*Students with post-baccalaureate degrees need only take one of these courses

+Potential biostats alternatives:

(registration for any of the following will require petition to and approval from the CMB PAC)

CMB 8910 Statistical Principles of Research Design	3 cr.
PUBH 6450 Biostatistics I	4 cr.
PUBH 6451 Biostatistics II	4 cr.
Stat 5021 Statistical Analysis	4 cr.
Stat 5031 Statistical Methods for Quality Improvement	4 cr.
Stat 5302 Applied Regression Analysis	4 cr.

Stat 5303 Designing Experiments	4 cr.
Stat 5421 Analysis of Categorical Data	3 cr.

Statistics courses other than those recommended can be used to fulfill these requirements with the approval of the student's adviser, the thesis committee, and the PAC.

Additional 6-11 credits in course requirements:

- 5000 and 8000 level courses in the biological sciences
- Certain 5000 level courses will suffice, but it is recommended that the student first consult with the DGS about course content.
- Seminar and journal club courses do not qualify.
- GRAD8101 Teaching in Higher Ed - **OR** –
- GRAD8200 Teaching and Learning Topics in Higher Ed
(but not both to be counted towards additional course requirements)

Courses for consideration to meet the additional course requirements:

CMB 5200	Introductory Statistical Genetics & Genomics	4 cr.
CMB 5340	Structural Biology in Biomedical Research	2 cr.
CMB 5571	Pathogenomics and Molecular Epidemiology	3 cr.
CMB 8012	Basic concepts in Skeletal Biology	2 cr.
CMB 8208	Neuropsychopharmacology	3 cr.
CMB 8361	Neuro-Immune Interactions	3 cr.
CMB 8371	Mucosal Immunobiology	3 cr.
CMB 8481	Advanced Neuropharmaceutics	4 cr.
CMB 8571	Pathogenomics and Molecular Epidemiology	3 cr.
CMB 8910	Statistical Principles of Research Design	3 cr.
GCD 8131	Advanced Genetics	3 cr.
GCD 8151	Cell Structure & Function	3 cr.
GCD 8161	Advanced Developmental Biology	3 cr.
MICA 8002	Structure, Function & Genetics of Bacteria & Viruses	4 cr.
MICA 8003	Immunity & Immunopathology	4 cr.
MICA 8004	Cellular & Cancer Biology	4 cr.
VMED 5180	Ecology of Infectious Diseases	3 cr.
VMED 5181	Spatial Analysis in Infectious Disease Epidemiology	3 cr.
VMED 5190	Seminar & Presentation Development for Grad. Stud.	2 cr.
VMED 5442	Quant. Methods for Analysis of Food An. Disease Data	4 cr.

In addition, many other 5000 and 8000 level courses in Microbiology, Parasitology, Virology, Immunology, Molecular and Cellular Biology, Biochemistry, Neuroscience, Physiology, Pharmacology, Genetics, Anatomy, Histology, Cytology, and Pathology can be used to meet this requirement. Students are required to consult with their adviser and committee members to determine which courses are appropriate for the student's program.

E.2 Research Rotations

Research rotations (CMB 8100) in two different laboratories (8-10 weeks in length) are required of all CMB Ph.D. students before a thesis adviser is selected (See section I.1-I.2 below). Students may participate in an additional laboratory rotation if needed to identify an appropriate advisor. Students who are unable to find a mutually agreeable arrangement with an adviser will be not be re-appointed for a second year.

E.3 Selection of an Adviser

By the end of the spring semester of the first year, students will select a thesis research adviser who will mentor the student's research program. It is the responsibility of the student, in consultation with the DGS, to identify a research adviser. This must be a mutually agreeable arrangement between the student and the adviser. Only University faculty, including adjunct faculty, may serve as advisers. The primary adviser must be appointed at the SM level and hold an earned doctorate or equivalent degree from an accredited university. Faculty appointed at the TENURE-TRACK/M2 level may advise PhD students if they have a Senior Member serve as co-adviser. Individuals working toward a graduate degree at the University may not serve as adviser. Emeritus faculty and faculty who have left the university may continue as adviser so long as the faculty, student, and ADGP agree in writing. In this case, an active faculty co-adviser will be named. The adviser and student will be responsible for obtaining financial support for the student during completion of the Ph.D. studies. If a mutually agreeable research adviser cannot be identified the student will have to withdraw from the program.

Students who wish to change advisers during their training must make arrangements with the adviser in due course, and to properly notify the DGS and their current adviser. The DGS and the PAC can assist in cases where a student may need to change advisers, but the graduate program will provide no stipend support in these instances.

E.4 Credits Required Each Term

Students with an assistantship need to register for 6-14 credits. The minimum number of 6 credits is considered full time. **Anything less than 6 credits is part time.** Assistantships allow for the registration of up to 14 credits. Registration for more than 14 credits includes an additional financial charge which is the responsibility of the student and/or adviser. Those students who have passed their preliminary oral exam, completed all coursework and 24 thesis credits may register for CMB8444, which is a 1 credit, full-time equivalent course.

To assist students in completing thesis credits in a timely fashion, they should register for thesis credits each semester they do not have at least 14 course credits on their schedule. This should facilitate completing the 24 required thesis credits within the first two years of the Ph.D. program.

E.5 Graduate Planning and Audit System

No later than the end of spring semester of the first year, students must file their official program using GPAS (Graduate Planning and Audit System). This online tool lists all completed and planned coursework, as well as requested transfer credits. The GPAS is submitted by the student and then the Graduate Program Coordinator takes it to the PAC for approval. It is then submitted to GSSP.

E.6 Selection of Thesis Committee

Prior to the start of the second year the student and adviser will select the thesis committee to advise the student in further course selection and assist in evaluating the research activity. The committee must consist of at least four graduate faculty members: three members from CMB, including the adviser, and one member who is not a member of the CMB graduate program. Of these four at least one must be tenured, at least one other must be tenured or tenure-track. The other two must be university faculty who hold an earned doctorate or designated equivalent from an accredited institution.

Experts outside of the University may serve on examining committees with appropriate review and approval by the PAC. The student should request a current CV from the individual and the student must submit that along with a paragraph outlining why the individual is appropriate to sit on their examining committee. Additionally the individual must submit a HRIF (Human Resources Information Form) in order to be assigned an ID number and U of M e-mail address. It will be necessary for the e-mail address to be activated for use in the thesis review and final exam process. It will be the student's and adviser's responsibility that the outside of the University committee member complete these processes.

Individuals working toward a graduate degree at the University may not serve as committee members in any capacity. Please refer to University policy on Graduate Examining Committees at <http://www.policy.umn.edu/Policies/Education/Education/APPOINTGRADCOMM.html>.

Individuals who do not meet the policy's eligibility criteria may receive collegiate approval by submitting a CV and paragraph outlining the rationale for their committee involvement. This is reviewed and approved by the PAC.

The preliminary and final defense examining committees must designate a chair who holds an earned doctorate or designated equivalent in an appropriate field from an accredited institution and meets the CMB graduate faculty criteria (see C.1). The chair cannot be the adviser or co-adviser.

In order to approve the student's committee, a form must be completed identifying the desired committee members. This form is available from the graduate programs coordinator (GPC). It is completed by the student with the adviser's input and returned to the GPC who takes it to the PAC for approval. Once approved by the PAC the student submits their request online at <https://onestop.umn.edu/academics/examination-committees> for entry into the student's official record.

E.7 Individual Development Plan

An individual development plan (IDP) is a tool to assist you in considering career options and in developing and reaching short- and long-term goals. As a CMB graduate student you are required to complete and use an IDP during your graduate training. To assist in the process, we recommend the AAAS web tool myIDP available at <https://myidp.sciencecareers.org>. To create an IDP, you will assess your scientific skills, interests, and values. The web tool will generate careers that fit your interests, and allow you to set personal (short and long term) goals. After completing the assessment, you will have a working document to use in meeting with your advisor to help you gain insight into your plans for the future. You may choose to use other IDP tools, but the process is essentially similar.

E.8 Annual Student Review

Students will be evaluated by the PAC every year to assess their progress towards their degree requirements. The performance in research rotations and all coursework, as determined by the written evaluation by advisers and faculty, must be satisfactory. If it is determined that a student is not making adequate progress, he/she will be required to report to the PAC providing reasons for the delay in progress and a timeline for addressing the issue. If the PAC does not deem this petition to be reasonable, the student will be required to meet with the PAC and a timeline will be determined at that meeting. Failure by the student to adhere to the timeline will result in a request by the PAC that the student be dismissed from the graduate program.

E.9 Minimum Grade Requirements

Students are required to have a minimum grade point average of 3.0 (on a 4.0 scale) for all courses on their U of M graduate transcript and on the official graduate degree plan (GPAS). Courses with grades of A, B, C (including C-) and S may be included, but grades of S are not calculated in the GPA. At least 2/3 of all course credits on the degree program plan (GPAS) must be graded A-F. Students whose GPA falls below 3.0 will be placed on probation and allowed one semester to raise cumulative GPA to the 3.0 minimum. After that time students will be dismissed for lack of satisfactory progress.

Students who are not making satisfactory progress will not be re-appointed.

E.10 Summer Registration:

Students do not register for summer sessions unless required to do so by a funding agency or government, or needed to accrue thesis credits in order to graduate by the end of fall term. **Students need to consult their adviser and obtain permission through the Graduate Program Office prior to registering.** If approved, a request for graduate assistant tuition benefits form must be completed and submitted prior to registration.

E.11 Second Year in the Ph.D. Program

Beginning in the second year of the Ph.D. program, students will initiate their research program. This may be a continuation of a rotation project, working on an established project, or the beginning of a new project. During the second year it is expected that the student will generate preliminary data to be used to develop and defend their thesis proposal. In addition, it is expected that the remaining required course credits will be completed during the second year.

