



**MCDB&G**

**Molecular, Cellular, Developmental Biology and Genetics**

***Graduate Program Handbook***

***Applies to students who began Fall 2016***

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*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. The information in this handbook is available in other formats upon request.*

## **WELCOME TO THE GRADUATE PROGRAM IN MOLECULAR, CELLULAR, DEVELOPMENTAL BIOLOGY AND GENETICS.**

This handbook is designed to provide you with important information regarding course requirements, registration details, preliminary written and oral examinations, degree requirements, and health and dental insurance.

While graduate programs are officially distinct from departments, in practice programs rely on departments for financial assistance, office staffing, and space. The MCDB&G program works closely with the Department of Genetics, Cell Biology and Development (GCD).

Advising can be obtained from your advisor, from the Director of Graduate Studies (DGS), Duncan Clarke, 6-128 MCB, 612-624-3442 email: [clark140@umn.edu](mailto:clark140@umn.edu). If you need additional support for professional or personal issues, your advisor, DGS and/or Sue can help you find the appropriate resources or you can contact University-based offices directly. These include the **Graduate School Student Services office** (612-625-3490, 333 Bruininks Hall) <http://www.grad.umn.edu/students/doctoral/index.html>), the International Student and Scholar Services (**ISSS**) (612- 626-7100, 190 Hubert H. Humphrey Center (<http://www.iss.umn.edu/>)) and **Graduate Assistant Health Benefits office** (612-624-0627, [umshbo@umn.edu](mailto:umshbo@umn.edu)) <http://www.shb.umn.edu/twincities/graduate-assistants/gahp/graduate-assistant-health-plan.htm>

### **JD/PhD and JD/MS Joint Program**

Students will be advised by the DGS in MCDB&G. The Joint Degree office contact info is – 612-625-0055, [jointdgr@umn.edu](mailto:jointdgr@umn.edu), <http://www.jointdegree.umn.edu/>

### **MD/PhD Program**

Students will be advised by the DGS in MCDB&G. The MD/PhD program office contact info is- 612-625-3680, [mdphd@umn.edu](mailto:mdphd@umn.edu), <http://www.med.umn.edu/mdphd/>

## PhD DEGREE REQUIREMENTS

As a member of the MCDB&G graduate program, you are expected to follow the Student Academic Conduct Code (Appendix A) and specifically to:

- Actively pursue thesis research with adequate and timely progress
- Maintain a cumulative GPA of at least 3.0.
- Meet course requirements.
- Give a student research seminar once a year.
- Meet annually with your committee.
- Attend a student research seminar series and one regular departmental seminar series.
- Attend a regularly scheduled journal club.
- Fulfill TA requirements (2 semesters for PhD students or 1 semester for MD/PhD and JD/PhD students).
- Attend and present a poster at the annual MCDB&G Fall retreat.
- Participate and present a poster at MCSB recruiting activities.
- Maintain active status with the Grad School by registering every Fall and Spring.

**Publication of thesis research:** It is required that a student's Ph.D. Thesis encompasses substantial and novel research of high significance. To meet this requirement, students are expected to have at least one first author paper accepted for publication in a peer-reviewed journal within their research field, before being allowed to defend their work at the Final Oral Exam.

Note: In most cases at least 40 hours of thesis research per week, excluding coursework, will be required to make adequate progress towards the PhD degree.

### Total Credit requirements for PhD

24 or more Total Credits

16 of your Total Credits must be graded A-F and you must complete the Required Core Courses, as well as Elective Courses

24 Thesis Credits (MCDG 8888)

Ideally you should try to complete all of these credits by the end of your 2<sup>nd</sup> year

**Register for EXACTLY 14 credits each semester.** The number of thesis credits to register for each semester equals 14 minus the number of course credits taken that semester. If you register for more than 14 credits, you will be responsible for the excess tuition charge. **Your goal is to get to 24 course credits and 24 thesis credits as soon as you can. Once completed, you will register for one credit until you are finished.**

### **REQUIRED CORE COURSES**

To complete a PhD in the MCDB&G program you must take the following courses:

MCDG 8920 Itasca (2 credits)  
GCD 8131 Advanced Molecular Genetics and Genomics (3 credits)  
GCD 8151 Cellular Biochemistry and Cell Biology (3 credits)  
GCD 8161 Advanced Cell Biology and Development (3 credits)  
GCD 8171 Literature Analysis / Grant Proposal Writing Course (2 credits)  
GCD 5005 Computer Programming for Cell and Developmental Biology (3 credits) and/or  
GCD 8920 Computational Genomics (3 credits)  
BioC 8401 Ethics, Public Policy, and Careers in MCB (1 credit)  
MCDG 8900 Student Seminar (1 credit)  
MCDG 8950 Teaching Practicum (1 credit) (TA assignments)

### **APPROVED ELECTIVE COURSES**

Elective Courses make up the remainder of your Total Credits so that you achieve a minimum of 24 Total Credits. You need to take enough Elective Courses graded A-F to reach the 16 credit minimum of A-F graded courses within the 24 Total Credits. As you might finish your 24 course and 24 thesis credits at the end of your second year, plan your elective courses carefully. If you need to take a course in your third year, discuss it with your advisor and DGS. Your goal, however, is to register for 1 credit starting your third year.

BioC 8001 Biochemistry: Structure, Catalysis, and Metabolism (3 credits)  
BioC 8002 Molecular Biology and Regulation of Biological Processes (3 credits)  
GCD 8008 Mammalian Gene Transfer and Genome Engineering (2 credits)  
GCD 8073 Genetics and Genomics in Human Health (3 credits)  
GCD 8920 Quantitative Microscopy (3 credits)  
Grad 8101\* Teaching in Higher Education - Preparing Future Faculty (3 credits)  
Grad 8200\* Teaching and Learning Topics in Higher Education (1 credit)  
MICA 8003 Immunity and Immunopathology (4 credits)  
MICA 8004 Cellular and Cancer Biology (4 credits)  
NSC 8211 Developmental Neurobiology (3 credits)  
PubH 6450 Biostatistics I (4 credits)  
SCB 8181 Stem Cell Biology (3 credits)

\*See page 17 for more information

## OTHER ELECTIVE COURSE OPTIONS

Must talk to advisor and gain approval from DGS before registering. Note: this is a partial list

BIOC 5309	Biocatalysis and Biodegradation (3 credits)
BIOC 5528	Spectroscopy and Kinetics (4 credits)
BIOC 5535	Introduction to Modern Structural Biology -- Diffraction
BIOC 5536	Introduction to Modern Structural Biology - Nuclear Magnetic Resonance
BIOC 5352	Biotechnology and Bioengineering for Biochemists (3 credits)
BIOC 5361	Microbial Genomics and Bioinformatics (3 credits)
BIOC 5444	Muscle (3 credits)
CSCI 5461	Functional Genomics, Systems Biology, and Bioinformatics (3 credits)
CSCI 5980/8980	Special Topics in Computer Science
MATH 8540	Topics in Mathematical Biology (3 credits)
MICA 8002	Structure, Function, and Genetics of Bacteria and Viruses (4 credits)
OBIO 8012	Basic Concepts in Skeletal Biology
PHCL 5111	Pharmacogenomics (3 credits)
Stat 5021	Statistical Analysis (4 credits)

## YEAR-BY-YEAR INFORMATION REGARDING REGISTRATION

### YEAR ONE

During your first year, you took the required core courses and some Elective Courses. It is important to make sure that you are on track for the Total Course Credits required for the PhD. You must also pay attention to the ratio of graded (i.e. A-F) vs. non-graded (i.e. S/N) courses. Finally, **YOU MUST register for EXACTLY 14 credits** each semester (i.e. both fall and spring of year one). The number of thesis credits to register for each semester equals 14 minus the number of course credits taken that semester. If you register for more than 14 credits, you will be responsible for the excess tuition charge.

A **typical year 1** registration follows:

#### FALL

GCD 8151	Cellular Biochemistry and Cell Biology	3	A-F
GCD 8131	Advanced Genetics and Genomics	3	A-F
MCDG 8920	Itasca	2	S/N
MCDG 8900	Student seminar*	1	S/N
MCDG 8888	Thesis credits – <b>use to reach 14 credits</b>		

#### SPRING

BioC 8401	Ethics, Public Policy and Careers in Mol. and Cell. Biology	1	S/N
MCDG 8900	Student seminar*	1	S/N
MCDG 8888	Thesis credits – <b>use to reach 14 credits</b>		

#### SUMMER

GCD 8171	Literature Analysis / Grant Proposal Writing Course**	2	A/F
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\*A minimum of 90% attendance is required to pass this course requirement (this is tracked and you will receive an N if you do not meet the attendance requirement). Also, you must evaluate one seminar speaker.