E.12 Annual Thesis Committee Meetings

Students are **required** to meet with their thesis committee *at least once each academic year*. The first thesis committee meeting **should** take place during the summer after year one or during fall semester of the second year of the Ph.D. program, and again immediately prior to the preliminary written exam, at the preliminary oral exam, and no less than once per year afterwards, including approximately 6 months prior to the Ph.D. defense to ensure all members are aware of student progress and that there is agreement on the body of work for the Ph.D. At the last committee meeting prior to the final defense *all* committee members must agree that the student should be ready to defend within the next 6 months. This is indicated as a check box at the bottom of the [Thesis committee meeting summary form](#).

It is the responsibility of the student to convene the thesis committee within the timeframes described above. The adviser and all committee members accept the obligation to be available and participate in committee meetings. Meetings with individual committee members do not meet the committee meeting requirements but are encouraged. Committee meetings are compulsory and a prerequisite for stipend support for the following year. Students who fail to convene committee meetings may be dismissed from the program and the adviser may not be allowed to accept additional graduate students. Students and advisers are encouraged to solicit the DGS or Office of Graduate Programs if scheduling difficulties arise.

E.13 Thesis Committee Instructions

The purpose of the Thesis Committee is to help the candidate achieve full scientific potential, improve the quality of research and enrich the scientific training. In addition to preparing the candidate for the Ph.D. preliminary exams and conducting the exams the committee meetings aim to:

- Ensure that the project is scientifically valid and suitable for a Ph.D. project
- Ensure that coursework supports the Ph.D. project, assures adequate knowledge and expertise in the field, and provides the necessary skills for completion of the research
- Determine the student's familiarity with relevant literature
- Evaluate the progress and future plans of the Ph.D. project
- For hospital residents, ensure integrity of both specialty and graduate training
- Oversee the timely graduation of the student

The committee must convene as a quorum, defined as the mentor and at least two other committee members. Committee members may participate via video conference formats, if necessary.

Meetings and reporting

The first meeting should convene prior to the end of third semester for Ph.D. students. After the preliminary exams a thesis committee meeting is required annually (Ph.D.) until the thesis defense, but may be held more often if desired. The nature of thesis committee work changes according to the maturation of the Ph.D. student and the progress of the project. The following is a recommended structure:

Meeting 1: Form a personal study plan with the student; discuss objectives of the thesis project

Meeting 2: Complete the preliminary examinations

Meetings 3-5: Follow up on the personal study plan, thorough check of research results
Final Meeting: Accepting the Ph.D project, formally grant permission to write the thesis

Conducting Regular Thesis Committee Meetings

For each meeting the student is to prepare a report for the Thesis Committee summarizing coursework and scientific research progress. During the meeting, which should not exceed 2 hours, the student and committee will discuss:

- Coursework progress, quality, how it meets the student's needs, and plans for additional learning and professional development
- Specific aims of the research and the current status of the project, including technical difficulties and unsuccessful experiments
- Progress on work accomplished since the last committee meeting
- Future short-term and long-term plans of the dissertation project
- The project's experimental strengths and weaknesses
- Expectations and deadlines for obtaining significant results

At the end of each meeting, the following actions will be taken:

- Committee members will make a majority recommendation regarding continuation of the student's program
- The student is informed of any concerns or pending milestones
- The committee chair completes the [Thesis committee meeting summary form](#) and submits it online
- OGP receives the form and sends copies to the student, adviser and committee members

E.14 Changes to Examining Committee

To change an examining committee member you must have the approval of your Adviser, the DGS, and the ADGP as appropriate. At the discretion of the DGS or ADGP, the committee member being removed is to be solicited for input prior to the decision. If it becomes necessary to replace a thesis committee member, the DGS must approve all replacements. The ADGP will mediate a solution in cases where there are disagreements with removing a committee member. Substitutions for a preliminary or final oral examination that are necessitated by emergency situations must also be approved in advance. In such cases, the adviser should consult with the Office of Graduate Programs (624-7413), the DGS, or the Graduate Student Services and Progress Office (625-3014) before the start of the examination.

E.15 Preliminary Examination

The preliminary examination consists of both a written and an oral component. **The written preliminary exam must be successfully completed before the end of August, following year 2.** The oral preliminary exam must be completed by the end of Fall semester, Year 3, as described below. Only under unique circumstances will students be allowed to delay the preliminary examination. Any delay in taking the preliminary exam needs prior approval by the DGS.

Written Preliminary Exam

The preliminary written exam will contain two proposals. Please refer to the CMB Written Prelim Submission Form (to be obtained from the Graduate Program Coordinator) for additional details and critical preparation guidelines.

1) Thesis proposal

The thesis proposal is limited to **10 pages** (not including references) and is to be written as a mentored exercise with the student's adviser and thesis committee. Consultation with the adviser and committee members is strongly encouraged during this phase of the written exam. The proposal is to represent a plan of research for completion of the thesis requirements.

2) **Alternate (distinct) proposal**

The alternate proposal is limited to 5 pages (not including references) and is to be written entirely by the student without any input from the adviser or the thesis committee. It is up to the thesis committee to approve the topic and general experimental plan of the alternate proposal. The committee will determine if the alternate proposal and experimental plan are distinct from the thesis proposal. The alternate proposal may be in the same general field or area, but must not overlap in hypothesis or be proposing a similar experimental plan. The decision as to whether the alternate proposal is distinct rests solely with the thesis committee. The committee should not discuss or suggest modifications to the proposal at this time, or during its preparation. The committee is only to determine its appropriateness as a tool for evaluation of the student's ability to identify and experimentally address a scientific problem for which a need exists.

The alternate proposal is reviewed by all members of the thesis committee, except for the student's adviser(s). In addition, the alternate proposal will be evaluated by one or more members of the CMB faculty whose scientific expertise is most appropriate. The written exam is passed if a majority of the reviewers find the proposal "acceptable". If majority approval is not obtained, the student will be allowed one chance to revise the alternate proposal based on the comments of the reviewers. If revisions are necessary the student should plan to complete them within one week. Those committee members requesting revisions will then have one week to review the student's revisions and accept or reject the alternate proposal. Upon the successful completion of the written exam the student is to schedule the preliminary oral exam.

The thesis proposal and alternate proposal forms that are inserted within the **CMB Written Prelim Submission Form** will be submitted to the Graduate Program Coordinator (GPC) for distribution with evaluation forms to the thesis committee. Committee members are to evaluate the proposals, return the proposal evaluation form to the GPC, and determine if the proposals are acceptable for defense **within 3 weeks** after receipt. Once the thesis committee approves the thesis proposal and alternate proposal, the GPC will submit the online form indicating the written preliminary exam has been successfully completed.

Oral Preliminary Exam

Oral preliminary exam must be successfully completed by end of Fall semester Year 3 (Dec. 15).

Students must schedule the oral preliminary exam electronically with the GSSP. Details here:

<https://onestop.umn.edu/academics/doctoral-oral-exam-scheduling> You must schedule with the GSSP at least one week prior to your oral prelim.

1). **Open seminar presented to the graduate program based on the thesis proposal.** A public research seminar is required for completion of the preliminary examination. Ideally, the seminar will be given as part of CMB 8550 or another regularly scheduled seminar series, following successful completion of the written preliminary examination. The seminar ordinarily will be given after completion of the written examination and in the same semester as the oral examination is scheduled. Exceptions must be approved by the PAC and the DGS.

The seminar will include an introduction to the research project, relevancy of the scientific problem, the hypothesis to be tested, an outline of the proposed studies, including preliminary results obtained to date (second year research), and anticipated results.

2). **Examination by the thesis committee in which the student defends the thesis proposal.**

The exam is focused on the thesis proposal and the student's coursework. *The alternate proposal is not part of the preliminary oral examination.* The exam requires the student to demonstrate satisfactory knowledge in both the major area and the specific research topic. Upon completion of the preliminary oral examination, there will be a vote by the thesis committee, as outlined below. After discussion and voting the student will be informed of their performance.

There is no expectation that food will be provided during the oral preliminary examination. Furthermore, the student is neither responsible for nor expected to provide food for their oral preliminary examination.

Outcome of the committee vote will be; Pass, Pass With Reservations, or Fail

Step 1. Determine Pass or Fail:

Pass and Pass With Reservations count as a Pass. The voting proportions necessary to Pass are:

4 member committee - 3 Pass/1 Fail

5 member committee - 4 Pass/1 Fail

6 member committee - 4 Pass/2 Fail

Step 2. For a Pass, determine whether there are reservations:

The voting proportions necessary to Pass without any reservations are:

4 member committee - 3 Pass/1 Pass With Reservations

5 member committee - 4 Pass/1 Pass With Reservations

6 member committee - 4 Pass/2 Pass With Reservations

If in Step 1, a fail vote occurs but the student passes, it is recommended that the committee member changes his/her *Fail* vote to a *Pass With Reservations* vote for which the student may then be required to address particular issues.

- Pass: Students who pass the preliminary exam will continue with their graduate studies.
- Pass with reservations: Students who pass with reservations will be given a letter outlining the necessary requirements to have the reservations removed. The letter will contain a completion date, as determined by the thesis committee, for the requested stipulations. After successfully addressing the reservations to the satisfaction of the thesis committee the student will continue with their graduate studies.

Fail: Students who fail the preliminary examination may have the opportunity to retake the preliminary examination in accordance with the Doctoral Degree: Performance Standards and Progress policy. If a fail with retake is the outcome, committees must allow a minimum of 4 weeks before the retake exam.

Within 24 hours of completing the preliminary oral exam, the student must submit the signed Preliminary Oral Examination Report form to GSSP. For a Pass With Reservations, the committee is permitted one week to submit the signed Preliminary Oral Examination Report form to GSSP along with a letter detailing the conditions of the reservation. A copy of the letter outlining the reservations should also be submitted to the OGP.

Once a student achieves Ph.D. candidacy (successfully completing preliminary exams) the minimum stipend is \$27,500. Students must initiate this increase by communicating directly with the Graduate Program Coordinator. After officially passing their exams students must send an e-mail to the graduate program coordinator in order for the increase in stipend support to be initiated.

E.16 Thesis Credits

PhD students are required to complete 24 doctoral thesis credits (CMB8888). Thesis credits may be taken at any time and it is suggested that students add thesis credits each semester until they have the maximum of 14 credits per term. Pre-thesis credits (CMB 8666) may be taken but do not count toward the required course credits, or the 24 thesis credits (CMB 8888) requirement. Upon completion of all 24 thesis credits students should register for VMED8444 (1 credit but offers full-time status) to decrease tuition costs.

E.17 Professional Development

All students need to engage in activities that enrich their graduate experience and help them identify and prepare for their post-graduate career. A personalized individual plan will assist the student and advisor in identifying appropriate activities. Activities that qualify include (but are not limited to), mentored teaching, professional externships, and outreach activities designed to advance the career goals as identified in the students' Individual Development Plan (IDP).

Individual Development Plan

Students are required to develop an IDP and to complete meaningful professional development activities prior to graduating from the CMB graduate program. IDPs provide a planning process that identifies professional development needs in the context of career objectives.

There are several resources for completing the IDP, the program recommends the online AAAS version (<https://myidp.sciencecareers.org>). Each student is expected to complete an IDP, discuss goals with their advisor and committee during regular and mandated meetings, and update it regularly as goals are achieved and new ones added. Completion of this process is to be reported each year in conjunction with the Annual Progress Report.

Means to address IDP objectives include:

Teaching

The CMB program is committed to the fundamental linkage between research and education. We recognize the importance of teaching and highly recommend that the IDP include a teaching experience. Students can achieve this by serving as a Teaching Assistant, guest lecturer (in a course taught or supervised by a CMB faculty member with lectures formally evaluated), or through a combination of coursework and a mentored teaching experience. Teaching Assistantships are often available in several general science laboratories. For students wishing to receive more formalized/didactic training the preparing future faculty course series is recommended: GRAD 8101 Teaching in Higher Education 3 cr. and/or GRAD 8200 Practicum for Future Faculty 1 cr. For further information go to <http://cei.umn.edu/courses-programs/preparing-future-faculty/future-faculty-courses>

Externships

For students interested in research careers outside of academia, experience in an industry setting can be highly beneficial. Short duration externships can be easily completed during spring or winter breaks, and longer experiences can be arranged. Externships may range from job shadowing to more extensive projects with assigned responsibilities, work deadlines and expectations.

Other Professional Skills

- Leadership activities including student groups, community outreach
- Professional networking to attend and present at professional and scientific meetings
- Student mentoring to include, as available and if appropriate, undergraduates, summer scholars less senior students

E.18 Final Examining Committee

Students must complete the online Assign/Update Final Oral Examining Committee form which is found at <https://onestop.umn.edu/academics/examination-committees>, even if their committee remains the same as the preliminary examination committee.

E.19 GRAD999 Registration

Students need to maintain active enrollment in the graduate program each fall and spring semester and at the time their final manuscript and all other required paperwork is submitted. There may be a situation when students need to have an active enrollment, but do not need to have full-time status. These situations are the exception, but it is possible that the student may be eligible to register for GRAD999, a non-tuition and non-credit bearing course. Note that GRAD999 registration does not provide full-time student status. You must check with the graduate program office before registering for GRAD999.

If it is determined that the student is eligible to register for GRAD999, they may do so for one semester only. After which, if the student needs to register for an additional semester, they must petition the PAC for permission prior to the start of the term. The petition will need to outline the student's academic progress over the previous term and the progress intended to be made over the coming term. The petition must be accompanied by signatures of the student's adviser and examining committee members.

E.20 Requesting Extension to Time Limit for Degree

Those students who experience extraordinary circumstances which prevent Ph.D. degree completion within the established time limits may request a one time extension of up to 24 months. The student needs to discuss this option with their adviser to determine if it is a viable solution. If the student decides to request an extension they must complete the form Doctoral Degree: Request for Extension to the Maximum Time Limit <http://policy.umn.edu/sites/policy.umn.edu/files/forms/um1777.pdf> The extension request form is submitted to the CVM Office of Graduate Programs after being signed by the adviser, at least 6 months prior to the 8 year time limit. The extension request must include a letter from the adviser recommending the time extension and identifying a new completion date. The request is then taken to the PAC. If approved the PAC will establish a new completion date and the DGS will sign the form. If the request is denied the student will be terminated from the program if they do not complete within the standard 8 year time limit. The student will be informed of the PAC's decision in writing.

E.21 Graduation Packet

Download a graduation packet from GSSP the term before you plan to defend your thesis. The graduation packet is online at <https://onestop.umn.edu/forms> (click on Graduation and then Graduation Packet). This packet will include a link to the Thesis Reviewer's Report form. You will need to initiate the Thesis Reviewer's Report form at least one week before your defense date. Your committee members should respond to the form at least three – four days prior to your defense date. Once all committee members have responded to the form your student record will be updated and you will receive an e-mail with a link to complete the final exam form.

The Application for Degree must be submitted prior to the first day of the month in which you plan to defend. You can find that form by going to <https://onestop.umn.edu/forms> (click on Graduation and then Application for Degree).

E.22 Doctoral Thesis

Students nearing completion of their thesis research should discuss the timeframe for completing their program with their thesis committee at their annual committee meeting. The committee chair must indicate on the last **section of the Thesis Committee Meeting Summary Report form** that the student has approval to begin writing his/her thesis (this should be done at an annual committee meeting). The student then begins writing the thesis. Students should refer to the thesis/dissertation submission and formatting document which is located at <https://onestop.umn.edu/academics/thesisdissertation-submission-and-formatting> on the OneStop website. Single author and not collaborative, shared, or co-authored theses are required.

After the thesis is completed and the adviser is satisfied with the draft, the student submits a typed and legible copy to the thesis committee. **The committee members must be given a minimum of three weeks to confer with the candidate on the content of the thesis.** Any major revisions must be completed prior to the final defense. Minor revisions can be made after the defense but before the final manuscript is submitted. The appropriate committee members must agree that the thesis is suitable for defense by submitting the online Ph.D. Thesis Reviewers Report Form. The Ph.D. Thesis Reviewers Report Form must be submitted, to the GSSP, at *least* three –four days prior to the final defense date.

E.23 Final Oral Exam

The final oral examination (thesis defense) may be scheduled only after the thesis committee agrees that sufficient research accomplishments have been achieved by the student. Candidates are expected to complete at least one first author manuscript, based on their thesis research, along with evidence that it has been accepted for publication. This documentation is submitted to their committee chair and OGP. Committee approval is demonstrated by submission of the Ph.D. Thesis Reviewers Report Form. A one page explanation of the situation is required if there is a reason that the student cannot publish. The student must submit the online Final Oral Defense/Examination Scheduling Form found at <https://onestop.umn.edu/academics/doctoral-oral-exam-scheduling> a minimum of one week prior to the final exam date.

Announcements to the CMB students and faculty need to be sent out a minimum of two weeks prior to the exam. The student should contact the Graduate Program Coordinator with the date, time, location of the final defense as well as the title of the thesis and the adviser's name. The graduate program coordinator will send out an announcement for the final oral defense to the CMB students and faculty. The candidate will then present his/her thesis in a public seminar with the examining committee present. The seminar constitutes the final oral exam, and is followed by a short meeting with the examining committee. After this meeting the committee chair submits the Final Oral Examination Report Form. All faculty and students are encouraged to attend the final oral exam.

E.24 Dissertation Submission

University policy requires students to submit the final completed dissertation electronically. Directions for submitting the dissertation are found in Dissertation Submission which is located at <https://onestop.umn.edu/academics/thesisdissertation-submission-and-formatting> . **The University will not award the official degree until the dissertation has been received.** Paper copies of the dissertation are required for the following with thesis binding being the responsibility of the student. Most students will need at least two copies of the thesis:

- ✓ one for the adviser,
- ✓ one for the Office of Graduate Programs, and
- ✓ one for each committee member (optional).

E.25 Exit Interview

Upon completing the Ph.D. degree, the Graduate Program Coordinator will solicit a written evaluation of the student's experience in the CMB graduate program. The student will be offered an opportunity to meet individually with the GPC or to submit the written evaluation electronically. These evaluations will be used to assess the quality of the Ph.D. program and faculty, and to provide guidance for improving graduate education.

E.26 Leave of Absence

A leave of absence (LOA) from the graduate program may be possible under limited circumstances. If a LOA is approved the student must not have contact with their graduate program, adviser, research, etc. A LOA is a total respite from all forms of graduate education, courses, lab work, contact with professors and staff. Students must apply for a LOA and have it approved by the DGS and OGP, before it goes into effect. LOAs are for full semesters and cannot be approved for less than one semester or more than four semesters. More information is available at

<http://www.policy.umn.edu/Policies/Education/Education/GRADSTUDENTLEAVE.html>

Circumstances that may warrant a request for a LOA include serious illness, death of a close family member, birth or adoption of a child and for voluntary military service. Other circumstances may cause a request to be initiated but there is never a guarantee that a LOA will be approved.

When considering a Leave of Absence

- review Administrative Policy: [Leave of Absence and Reinstatement from a Leave: Graduate Students \(Twin Cities, Duluth, Rochester\)](#);
- read instructions on the [Leave of Absence](#) form
- confer with your adviser(s), DGS, graduate programs coordinator (GPC), and relevant offices (e.g., ISSS, Graduate Assistant Employment, Financial Aid) regarding the impact of a LOA on your financial, academic, work-related, and personal circumstances
- confer with your DGS and CVM Office of Graduate Programs about what, if any, conditions may be placed on your reinstatement after the LOA.

If, after review and consultation, you choose to request a LOA

- complete the form (include supporting documentation, if requested) immediately
- obtain signatures of your adviser(s) and DGS
- submit the signed form to the CVM Office of Graduate Programs for review

The DGS in consultation with GPC and ADGP will review the request and make a decision.