\*\*You will register for this in the Fall of Year 2, but you will take the course in the summer of your first year.

## YEAR TWO

Register for **EXACTLY 14** credits during fall and spring semesters. The number of thesis credits to register for each semester equals 14 minus the number of course credits taken that semester. If you register for more than 14 credits, you will be responsible for the excess tuition charge. You will not register for Summer Session.

In the fall and spring semesters of Year 2, MCDG students are required to take GCD 8900, a journal club-style course that complements the GCD Thursday seminar series.

A **typical year 2** registration follows:

### FALL

GCD 8171	Literature Analysis*	2	A/F
Elective Courses	One or two (see above)	3-7	A/F
MCDG 8900	Student seminar	1	S/N
MCDG 8950	Teaching Practicum - if you have a TA assignment	1	S/N
MCDG 8888	Thesis credits – <b>use to reach 14 credits</b>		

### SPRING

Elective Courses	Usually no more than one	3-4	A/F
MCDG 8900	Student seminar	1	S/N
MCDG 8950	Teaching Practicum - if you have a TA assignment	1	S/N
MCDG 8888	Thesis credits – <b>use to reach 14 credits</b>		

\*You will have taken this course during the summer months but register for it Fall semester of Year 2.

## YEAR THREE AND BEYOND

You should have completed all the credits. However, if you need to take a course, you need advisor and DGS approval. Register for MCDG 8444 FTE Doctoral for 1 credit each Fall and Spring semester until completion of your degree. (FTE = full time equivalent student)

## VERY HELPFUL TOOL

### GRADUATE SCHOOL COMPLETION STEPS, TIME FRAMES AND FORMS

The following steps are your responsibility. Everything is done online. Go to - <http://www.grad.umn.edu/students/forms/doctoral/index.html>

#### **Assign Members to Prelim Written and Oral Exam Committee**

- File online in your second year after your committee has been approved by the DGS

#### **Graduate Degree Plan**

- File in your second year, before your oral prelim exam
- Instructions will be sent to you by Sue

#### **Schedule Prelim Oral Exam**

- Schedule online at least one week in advance
- Prelim Oral Signature Report will be sent to your chair

#### **Assign Members to Final Exam Committee**

- File online at least one month prior to final exam

#### **Thesis Formatting**

- <http://www.grad.umn.edu/students/ThesisSubmission/index.html>

#### **Request Graduation Packet**

- Log in and print packet - <http://www.grad.umn.edu/students/doctoral/index.html>
- Packet will include the Grad Application for Degree form and Reviewers' Report form

#### **Submit Reviewers' Report**

- Submit prior to your defense

#### **Schedule Final Exam**

- Schedule online at least one week in advance

#### **Submit Graduate Application for Degree**

- Found in your Graduation Packet
- Submit to One Stop by the first business day of anticipated month of graduation

#### **Submit Doctoral Final Exam Report**

- Submit no later than the last business day of anticipated month of graduation

#### **Submit Dissertation**

- Submit by the last business day of anticipated month of graduation.
- Submission information can be found at <http://www.grad.umn.edu/students/ThesisSubmission/index.html>

#### **Commencement**

- The Commencement Ceremony is in April/May. Emails are sent to all students in Feb/March

## COMMITTEE REQUIREMENTS

- You need to have a 6-member examination committee (this includes your advisor)
- Four members, one of which is your advisor, must be a MCDB&G faculty member (major field)
- Two members must be graduate faculty members in another graduate program (minor field)
- Co-Advisors – If you have a co-advisor, at least one of your advisors must represent the major field. The other advisor may represent the major or minor field. Both must be on your committee and must be readers of your thesis.

Note - Although the graduate school states that a 4-member committee is necessary, MCDB&G requires a **6-member committee** (5 committee members plus your advisor).

Check this website for which graduate programs faculty are members of - <https://apps.grad.umn.edu/programs/faculty.aspx>

Consult with your advisor about which faculty would be appropriate choices for committee members. Once you and your advisor have agreed on your selections, you need to contact potential committee members to check their availability and willingness to serve on your committee. Send list to Sue. ***The DGS will assign the committee chair.***

### **Preliminary Oral Exam Committee**

Once the DGS has approved your committee, go online to assign your oral prelim committee <http://www.grad.umn.edu/students/assignprelimcommittee/index.html>

### **Final Oral Exam Committee**

You may change your committee members, but you must have approval from your adviser and the DGS. For the member(s) you are replacing, it is your responsibility to inform them they are no longer on your committee.