GPC will notify student in writing of decision and time limit of approved leave, including any conditions that are placed on reinstatement.

Reinstatement after Leave of Absence

A reinstatement request is required at least one month prior to the *beginning of the term* in which the student wishes to return. Submit the [LOA Reinstatement Request](#) form with adviser signature(s) to the Graduate Programs Coordinator (GPC). The GPC will notify the student in writing of decision and any reinstatement conditions after consultation with DGS and ADGP. The graduate program reserves the right to request documentation that the student has acceptably addressed the reasons that necessitated the LOA prior to granting reinstatement. Students may submit a request to return from LOA earlier than the term approved. However, any requests submitted after the term approved, will be denied and will require a formal re-admission application to the graduate program.

E.27 Recommended Timeline for Ph.D. Students

The following timeline is recommended for all Ph.D. students in the CMB program. Completion of requirements as described will ensure that each student will progress through the program in an efficient and timely manner.

YEAR 1

Begin coursework:

Required courses are:

CMB 8100	Research Rotation in CMB
CMB 8134	Ethical Conduct of Animal Research
CMB 8202	Mech. of Animal Health & Disease II
CMB 8303	Comparative Models of Disease

A course in Biostatistics (CMB5915 Essential Statistics for the Life Sciences is required)
CMB 8550 CMB Seminar
(Required attendance every semester, but only need to register twice, for a total of 2 credits)
CMB 8560 Research and Literature Reports
(one credit is required; a second credit may also be completed)

- Submit GPAS (Graduate Planning and Audit System) <https://onestop.umn.edu/academics/gpas> for approval by end of year 1
- Identify thesis committee members and request approval of committee from PAC
- Submit Preliminary Exam Committee <https://onestop.umn.edu/academics/examination-committees>
- Begin Individualized Development Plan (IDP) <https://myidp.sciencecareers.org/>

YEAR 2

Complete coursework:

CMB 5910 Grantwriting: What makes for a Winning Proposal?
(Required course to be taken spring term as lead up to preliminary exam)

- Schedule first committee meeting during fall semester to discuss thesis proposal and approval of alternate proposal title; Committee Chair submits [Thesis committee meeting summary form](#)
- Submit written preliminary exam to Graduate Programs Coordinator (GPC) for committee approval before end of August
- Update [IDP](#)

YEAR 3

- Schedule oral preliminary examination <https://onestop.umn.edu/academics/doctoral-oral-exam-scheduling> with GSSP
- Complete preliminary oral exam before end of December
- Submit final oral examination committee <https://onestop.umn.edu/academics/examination-committees> after successfully completing oral preliminary exam
- Schedule and complete annual committee meeting; Submit [Thesis committee meeting summary form](#)
- Update [IDP](#)

YEAR 4

Complete thesis research, write and defend dissertation

- Schedule and complete annual committee meeting; Submit [Thesis committee meeting summary form](#)
- Update [IDP](#)
- Download graduation packet at. <https://onestop.umn.edu/forms> (click on Graduation and then Graduation Packet)
- Submit Application for Degree prior to the first day of the month in which you plan to defend. You can find that form by going to <https://onestop.umn.edu/forms> (click on Graduation and then Application for Degree)
- Provide draft of thesis to committee *(allow at least three weeks for review)*
- Initiate Ph.D. Thesis Reviewers Report Form
- Provide graduate program coordinator with thesis title, date, time and location of thesis defense *(two weeks prior to defense)*
- Complete final oral examination scheduling <https://onestop.umn.edu/academics/doctoral-oral-exam-scheduling>
- Complete final defense and Committee Chair submits online final oral examination report form to GSSP

- Electronically submit final thesis manuscript
<https://onestop.umn.edu/academics/thesisdissertation-submission-and-formatting>
- Complete exit interview with graduate program coordinator

F. COMBINED D.V.M./Ph.D. PROGRAM

The most significant discoveries in medicine result from collaboration between the basic sciences and clinical medicine. Both industry and training institutions require a population of individuals skilled in both hypothesis-based research and clinical practice to generate new knowledge to address basic health issues in veterinary and human medicine and food safety. To meet the shortfall of research veterinarians, the CVM Graduate Programs have established a dual/combined degree program (D.V.M./Ph.D.). Acceptance into the D.V.M./Ph.D. dual degree program is based on competitive review of D.V.M. applicants who have also completed a separate graduate program application.

F.1 Application to the Graduate Program

Students apply for admission to the Ph.D. program at the same time they are applying to the D.V.M. program. The deadline for completing the Ph.D. application is December 1. Students who apply and are offered a D.V.M. interview for admission will have a Ph.D. admission interview on the same day as their scheduled interview for the D.V.M. program.

To be offered admission to the formal dual degree program students must meet all eligibility requirements for both the D.V.M. and the Ph.D. program.

F.2 Process for Completing the Formal Dual Degree Program.

D.V.M./Ph.D. trainees have two options for completing both degrees. In the **concurrent** training model, students step out of the D.V.M. program in the middle of year three and begin the Ph.D. program. Upon completing the Ph.D. requirements (3-4 years), the student reenters the D.V.M. program in the spring semester of the third year of the D.V.M. program. In the **consecutive** training model students will first complete their D.V.M. requirements prior to starting the Ph.D. program in the summer following their fourth year of the D.V.M. curriculum. Students choosing the consecutive option should choose the Interdisciplinary Track and arrange research rotations during their fourth year.

F.3 Research Rotations

Research rotations in at least two different laboratories (8-10 weeks in length) are required of all dual degree students (CMB 8100) before a thesis adviser is selected. For those admitted into the combined D.V.M./Ph.D. program, participation in the CVM Summer Scholars Program (or perhaps other research programs) during the summer sessions after the first and second year of the D.V.M. curriculum is required and will count towards the recommended research rotations if conducted in the laboratories of potential advisers. Students register for CMB 5594 as DVM students. Any remaining research rotations must be completed upon starting the Ph.D. portion of the degree program.

For all research projects that count as a rotation, students are required to present a research poster at the CVM Points of Pride Research Day. Alternatively, a short research talk (15-20 min.) can be scheduled in the CMB Graduate Student Seminar Course (CMB 8550). Presentations should include the necessary background information to understand the research problem, an overview of the rotation project, results obtained by the student, and a discussion of future directions or implications of the proposed project.

F.4 Student Advising

The ADGP and the DGS are available to provide advice to D.V.M. students considering the D.V.M./Ph.D. combined degree program. For students choosing the consecutive training model, the ADGP will work with the Academic Affairs Office to arrange fourth year rotations that allow the student to begin a research project. The DGS will serve as their temporary adviser following their admission into the Ph.D. program, until their research adviser is determined. Each new student will be assigned a current D.V.M./Ph.D. student to serve as a mentor as well.

F.5 Selection of an adviser

Upon completion of all research rotations, including Summer Scholars experiences students will select a research adviser who will mentor the student's research program. It is the responsibility of the student to identify a research adviser. This must be a mutually agreed upon arrangement between the student and the adviser. The adviser will be responsible for providing financial support for the student during completion of the Ph.D. studies.

F.6 Financial support

No support is provided to combined degree students during their first two years in the professional curriculum. Support during the graduate training portion of the combined degree program is the responsibility of the adviser. Students are strongly encouraged to compete for external fellowships, particularly those who have completed the D.V.M. prior to beginning the Ph.D. training. Upon completing the Ph.D. requirements (including the final thesis defense), D.V.M./Ph.D. students who have chosen the concurrent training model will receive \$10,000 per semester toward their third and fourth year D.V.M. tuition. The CMB graduate program will provide \$10,000 the second semester of their third year of D.V.M. training, and the OGP will provide \$10,000 over each of the remaining semesters. The student will be responsible for all other fees, costs, or tuition charges over and above this \$10,000/semester tuition funding. **Return to the D.V.M. curriculum and the tuition funding will be contingent upon 1) completion of all Ph.D. requirements (including final thesis defense), and 2) good academic standing in the professional degree program.**

Students who complete the D.V.M. prior to beginning the Ph.D. program will receive an augmented graduate stipend (\$4,500 greater than the minimum graduate stipend) throughout the course of their Ph.D. training. The CMB graduate program will provide that differential stipend for the first year, and the OGP will provide the stipend differential for the remaining years of the Ph.D. program. Continuation in this program requires the student to remain in good academic standing as determined by GPA and Annual Student Progress reviews.

F.7 Coursework

Graduate courses will provide information, perspectives and emphasis different from that offered in the D.V.M. curriculum. Generally, the D.V.M./Ph.D. students follow the same requirements as the Ph.D. students.

Upon enrollment into the graduate program, D.V.M./Ph.D. students are considered to be in the first year of their Ph.D. program with respect to courses, evaluations, and expectations, and should follow the description for first year students. Students who have earned credit in CMB 5594 for their prior Summer Scholars experience will not be required to register for Research Rotations (CMB 8100). Those D.V.M./Ph.D. students who did not complete their research rotations through the summer scholars program should register for CMB 8100 as recommended. In all subsequent years, students should follow the description and course recommendation provided for the Ph.D. program as outlined below. This includes the preliminary examination, seminar requirements, instruction experience, etc.

Required courses	Credits
CMB8100 (Research rotation) or CMB5594	2.00 – 4.00
CMB8550 (CMB Seminar)	2.00
CMB8134 (Ethical Conduct Anim Res)	3.00
CMB8303 (Comp Models)	2.00
CMB8560 (Res Lit Reports) or CVM 6906	1.00
CMB5910 (Grant Writing)	2.00
Electives	4.00 – 6.00
Statistics	3.00
DVM courses	3.00
Total Course credits	24.00
Thesis	24.00
	48.00

Credits from DVM curriculum are included on the GPAS for PAC approval.