### **Thesis Reviewers**

Advisor/s must serve as reviewers. In addition, there must be one major field reviewer and one minor/outside reviewer. The chair is not required to be a reviewer. Consult your PI regarding reviewer choices.

Go online to assign your final oral committee

<http://www.grad.umn.edu/students/assigndocfinalcommittee/index.html>

## MCDB&G Preliminary Examinations - An Overview

1. All MCDB&G students must participate in the Proposal Writing Course (GCD 8171) during the summer following the first year. The goal of this course is to provide students with practical experience in developing a research proposal that addresses a novel hypothesis.
2. Students must choose an examination/thesis committee composed of six faculty (which includes the advisor) and get approval by the DGS. The list of potential committee member must be submitted by the first week of the Fall semester of the second year.
3. The Written Preliminary Examination will be taken in the Fall Semester of Year 2.
4. The Oral Preliminary Examination must be taken by the end of the Spring Semester in Year 2.

### PRELIMINARY WRITTEN EXAMINATION

The goal of the Preliminary Written Examination is to test your ability to independently (a) develop a novel hypothesis that addresses a significant problem, (b) develop a set of well-crafted experiments to test your hypothesis (c) interpret data obtained (d) anticipate difficulties and devise alternative strategies and (e) draw conclusions based on predicted experimental outcomes. NOTE: We understand that in the "real world" you would consult with your colleagues to refine your ideas and hypotheses. However, the goal of the written prelim is to evaluate your ability to do this on your own.

#### Exam Instructions

The Preliminary Written Examination should propose a novel hypothesis that addresses a previously unanswered question of biological significance and that describes a research plan that tests your hypothesis. The scope should be sufficiently narrow that it represents a 3-4 year project that can be completed by an individual, not a broad NIH grant to support 5-10 people. The proposed topic should be of significant importance such that the anticipated results would be suitable for publication in a leading journal in the field. You are encouraged to consider a wide range of techniques to evaluate the validity of your hypothesis.

Students will be asked to write a research proposal based on one of three papers that cover topics in the major fields represented by the MCDB&G program. The papers will be posted two days before the official start of the exam. The student will ***select one of these papers*** as the basis for their proposal and submit their choice to the Chair of the examination committee within 48 hours of the exam papers being posted. The completed proposal must be submitted two weeks after that.

The proposal must be of the student's own creation. Students ***may not*** consult with another student, colleagues or their advisor during the preparation of the exam or ask anyone to read/edit their proposal prior to submission. Students have complete freedom to take the problem in any direction they wish, but the hypothesis and proposed experiments must be grounded in the exam paper. Note that proposals that simply describe the same studies of a molecule (or closely related molecule) using a different model organism are not acceptable.

Note that you may seek help with your grammar and writing style at the Center for Writing, 15 Nicholson Hall or 9 Appleby Hall, <http://writing.umn.edu/sws/> E-mail: writing@umn.edu, Nicholson appointments and information: (612) 625-1893, Appleby walk-in center: (612) 626-1328.

**Format:** The proposal should include an NIH-formatted **Specific Aims page** (1 page, single-spaced). The **Research Strategy** (8-10 pages, double-spaced) should contain a **Background & Significance** section (1-2 pages) and a **Research Plan** (6-8 pages). The **Research Plan** should consist of one or two specific aims. The length restriction includes figures plus legends but does not include references. The entire proposal must have 1 inch margins all around, using an 11 or 12 pt Arial or Helvetica font.

**Evaluation:** The Preliminary Exam committee will evaluate the proposal within two weeks of submission. Each proposal will be reviewed by two primary reviewers who will provide detailed critiques and will also be read by a third member of the committee. The exam will be graded (20 pts for Specific Aims, 20 pts for Significance, 10 pts for Innovation, 50 pts for Research Plan) and each reviewer will submit a score. The final score will be the average of the three scores. The exam committee will meet to discuss the review and rating of all of the exams. The final scores will determine if the student earns a Pass with Distinction (95 or higher), Pass (90 or above) Pass with Revisions (70-90), Fail (69 or lower).