Dual degree timeline

Year	Fall	Spring	Summer
1	DVM	DVM	Rotation #1
2	DVM + CMB8550 + CMB5594	DVM	Rotation #2
3	DVM + CMB8550 + CMB5594	Grad max 14 cr (CMB8303, Stats, elective, thesis credits)	
4	Grad max 14 cr. (CMB8134, elective(s), thesis credits)	Grad max 14 cr. (CMB5910, thesis credits)	prelims must be completed
5	Research	Research	
(optional yr 6)	Research	Research	
6 (7)	Thesis writing and defense	DVM	
7 (8)	DVM	DVM	

F.8 Return to the D.V.M. Curriculum

It is required that students defend their thesis prior to returning to the professional curriculum. In *rare* circumstances, students will be allowed to submit the final thesis manuscript after returning to the D.V.M. program. This requires approval of the ADGP and the DGS. A signed agreement form outlining the student's timeline for completing the final manuscript must be on file in the graduate program office prior to the student's return to the D.V.M. curriculum. Failure to submit the timeline and/or completion of the final manuscript as outlined in the agreement will automatically result in the forfeit of any tuition funding. The student will be allowed a maximum of one semester to complete the final manuscript following return to the D.V.M. curriculum. If the student has not successfully submitted the final manuscript by the start of the summer term prior to fourth year they will forfeit the remaining \$30,000 of tuition funding associated with the dual degree program.

G. MASTER'S DEGREE PROGRAM

The master's degree (M.S.) is offered only under Plan A, thus requiring a thesis. The M.S. degree ordinarily requires 2 to 3 years in residence and cannot be completed in less than one year. The master's degree is granted not on the basis of successful completion of a definite amount of prescribed work, but chiefly as a result of recognition of the candidate's research attainments. This is determined by completing the required coursework and successful completion and defense of a thesis. It is expected that the completed thesis will contain data sufficient for at least one publication in a refereed journal. **All requirements for the master's degree must be completed and the degree awarded within five calendar years of initial enrollment in the graduate program.**

G.1 Degree Requirements

Formal coursework for the M.S. degree varies according to the field of study, interests, and career goals of the individual graduate student. Courses may be taken in disciplines other than Comparative and Molecular Biosciences. All requirements of the M.S. degree program must be completed and the degree awarded within five calendar years after initial enrollment in the graduate program.

- At least 60% of the coursework on the official graduate degree plan must be completed as a registered University of Minnesota graduate student in CMB.
- A maximum of eight graduate course credits may be counted in common between two University master's degree programs.
- Approved transfer coursework may make up the remaining 40% of degree credits and can include a maximum of 12 graduate credits taken as a non-degree seeking or non-admitted student.
- Transfer of thesis credits is not allowed.
- As per graduate education requirements, at least 2/3 of course credits must be taken with grades A-F.
- Based on individual student needs, exceptions to requirements can be petitioned to the PAC

Plan A M.S. Program requirements:

Course credits: 20 credits minimum to be taken in CMB, VMED or a related field

Thesis Credits: 10 credits (CMB8777)

Total credits: 30 credits minimum

Required courses:

		<u>Credits/Semester</u>
CMB 8134	Ethical Conduct of Animal Research	3 cr/Fall
CMB 8202	Mechanisms of Animal Health and Disease II	3 cr/Fall
CMB 8303	Comparative Models of Disease	2 cr/Spring
CMB 8550	Comparative and Molecular Biosciences Seminar	1 cr/Fall and 1 cr Spring
CMB 8560	Research and Literature Reports	1 cr/Fall

Additional course requirements:

A course in Biostatistics (CMB5915 Essential Statistics for Life Sciences is required)

5000 or 8000 level course(s) in biological sciences

- Certain 5000 level courses will suffice, but it is recommended that the student first consult with the DGS about course content.
- Seminar and journal club courses do not qualify.

Biostatistics requirement:

CMB 5915 Essential Statistics for Life Sciences 3 cr.

Potential alternatives:

(registration for any of the following will require petition to and approval from the CMB PAC)

CMB 8910 Statistical Principles of Research Design 3 cr.

PUBH 6450 Biostatistics I 4 cr.

PUBH 6451 Biostatistics II 4 cr.

Stat 5021 Statistical Analysis	4 cr.
Stat 5031 Statistical Methods for Quality Improvement	4 cr.
Stat 5302 Applied Regression Analysis	4 cr.
Stat 5303 Designing Experiments	4 cr.
Stat 5421 Analysis of Categorical Data	3 cr.

Statistics courses other than those recommended can be used to fulfill these requirements with the approval of the student's adviser, the thesis committee, and the PAC. First-year students should consult with the DGS concerning registration.

Courses for consideration to meet the additional course requirements:

CMB 5340	Structural Biology in Biomedical Research	2 cr.
CMB 5571	Pathogenomics and Molecular Epidemiology	3 cr.
CMB 5910	Grantwriting: What Makes for a Winning Proposal	2 cr.
CMB 8012	Basic concepts in Skeletal Biology	2 cr.
CMB 8208	Neuropsychopharmacology	3 cr.
CMB 8361	Neuro-Immune Interactions	3 cr.
CMB 8371	Mucosal Immunobiology	3 cr.
CMB 8481	Advanced Neuropharmaceutics	4 cr.
CMB 8571	Pathogenomics and Molecular Epidemiology	3 cr.
CMB 8910	Statistical Principles of Research Design	3 cr.
GCD 8131	Advanced Genetics	3 cr.
GCD 8151	Cell Structure & Function	3 cr.
GCD 8161	Advanced Developmental Biology	3cr.
MICA 8002	Structure, Function & Genetics of Bacteria & Viruses	4 cr.
MICA 8003	Immunity & Immunopathology	4 cr.
MICA 8004	Cellular & Cancer Biology	4 cr.
VMED 5180	Ecology of Infectious Diseases	3 cr.
VMED 5181	Spatial Analysis in Infectious Disease Epidemiology	3 cr.

In addition, many other 5000 and 8000 level courses in Microbiology, Parasitology, Virology, Immunology, Molecular and Cellular Biology, Biochemistry, Neuroscience, Physiology, Pharmacology, Genetics, Anatomy, Histology, Cytology, and Pathology can be used to meet this requirement. Students are required to consult with their adviser and committee members to determine which courses are appropriate for the student's program.

Students are encouraged, but not required, to obtain a formal teaching experience prior to graduation as described for the Ph.D. program.

G.2 Selection of an Adviser

Students entering the master's program will have made prior arrangements to select a thesis research adviser to mentor the student's research program. It is the responsibility of the student to identify a laboratory and an adviser prior to acceptance into the program. Only University faculty, including adjunct faculty, may serve as advisers. The adviser must be appointed at the SM or TENURE-TRACK/M2 level and hold an earned doctorate or equivalent degree from an accredited institution. The ADGP, on recommendation by the PAC, must approve all assignments as adviser. Individuals working toward a graduate degree at the University may not serve as adviser. Please refer to University policy on Graduate Examining Committees at <http://www.policy.umn.edu/Policies/Education/Education/APPOINTGRADCOMM.html>. Financial support is the responsibility of the adviser and the student and will not be provided by the CMB graduate program.

G.3 Credits Required Each Term

Students with an assistantship need to register for 6-14 credits. The minimum number of 6 credits is considered full time. **Anything less than 6 credits is part time.** Assistantships allow for the registration of up to 14 credits. Registration for more than 14 credits includes an additional charge which is the responsibility of the student and/or adviser. Students who have completed all coursework and thesis credits may register for CMB8333, which is a 1 credit full-time equivalent course.

G.4 Graduate Planning and Audit System

By the beginning of second semester of the first year, students must submit their official program plan using GPAS (Graduate Planning and Audit System). This online tool lists all completed and planned coursework, as well as requested transfer credits. The GPAS is submitted by the student and then the Graduate Program Coordinator takes it to the PAC for approval. It is then submitted to GSSP.

G.5 Selection of Thesis Committee

By the beginning of the second semester of the first year the student and adviser will select the thesis committee to assist in evaluating the research activity. The committee shall consist of the adviser and at least one faculty member from the CMB graduate program and at least one expert from outside of the CMB program. The student should request a current CV from the outside committee member.

Experts outside of the University may serve on examining committees with appropriate review and approval by the PAC. The student should request a current CV from the individual and the student must submit that along with a paragraph outlining why the individual is appropriate to sit on their examining committee. Additionally the individual must submit a HRIF (Human Resources Information Form) in order to be assigned an ID number and U of M e-mail address. It will be necessary for the e-mail address to be activated for use in the thesis review and final exam process. It will be the student's and adviser's responsibility that the outside of the University committee member complete these processes.

Individuals working toward a graduate degree at the University may not serve as committee members in any capacity. Please refer to University policy on Graduate Examining Committees at <http://www.policy.umn.edu/Policies/Education/Education/APPOINTGRADCOMM.html>.

In order to approve the student's committee, a form must be completed identifying the desired committee members. This form is available from the Graduate Program Coordinator. It is completed by the student with the adviser's input and returned so that it can be taken to the PAC for approval. Once approved by the PAC the student submits their request online at <https://onestop.umn.edu/academics/examination-committees> for entry into the student's official record.

If it becomes necessary to replace a thesis committee member, the DGS must approve all replacements. The ADGP will mediate a solution in cases where there are disagreements with removing a committee member. Substitutions for a final oral examination that are necessitated by emergency situations must also be approved in advance. In such cases, the adviser should consult with the Office of Graduate Programs (624-7413), the DGS, or the Graduate Student Services and Progress Office (625-3490) before the start of the examination.

G.6 M.S. Committee Meetings

The first thesis committee meeting must take place during the second semester of the first year in the M.S. program and it is **required** that the committee be convened every six months through the duration of the program. The graduate student, in consultation with his/her adviser, is responsible for convening committee meetings. Students should supply each committee member with a progress report and a plan for the following semester. These committee meetings should be viewed as an opportunity for the student and adviser to obtain valuable input concerning the direction of the research project. Students are encouraged to meet with their committee more frequently as the need arises. Students not making

sufficient progress towards their degree requirements (as determined by coursework and research milestones established by their thesis committee) will have one semester to meet the stipulations (imposed by their thesis committee and approved by the PAC) for continuance in the program.