***Students will have two weeks to revise and re-submit their proposals.***

The original three reviewers will evaluate the revised proposal within two weeks. The revised proposal must be rated Pass or Fail and two "Fails" means an overall failure. If the revised examination is rated as a Fail, then the MCDB&G Executive Steering Committee (ESC) will review the student's performance on the examination, their academic record and consult with the Chair of the Exam Committee, the Student Review Committee and the student's advisor. They will then determine if the student cannot continue in the program or if they may have a final opportunity to pass the Written Preliminary Examination.

## **PRELIMINARY ORAL EXAMINATION**

The goal of the Preliminary Oral examination is to examine a student's general knowledge in the core areas of the MCDB&G program and to test their problem solving skills, particularly in areas related to their written proposal, their own research area and completed course work. It is intended to be an open-ended examination.

The Oral Prelim must be taken within one semester of passing the Written Prelim, e.g. by the end of the Spring Semester of year 2. Contact all of your committee members to determine a date for the examination. All six committee members need to be present for the exam. Note that the advisor is to be a silent observer, not an active participant in the questioning. However, the advisor is a full voting member of the committee. Committee members may participate remotely as long as all conditions for remote participation in the exam are met.

Schedule your Oral Prelim with the Graduate School at least one week in advance of the exam - <http://www.grad.umn.edu/current-students-forms/formsdoctoral>. This generates the examination report form. An email will be sent to you with information on how to obtain the examination

report form. ***The student is responsible to return the examination report form back to the Graduate School within one day after the exam.***

***Send the following materials to your committee members a few weeks before your exam. Notify Sue (smk@umn.edu) of your exam date, time and place as soon as you can. She will send a reminder and instructions to your committee a day before your exam.***

Prepare the following materials for submission to the committee. **Put in ONE PDF file.**

(1) The final Written Preliminary Examination plus the reviews

(2) Proposal on thesis work.

This is the proposal that was developed during the Proposal Writing Course and submitted for a final grade.

The proposal can be revised before submission to the committee.

Prepare two presentations for the exam:

(1) A brief presentation of your written proposal. We suggest that you prepare a presentation that would take NO MORE THAN 20 min (uninterrupted); this would ideally constitute at most 10 slides. It is unlikely that you will complete this presentation because your committee will frequently interrupt you with questions. You should be prepared to use the whiteboard to diagram and explain your proposed research.

(2) A brief outline of your thesis research. For this portion of the exam, be prepared to present your thesis project as a “chalk talk” in 10 - 15 minutes. Your committee will have questions about your goals and approaches. Members of the examining committee representing the minor or supporting program should evaluate your breadth of knowledge. DO NOT prepare a formal presentation with slides. Practice presenting your proposal on the whiteboard to diagram and explain your proposed thesis research.

### **Format of the Prelim Oral Exam**

The examining committee chair will excuse you before the exam starts and committee members will hold a brief discussion regarding your overall performance to date in the program (coursework, progress in lab) as well as your performance on the written prelim exam.

A typical time-line for a preliminary oral examination is as follows. You will usually be given about 5 min to begin presenting your written prelim proposal be approximately 45 min to 1 hour, including questions, followed by ~45 min of general questions and a final 20 min on your thesis research. ***These time limits are a general guide and your examiners will determine the timing.***

Upon completion of the exam you will be excused and your committee members and the advisor will vote by secret ballot. This will be followed by a discussion and then a final vote. The final vote is tallied by the chair.

Possible results are pass, pass with reservations, or fail.

Procedures for lifting reservations must be specified by the committee members. These will be clearly explained to the student at the exam and a written summary of the requirements to lift the reservations will be sent to the student, the advisor and DGS within 2 days of the exam. If the result is fail, **the prelim oral exam may be taken a second time only with unanimous approval (vote) of the committee, and the same exam committee must conduct the exam.**

**After The Exam** The Oral Examination Report form, *which is picked up by the student at OneStop*, must be signed and returned to the Graduate School after the exam by the student. If the result is pass with reservations or fail, a letter describing the basis for the examination committee's decision must accompany the report form and be submitted to the DGS and student coordinator by the Committee Chair within a week of the exam.

## THESIS AND FINAL ORAL EXAM

Thesis formatting can be found at

<http://www.grad.umn.edu/students/ThesisSubmission/index.html>

Obtain a Graduation Packet at: <http://www.grad.umn.edu/current-students-forms/formsdoctoral>

- The site noted above is a WEALTH of information including directions on the required content and format of your thesis. Please read it carefully.
- Once completed and approved by your advisor(s), distribute your thesis to your Readers. Your Readers must include your advisor (and co-advisor if you have one) and in addition, one committee member in MCDB&G and one outside the program. You need to give your readers a minimum of two weeks to read the thesis. Your readers determine whether the thesis is acceptable for defense. If acceptable, the readers (and your advisor) will sign the Thesis Reviewer's Report form (found in the Graduation Packet) which needs to be submitted to the Graduate School before the defense date can be set officially. Signing the Thesis Reviewer's Report form indicates that the reader has judged that the thesis is ready for oral defense - and only that. The reviewer may have reservations and after the oral examination may vote to fail the candidate for the PhD degree. However, this is rare and the annual student evaluations are designed to guard against such a possibility. **If the thesis is judged to be unacceptable for defense, specific reasons will be communicated to the student in writing and the thesis will need to be revised.**
- The Thesis Reviewer's Report form needs to be submitted to the Graduate School at least one week before the final oral exam.
- After the Thesis Reviewer's Report form has been submitted, schedule the final oral exam at least one week in advance at:  
<http://www.grad.umn.edu/current-students-forms/formsdoctoral>
- The Final Exam Report form will be sent to the committee chair.
- Submit the Final Exam Report by the last working day of the intended month of graduation.

This Final Examination is primarily the thesis defense, although the questions and discussion may cover related areas as well. The first portion of all final oral examinations is a one-hour seminar given by the student covering the thesis research. This seminar must be publicly announced and all interested faculty and students are invited. Following a brief period of questions from the audience, the second portion of the examination will consist of additional questions to the candidate from the members of the examination committee. The second section of the examination is not open to the public.

## OTHER ESSENTIAL INFORMATION.

### **Student Research Seminar**

All MCDB&G students are required to attend the MCDB&G Student Seminar each week. If you do not attend a minimum of 90% of the student seminars, you will receive an "N" grade for this course (MCDG 8900). There will be a sign in sheet at the seminar. Second to fourth year students are required to present a Student Research Seminar each year. The aim of this seminar is to give each student the opportunity to present a formal seminar on your research and also to give your committee the opportunity to assess your progress towards completion of the PhD degree.

### **Annual Committee Meeting and Progress Report Form**

There are two components to student evaluation - an annual committee meeting arranged by the student and an evaluation each semester by the Student Review Committee (student does not attend)

(1) Annual Committee Meeting – Beginning in the third year, each student is required to meet at least once a year with their Thesis Committee, including the advisor, to discuss academic and research progress and plans. It is strongly recommended that this meeting be held immediately after their yearly student seminar. Committee members should be notified immediately about the assigned date of the seminar and asked to attend a meeting following the talk. If scheduling conflicts prevent a majority of committee members from attending, the meeting should be scheduled for no later than one month after the talk. **Note that second year students are not required to have a committee meeting, however, they or their advisor do have the option to request a meeting.**

The student or any committee member may call for additional Thesis Advisory Committee meetings and/or Student Review Committee meetings if problems are detected in academic or research progress or if the student could benefit from the committee's advice.

(2) Annual Progress Report and Review Form - All students must complete the online Annual Progress Report Form which will be maintained as a cumulative record (i.e. new pertinent information will be added each year) beginning in the second year. **This form can be found in your Google Drive** (Sue creates the form). The purpose of the form is to facilitate communication of each student's accomplishments and plans to their Thesis Committee and to provide a formal record of the committee's recommendations for the coming year.

All students must submit a progress report to their committee one week prior to their student seminar. If you will not be meeting with your committee right after your seminar, send an updated progress report two days before your committee meeting. Please be sure your Chair understands they need to fill in their section and send it to the committee members for their approval following the meeting. It is then signed by the chair, student and DGS.

Second year students must also submit a progress report that will be reviewed by their committee and the Student Review Committee.