Thesis committee instructions

The purpose of the Thesis Committee is to help the candidate achieve full scientific potential, improve the quality of research and enrich the scientific training. The Committee meetings aim to:

- Ensure that the project is scientifically valid and suitable for a M.S. project
- Determine the student's familiarity with relevant literature
- Evaluate the progress and future plans of the M.S. project
- For hospital residents, ensure integrity of both specialty and graduate training
- Oversee the timely graduation of the student

The Committee must convene in full. Committee members may participate via video conference formats, if necessary.

Meetings and reporting

The first meeting should convene prior to the end of second semester for M.S. students. A thesis committee meeting is required every six months (M.S.) but may be held more often if desired. The following is a recommended structure:

Meeting 1: Form a personal study plan with the student; discuss objectives of the thesis project.

Meeting 2: Following-up on the personal study plan.

Meetings 3-5: Follow up on the personal study plan, thorough check of research results, etc.

Final Meeting: Accepting the project, formally grant permission to write the thesis.

Conducting Regular Thesis Committee Meetings

For each meeting the student is to prepare a report for the thesis committee summarizing coursework and scientific research progress. During the meeting, which should not exceed 2 hours, the student and committee will discuss:

- Coursework progress, quality, how it meets the student's needs, and plans for additional learning and professional development
- Specific aims of the research and the current status of the project, including technical difficulties and unsuccessful experiments
- Progress on work accomplished since the last committee meeting
- Future short-term and long-term plans of the thesis project
- The project's experimental strengths and weaknesses
- Expectations and deadlines for obtaining significant results

At the end of the meeting, the following actions will be taken:

- Committee members will make a majority recommendation regarding continuation of the student's program
- The student is informed of any concerns or pending milestones
- The committee chair completes the [Thesis committee meeting summary form](#) and submits it online
- OGP receives the form and sends copies to the student, adviser and committee members

G.7 Annual Student Review

Students will be evaluated by the PAC every year to assess their progress towards their degree requirements. The performance in the lab, courses, and CMB seminars, as determined by advisers and faculty, must be satisfactory. If it is determined that a student is not making adequate progress, the student will be required to petition the PAC to provide reasons for the delay in progress and to provide a timeline for addressing the issue. If the PAC does not deem this petition to be reasonable, the student will be required to meet with the PAC and a timeline will be determined at that meeting. Failure by the student to adhere to the timeline will result in a request by the PAC that the student be dismissed from the graduate program.

G.8 Individual Development Plan

An individual development plan (IDP) is a tool to assist you in considering career options and in developing and reaching short- and long-term goals. As a CMB graduate student you are required to complete and use an IDP during your graduate training. To assist in the process, we recommend the AAAS web tool myIDP available at <https://myidp.sciencecareers.org>. To create an IDP, you will assess your scientific skills, interests, and values. The web tool will generate careers that fit your interests, and you then set personal (short and long term) goals. After completing the assessment, you will have a working document to use in meeting with your advisor to help you gain insight into your plans for the future. You may choose to use other IDP tools, but the process is essentially similar.

G.9 Minimum Grade Requirements

Students are required to have a minimum grade point average of 3.0 (on a 4.0 scale) for all courses on their U of M transcript and on the official graduate degree plan. Courses with grades of A, B, C (including C-) and S may be included, but grades of S are not calculated in the GPA. At least 2/3 of all course credits on the graduate degree plan must be graded A-F.

Students who are not making satisfactory progress will not be re-appointed for another year.

G.10 Summer Registration

Students **do not** register during summer sessions unless required to do so by a funding agency or government, or need to accrue thesis credits in order to graduate by the end of fall semester. Students need to consult with their adviser and obtain permission through the Graduate Program Coordinator's office **prior** to registering. If approved, a request for graduate assistant tuition benefits form must be completed and submitted prior to registration.

G.11 GRAD999 Registration

Students need to maintain active enrollment in the University each fall and spring semester and at the time their final manuscript is submitted. There may be a situation when students need to have an active enrollment, but do not need to have full-time status. These situations are the exception, but it is possible that the student may be eligible to register for GRAD999, a non-tuition and non-credit bearing course. Note that GRAD999 registration does not provide full-time student status. Please check with the graduate program office before registering for GRAD999.

If it is determined that the student is eligible to register for GRAD999, they may do so for one semester only. After which, if the student needs to register for an additional semester, they must petition the PAC for permission prior to the start of the term. The petition will need to outline the student's academic progress over the previous term and the progress intended to be made over the coming term. The petition must be accompanied by signatures of the student's adviser and examining committee members.

G.12 Request Extension to Time Limit for Degree

Those students who experience extraordinary circumstances which prevent M.S. degree completion within the established time limits may request a one time extension of up 12 months. The student needs to discuss this option with their adviser to determine if it is a viable solution. If the student decides to request an extension they must complete the form Master's Degree: Request for Extension to the Maximum Time Limit <http://policy.umn.edu/sites/policy.umn.edu/files/forms/um1779.pdf> .

The extension request form is submitted to the CVM Office of Graduate Programs after being signed by the adviser, at least 6 months prior to the 5 year time limit. The extension request must include a letter from the adviser recommending the time extension and identifying a new completion date. The request is then taken to the PAC. If approved the PAC will establish a new completion date and the DGS will sign the form. If the request is denied the student will be terminated from the program if they do not complete within the standard 5 year time limit. The student will be informed of the PAC's decision in writing.

G.13 Graduation Packet

Download a graduation packet from GSSP the term before you plan to defend your thesis. The graduation packet is online at <https://onestop.umn.edu/forms> (click on Graduation and then Graduation Packet). This packet will include a link to the Thesis Reviewer's Report form and the Master's Final Examination Report. The Thesis Reviewer's Report form must be initiated by you. The Application for Degree must be submitted prior to the first day of the month in which you plan to defend. You can find that form by going to <https://onestop.umn.edu/forms> (click on Graduation and then Application for Degree).

G.14 M.S. Thesis

The thesis should be an independent research project. It should be well written and presented in such a form that the major research results are suitable for submission to a recognized, refereed journal. It should be suitable for publication, with the student as primary author. The suitability will be determined by the student's examining committee. It is expected that the thesis contains a literature review and at least two research chapters. The CMB program allows only single author theses.

Students nearing completion of their thesis research should discuss the timeframe for completing their program with their thesis committee at their semi-annual committee meeting. If the thesis committee agrees that the student has enough data to form a defensible thesis, the student then begins writing the thesis. Students should refer to the thesis formatting and submission instructions <https://onestop.umn.edu/academics/thesisdissertation-submission-and-formatting>

After the thesis is completed and the adviser is satisfied with the draft, the student submits a copy to the thesis reviewers and other members of the examining committee. **The committee members must be given a minimum of three weeks** to confer with the candidate on the content of the thesis. Any major revisions must be completed prior to the final defense. Minor revisions can be made after the defense but before the final manuscript is submitted. All thesis committee members must agree that the thesis is suitable for defense by submitting the online Master's Reviewers Report Form. The link to the Master's Reviewers Report form is in the Graduation Packet.

G.15 The Final Oral Examination

Announcements to the CMB students and faculty need to be sent out a minimum of two weeks prior to the exam. The student should contact the Graduate Program Coordinator (GPC) with the date, time, location of the thesis presentation as well as the title of the thesis and the adviser's name. The GPC will send out an announcement for the final oral presentation to the CMB students and faculty. The candidate will then present his/her thesis in a public seminar with the examining committee present. The seminar constitutes the final oral exam, and is followed by a short meeting with the examining committee. After this meeting the committee chair submits the Final Oral Examination Report Form. All faculty and students are encouraged to attend the final oral exam.

G.16 Thesis Submission

The thesis is required to be submitted online. Students should follow the format outlined in the Graduate School's Thesis Formatting and Submission instructions found at <https://onestop.umn.edu/academics/thesisdissertation-submission-and-formatting>. The University will not award the official degree until the thesis has been submitted. Most students will need at least two bound copies of the thesis, (which is the responsibility of the student).

- ✓ one for the adviser,
- ✓ one for the Office of Graduate Programs, and
- ✓ one for each committee member (optional),

G.17 Exit Interview

Upon completing the M.S. degree, the Graduate Program Coordinator will solicit a written evaluation of the student's experience in the CMB graduate program. The student will be offered an opportunity to meet individually with the GPC or to submit the written evaluation electronically. These evaluations will be used to assess the quality of the M.S. program and faculty, and to provide guidance for improving graduate education.

G.18 Leave of Absence

A leave of absence (LOA) from the graduate program may be possible under limited circumstances. If a LOA is approved the student must not have contact with their graduate program, adviser, research, etc. A LOA is a total respite from all forms of graduate education, courses, lab work, contact with professors and staff. Students must apply for a LOA and have it approved by the DGS and OGP, before it goes into effect. LOAs are for full semesters and cannot be approved for less than one semester or more than four semesters. More information is available at

<http://www.policy.umn.edu/Policies/Education/Education/GRADSTUDENTLEAVE.html>

Circumstances that may warrant a request for a LOA include serious illness, death of a close family member, birth or adoption of a child and for voluntary military service. Other circumstances may cause a request to be initiated but there is never a guarantee that a LOA will be approved.

When considering a Leave of Absence:

- review Administrative Policy: [Leave of Absence and Reinstatement from a Leave: Graduate Students \(Twin Cities, Duluth, Rochester\)](#);
- read instructions on the [Leave of Absence](#) form
- confer with your adviser(s), DGS, graduate programs coordinator (GPC), and relevant offices (e.g., ISSS, Graduate Assistant Employment, Financial Aid) regarding the impact of a LOA on your financial, academic, work-related, and personal circumstances
- confer with your DGS and CVM Office of Graduate Programs about what, if any, conditions may be placed on your reinstatement after the LOA

If, after review and consultation, you choose to request a LOA:

- complete the form (include supporting documentation, if requested) immediately
- obtain signatures of your adviser(s) and DGS
- submit the signed form to the CVM Office of Graduate Programs for review

DGS in consultation with GPC and ADGP will review request and make decision.

The Graduate Program Coordinator will notify student in writing of decision and time limit of approved leave, including any conditions that are placed on reinstatement.

Reinstatement after Leave of Absence:

A reinstatement request is required at least one month prior to the *beginning of the term* in which the student wishes to return. Submit the [LOA Reinstatement Request](#) form with adviser signature(s) to the Graduate Programs Coordinator (GPC). The GPC will notify the student in writing of decision and any reinstatement conditions after consultation with DGS and ADGP. The graduate program reserves the right to request documentation that the student has acceptably addressed the reasons that necessitated the LOA prior to granting reinstatement. Students may submit a request to return from LOA earlier than the term approved. However, any requests submitted after the term approved, will be denied and will require a formal re-admission application to the graduate program.

G.19 Recommended Timeline for M.S. Students

The following outline is recommended for all M.S. students in the CMB program. Participation as described will ensure that each student will complete all of the requirements of the program and progress through the program in an efficient and timely manner.

YEAR 1

Begin coursework

Required courses are:

CMB 8134	Ethical Conduct of Animal Research
CMB 8202	Mechanisms of Animal Health and Disease II
CMB 8303	Comparative Models of Disease
CMB 8550	Comparative and Molecular Biosciences Seminar
CMB 8560	Research and Literature Reports

At least one course in Biostatistics (CMB5915 Essential Statistics for Life Sciences is required)
5000 or 8000 level course(s) in biological sciences

Submit GPAS (Graduate Planning and Audit System) <https://onestop.umn.edu/academics/gpas> for approval beginning of second semester

Select thesis committee members and submit for approval beginning of second semester

Complete first committee meeting during year one and submit [Thesis committee meeting summary form](#)

Begin Individualized Development Plan (IDP) <https://myidp.sciencecareers.org>

YEAR 2

Complete remaining coursework

Update IDP

Schedule two committee meetings to discuss thesis proposal, approximately once every 6 months and submit [Thesis committee meeting summary form](#)

Complete research project and write thesis

SUMMER YEAR 2 or YEAR 3

Update IDP

Download graduation packet at <https://onestop.umn.edu/forms> (click on Graduation and then Graduation Packet)

Submit draft of thesis to adviser for approval

Submit thesis to committee members (*allow at least three weeks for review*) and notify Graduate Program Coordinator

Submit Application for Degree prior to the first day of the month in which you plan to defend. You can find that form by going to <https://onestop.umn.edu/forms> (click on Graduation and then Application for Degree)

Provide graduate program coordinator with thesis title, date, time and location of thesis defense (*two weeks prior to defense*)

Initiate Master's Thesis Reviewers Report Form

Complete final defense and Committee Chair submits final oral examination report form to GSSP

Electronically submit final thesis manuscript, <https://onestop.umn.edu/academics/thesisdissertation-submission-and-formatting>

Schedule exit interview with Graduate Programs Coordinator

H. MISCELLANEOUS PROGRAM INFORMATION

H.1 Records Policy

The Graduate Program Coordinator shall maintain a file for all incoming and current students. Documents contained in this file include, but are not limited to, the student's initial application documents (GRE scores, official transcripts, C.V., statement of training goals), CMB 8100 rotation evaluations, alternate proposal evaluation forms, preliminary written and oral exam forms, and annual progress and review forms including letters describing potential stipulations imposed during the preliminary exam or examining committee meetings.

Students may have access to the contents of their file for all documents for which the student has not waived viewing rights. The file can be accessed per written request to the DGS. Program faculty and staff have access to the file on a need-to-know basis, as per FERPA regulations.

H.2 Graduate Assistant Employment

Graduate assistants may be assigned or reassigned to any teaching or other duties that are appropriate for the class title as the needs of the department dictate. A complete explanation of Graduate Assistant Policies is provided through the Office of Human Resources at <http://www1.umn.edu/ohr/gae>. The Graduate Assistant Employment Services website contains much useful information regarding policies, rights, responsibilities, and opportunities for graduate assistants. Students and faculty of the program are encouraged to access the information contained within. The policy governing graduate assistants is available at: <http://policy.umn.edu/hr/gradstudentemployment>

H.3 Resources and Information for Graduate Students

Council of Graduate Students (COGS). This organization addresses graduate student concerns via formation of various issue-oriented working groups. They also staff various committees throughout the University in order to represent graduate students' interests and help graduate students navigate the University. COGS also makes available travel awards to support graduate study. The COGS newsletter is available via their website at: <https://cogs.umn.edu/>

Graduate Students Professional Development. The Graduate School has created a resource page for graduate students continued professional development, including addressing issues of grant writing skills, fellowships, stress management, science ethics, and job-seeking. Their website with relevant links can be found at: <http://www.grad.umn.edu/current-students/apd>

Dissertation Calculator. Available at <http://www.lib.umn.edu/help/disscalc/>, the Dissertation Calculator breaks down the thesis process into manageable timelines and provides important advice for timely completion of the thesis.

Information for International Students. The International Students and Scholars Services (ISSS) serves the University of Minnesota international student population. Their website is <http://www.issss.umn.edu/> and provides assistance to international students. This office should be consulted for all visa questions and issues.

H.4 Family and Medical Leave, and Parental Leave

The University of Minnesota provides for leave under the Family and Medical Leave Act for eligible employees, which includes Graduate Research Assistants and Teaching Assistants. The official language of this policy and how it is applied is located at <http://www1.umn.edu/ohr/gae/benefits/index.html> Graduate assistants may be eligible for up to twelve weeks' absence during a fiscal year for:

Parental leave for childbirth and/or care of the newborn <https://policy.umn.edu/hr/parentalleave>

Family medical leave for care of a close family member (spouse/registered same sex domestic partner/child/parent (with a serious health condition).

Personal medical leave for a serious health condition that prevents you from performing your duties or job-related responsibilities.

Eligibility requires that you have worked at least 1,250 hours in the 12 months preceding the leave. Be aware that your supervisor can place you on an FMLA leave, if appropriate, without your requesting such a leave.

H.5 Graduate School Commitment to Diversity

The Graduate School embraces the University of Minnesota's position that promoting and supporting diversity among the student body is central to the academic mission of the University. A diverse student body enriches graduate education by providing a multiplicity of views and perspectives that enhance research, teaching, and the development of new knowledge. A diverse mix of students promotes respect for, and opportunities to learn from, others with the broad range of backgrounds and experiences that constitute modern society. Higher education trains the next generation of leaders of academia and society in general, and such opportunities for leadership should be accessible to all members of society. The Graduate School and its constituent graduate programs are therefore committed to providing equal access to educational opportunities through recruitment, admission, and support programs that promote diversity, foster successful academic experiences, and cultivate the leaders of the next generation.

The mission statement of the Graduate School's Diversity Office can be found at:

<https://www.grad.umn.edu/diversity>

The Board of Regents Policy on Diversity, Equal Employment Opportunity, and Affirmative Action can be found at:

https://regents.umn.edu/sites/regents.umn.edu/files/policies/Equity_Diversity_EO_AA.pdf

H.6 Statement on Sexual Harassment

The CMB program, as part of the University of Minnesota, is committed to creating a welcoming and respectful work and educational environment that is free from sexual harassment and provides comprehensive support, education, and reporting mechanisms to all members of the University community.

All members of the program and University community are prohibited from engaging in sexual harassment and retaliating against individuals based on their participation in a sexual harassment investigation. When they learn about incidents of sexual harassment, University employees who are supervisors must take prompt remedial action to respond to any concerns including referring the matter to relevant internal options.

Sexual Harassment

Sexual harassment is against the law. It is prohibited by Title VII of the 1964 Civil Rights Act and by the Minnesota Human Rights Act. Sexual harassment includes unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature when (1) submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment or academic advancement in any University activity or program; (2) submission to or rejection of such conduct by an individual is used as the basis of employment or academic decisions affecting this individual in any University activity or program; or (3) such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive work or academic environment in any University activity of program.

Reporting and survivor services

Any individual who believes they have been subjected to sexual harassment or retaliation for reporting sexual harassment can report their concerns to the Office for Equal Opportunity and Affirmative Action (EOAA), the Office for Community Standards (OCS), the UReport anonymous online reporting system, or the relevant internal office for investigation, dispute resolution, and potential disciplinary action against perpetrators. Victim survivor services are also available to provide additional support.

More steps for reporting sexual harassment can be found here:

<https://policy.umn.edu/hr/sexharassassault>

Anonymous reporting Service for the U of M:

<https://secure.ethicspoint.com/domain/media/en/gui/9167/index.html>

To report harassment through EOAA: call (612) 624-9547 or email eoaa@umn.edu.

Additionally, for a free and confidential space for victims/survivors/concerned people of sexual assault, relationship violence or stalking, contact or visit the Aurora Center for Advocacy & Education. To speak with a trained advocate, call their 24 hour hotline (612) 626-9111. The Aurora Center also offers help in reporting incidences of sexual harassment as well as legal resources. For more information, visit their website at <http://aurora.umn.edu/>.

For ongoing support, visit the counseling center: <https://counseling.umn.edu/>

Retaliation

No one acting on behalf of the University may retaliate against an individual for having made a report in good faith under this policy or participated in a sexual harassment investigation. Any employee who engages in retaliation may be subject to disciplinary action up to and including termination of employment. Reports of retaliation will be reviewed and investigated in the same manner in which other allegations of misconduct are handled. This provision aligns with Board of Regents Policy.

Retaliation includes any form of intimidation, reprisal or harassment against an individual because the individual has made a report of sexual harassment or has participated in an investigation of sexual harassment by or of a University community member including (1) firing, refusing to hire, or refusing to promote the individual; (2) departing from any customary employment or academic practice regarding the individual; (3) transferring or assigning the individual to a lesser position in terms of wages, hours, job classification, job security, employment or academic status, (4) informing another student, staff, or faculty member who does not have a need to know that the individual has made a complaint or participated in an investigation of a complaint of sexual harassment; and (5) impeding the individual's academic advancement in any University activity or program.

H.7 Student Code of Conduct

University of Minnesota Board of Regents Student Conduct Code:

https://regents.umn.edu/sites/regents.umn.edu/files/2020-01/policy_student_conduct_code.pdf

I. COURSES IN COMPARATIVE AND MOLECULAR BIOSCIENCES

Courses offered by the CMB Graduate Program include:

<u>Course #</u>	<u>Cr.</u>	
CMB 5340	2.0	Structural Biology in Biomedical Research
CMB 5571	3.0	Pathogenomics and Molecular Epidemiology
CMB 5594	1.0	Directed Research in Comparative and Molecular Biosciences
CMB 5910	2.0	Grantwriting: What Makes a Winning Proposal?
CMB 5912	1.0	Creativity Creativity in Research, Problem Solving, Influence Teaching/Learning, Leadership, and Communication
CMB 5915	3.0	Essential Statistics for Life Sciences
CMB 8012	2.0	Basic Concepts in Skeletal Biology
CMB 8100	1.0	Research Rotation in Comparative and Molecular Biosciences
CMB 8134	3.0	Ethical Conduct of Animal Research
CMB 8202	3.0	Mechanisms of Animal Health and Disease II
CMB 8208	3.0	Neuropsychopharmacology
CMB 8303	2.0	Comparative Models of Disease
CMB 8333	1.0	FTE: Advanced Masters
CMB 8361	3.0	Neuro-Immune Interactions
CMB 8371	3.0	Mucosal Immunobiology
CMB 8394	1.0	Research in Comparative Biomedical Sciences
CMB 8444	1.0	FTE: Advanced Doctoral
CMB 8481	4.0	Advanced Neuropharmaceutics
CMB 8550	1.0	Comparative and Molecular Biosciences Seminar
CMB 8560	1.0	Research and Literature Reports
CMB 8571	3.0	Pathogenomics and Molecular Epidemiology
CMB 8777	10.0	Thesis Credits: Masters (total needed)
CMB 8888	24.0	Thesis Credits: Doctoral (total needed)
CMB 8910	3.0	Statistical Principles of Research Design

I.1 Research Rotations (CMB 8100)

Ph.D. candidates in the Comparative and Molecular Biosciences (CMB) Graduate Program are required to complete at least two 8-10 week laboratory rotations with potential mentors. It is expected that during the research rotations students will identify an adviser for their Ph.D. program. Toward this end, the laboratory experiences are intended to 1) introduce the student to the general areas of science represented by the CMB graduate program; 2) introduce the student to specific faculty who are available in the graduate program; 3) introduce the student to areas of research that may be new to the student; 4) introduce the faculty to the students for their evaluation of compatibility in their labs; 5) teach students a variety of approaches to research, including technical, conceptual and theoretical approaches; 6) promote cohesion between graduate students in the program; and 7) expose students to a variety of laboratory cultures. All research rotation experiences will be evaluated as to their satisfaction of these stated goals.

Research rotations last 8-10 weeks during which time students are expected to spend a minimum of 15 hr./week working on their rotation project. This includes time spent in the laboratory, reading relevant materials, and discussions with the rotation adviser. Please note that the rotations may overlap semesters by several weeks. The rotations are not tied to the semester calendar. Ideally, the first rotation will begin the first week of September and end the first week of November. The second rotation will begin the second week of November and end the last week of December. If necessary and as determined by the DGS and PAC, a student may complete a third rotation, to be completed during Spring semester.

Following each research rotation, students are required to present a short research talk (15-20 min.) about their research project. This should include the necessary background information to understand the research problem, an overview of the rotation project, results obtained by the student, and a discussion of future directions or implication of the proposed project. Rotation talks will be presented within the CMB

seminar series (CMB 8550). Following the rotation talks, the rotation adviser is required to provide the DGS a written evaluation of the student's performance during the rotation. In addition, students are required to provide a written evaluation of the rotation experience to the DGS.

I.2 Research Rotation Waiver Requests

There are few and rare circumstances under which the student may not require a second rotation or would benefit from waiver of a second rotation. To assist in decision making, the following factors should be considered as potential qualifications that may satisfy the requirement for a second rotation. ***These factors do not grant automatic exemption from the rotations requirement*** but serve as guides for discussion of the student's preparedness for selecting a research adviser and project. Other than students who may be transferring to CMB from another graduate program, every student must participate in research rotations. Students should consider the following prior to applying for exemption of a second rotation:

Factors that may support waiver of a second research rotation

- 1. Familiarity with CMB faculty and research programs:** Ph.D. candidates who have recently completed the M.S. degree in the CMB or Veterinary Medicine graduate programs may have sufficient knowledge of existing research opportunities available to them as Ph.D. trainees.
- 2. Prior research-based degree:** Ph.D. candidates who have recently completed a basic sciences M.S. thesis degree requirement in a biological science enter the program with advanced technical expertise. These students therefore also may have a stronger appreciation of how research is conducted, what areas of research exist in the program, and the personal dynamics that impact a student-mentor relationship.
- 3. Recent D.V.M. or M.D. degreed students:** Ph.D. candidates who recently have earned an advanced medical degree, particularly those who are or have completed a residency program, may be prepared to select an adviser because of their long-term interests and clinical experience. One consideration is whether one or more of the research rotations were completed under the mentorship of their residency adviser; as such, this would not suggest a broad enough rotation experience, particularly if the proposed Ph.D. adviser would also be their residency mentor.
- 4. Fellowship trainees:** At times, incoming Ph.D. candidates supported by a Training Grant may benefit from moving more quickly in selection of a research problem or adviser. The length of fellowship support is therefore a potential consideration for expediting the rotation program.
- 5. Status of the research project selected:** Under certain circumstances, it may benefit the student to begin working in a mentor's laboratory in order to hasten transition of techniques, research collection, or grant renewal. This is only a consideration if research personnel in the proposed mentor's laboratory are soon departing and the Ph.D. candidate has completed a prior research rotation in the P.I.'s laboratory.

Factors that may support denial of research rotation waiver request

- 1. Breadth of previous research rotations:** It is important that students experience a range of research opportunities with sufficient breadth of disciplines and techniques. In particular, students should be encouraged to try a research rotation in an area in which they have had no prior exposure.
- 2. Faculty interests:** It may be beneficial to complete a third rotation, especially if another potential adviser has expressed a desire to host the Ph.D. candidate's rotation. This provides greater technical training and appreciation for the research opportunities available to the student, regardless of whether or not the third rotation mentor is selected as the major adviser.

I.3 Comparative and Molecular Biosciences Seminar (CMB 8550)

The purpose of the seminar program is 1) to allow students to summarize and report their rotation experiences; 2) to permit students to present research progress and plans; 3) to provide a public forum for dissemination of thesis proposals and submissions prior to oral examinations; 4) to provide a forum for Faculty who apply for membership in the program; and 5) to permit CMB Faculty to describe aspects of their research programs.

Students in the CMB graduate program are required to register for two semesters. However, students are expected to participate in the seminar course until they complete their degree. Students are required to present a minimum of one seminar/year. In addition, students are required to attend a minimum of 80% of the presentations unless previously excused. Exceptions will be granted for class conflicts, etc., by the DGS and/or the Faculty member in charge of the seminar series.

Grading of students will be S/N. CMB Faculty and students will evaluate student presentations in order to provide comment and feedback on skills necessary to effectively and efficiently present scientific research and data. A critique will be immediately provided to the student by the course coordinator, attending CMB faculty, and members of the student's thesis committee. Written evaluations from the audience will be provided to the student and faculty mentor for additional assistance.

I.4 Comparative and Molecular Biosciences Course Descriptions

Brief course descriptions of the courses offered in the Comparative and Molecular Biosciences program can be found on [the University's graduate catalog website](#). Students are encouraged to contact the course coordinator for more specific information regarding the schedule and content of the course.

Students and faculty should note that the following policies apply to all courses at the University of Minnesota:

[Grading and Transcripts: Twin Cities, Morris, Rochester.](#)

[Teaching and Learning: Instructor and Unit Responsibilities: Twin Cities, Morris, Rochester\).](#)

[Teaching and Learning: Student Responsibilities \(Twin Cities, Morris, Rochester\)](#)

[Makeup Work for Legitimate Absences: Twin Cities, Morris, Rochester](#)

[Use of Personal Electronic Devices in the Classroom: Twin Cities, Morris, Rochester](#)

[Appropriate Student Use of Class Notes and Course Materials: Twin Cities, Morris, Rochester](#)

[Student Conduct Code](#)

[Sexual Harassment](#)

[Diversity, Equal Employment Opportunity, and Affirmative Action](#)

[Student Mental Health and Stress Management](#)

J. ACRONYMS

CMB	Comparative and Molecular Biosciences graduate program
VMED	Veterinary Medicine graduate program
DGS	Director of Graduate Studies
PAC	Program Advisory Committee
ADGP	Associate Dean for Graduate Programs
OGP	Office of Graduate Programs (in the College of Veterinary Medicine)
GPC	Graduate Programs Coordinator
GPS	Graduate Programs Specialist
GPAS	Graduate Planning and Audit System
GSSP	Graduate Student Services and Progress
CVM	College of Veterinary Medicine
VMC	Veterinary Medical Center
VetSci	Veterinary Science Building
AS/VM	Animal Science Veterinary Medicine Building
VDL	Veterinary Diagnostic Laboratory
VCS	Veterinary Clinical Sciences
VPM	Veterinary Population Medicine
VBS	Veterinary Biomedical Sciences
IACUC	Institutional Animal Care and Use Committee
COGS	Council of Graduate Students
PSG	Professional Student Government