### **GCD Departmental Seminar**

During your second year, you will need to attend the GCD Departmental Seminars. You will not register for it as a course. Requirements are as follows:

- Second year students will be given the list of invited speakers and will sign up to attend lunch with 3 speakers each semester.
- Second year students are required to attend seminar whether they will be going to lunch or not.
- One week before their visit, invited speakers will provide a paper on their research that is relevant to their seminar.
- Second year students will read the paper before seminar. This will allow you to familiarize yourself with the visiting scientist's research area and technical approach prior to their seminar, and make it easier to focus on the experimental logic and findings.
- If you will be attending lunch with the speaker, as you read the paper be sure to identify specialized techniques, striking or confusing results, interesting conclusions, ideas for experiments, etc that you would like to discuss with them.
- Students who attend lunch can ask questions they have about the paper with the speaker. This discussion will take the place of the journal club course.
- There is no course designation or credits involved. This activity is required as a component of the graduate program.

### **MCDB&G Retreat**

The GCD/MCDB&G annual retreat is usually in September. Second year students are encouraged to present a poster. Third students and beyond are **required** to present a poster.

### **Teaching Requirements**

All PhD students will teach two semesters and MD/PhD and JD/PhD students will teach one semester, not to include the first and last years. The teaching requirement is intended to ensure that all students in the program have, as part of their graduate training, experience as instructors at the university level. You can express your preference for particular teaching assignments, although we may not be able to accommodate your choices. Credit for teaching is obtained by registering for 1 credit under the designator MCDG 8950, Teaching Practicum. You will receive a \$500 stipend for each TA assignment.

- You should meet with the instructor of your assigned course before the course begins to discuss duties and expectations. Students will typically be expected to present at least one lecture or lab session.

TA duties can include:

- TAs for lecture courses usually hold weekly office hours to answer questions about material presented in lecture. You may also lead review session(s). TAs for laboratory courses help supervise students and answer questions during laboratory exercises. You should also be available to answer student questions after class, although typically you do not hold office hours.
- TAs for lecture courses may be asked to assist the instructor in either preparing, critiquing or reviewing in-class or take home examinations. Laboratory course TAs will typically assist the instructor in reviewing laboratory notebooks and in the design of one or more written assignments. The course instructor should provide a detailed examination or answer key for the TA to use as a guide. The instructor should also be

available to provide guidance when the TA has questions about grading an answer and should review the grading to ensure that student work is being evaluated appropriately.

- TAs may be asked to assist the instructor in preparing some materials for the course, such as copying handouts, on a limited basis (such as when a handout is unexpectedly needed at the last minute). However, it should be noted that **TAs are not responsible for course copying**. The departmental offices have all of the necessary resources for course copying.
- Instructors will be sent an evaluation form at the end of the semester that will be sent to you and placed in your file. If your TA report does not give you a passing grade, then you will have to do an additional TA.

### **Spoken English Test for Teaching Assistants (SETTA)**

All nonnative English-speaking students must demonstrate proficiency in spoken English appropriate to the demands of their teaching assistantship. The SETTA test MUST be taken in the Spring semester of the first year. For further detailed information see:

<http://cei.umn.edu/courses-programs/international-teaching-assistant-program/spoken-english-test-teaching-assistants>

### **Preparing Future Faculty (PFF) – GRAD 8101 and GRAD 8200**

Preparing Future Faculty (PFF) welcomes graduate and postdoctoral participants from all disciplines. PFF helps participants: acquire information about the teaching and learning process and the faculty role at a variety of institutions of higher education, gain a realistic perspective on the skills required for success as a faculty member, examine their fit with a teaching career in higher education, work with a faculty mentor in a teaching opportunity at a local college or university, demonstrate, document, and reflect on their teaching skills, and market themselves for faculty or other professional positions. To receive a letter of recognition and certificate of program participation from the Graduate School, participants must complete both courses. For information on program enrollment, contact PFF at 5-3811 or [pff@umn.edu](mailto:pff@umn.edu), or visit:

<http://cei.umn.edu/support-services/preparing-future-faculty>

### **Active status registration - GRAD 999**

GRAD 999 is a zero-credit, zero-tuition registration option intended for graduate students who have completed all coursework and thesis credit requirements, and who must maintain registration. The College of Biological Sciences needs to approve the registration. To register for GRAD 999, complete this CBS form [Request to Register for GRAD 999](#). Registration of GRAD 999 is **limited to two semesters** which individual programs will track. If the petition is denied, the program may restrict enrollment. GRAD 999 registration cannot be used during the semester you wish to graduate.

**NOTE:** GRAD 999 cannot be used to meet any other requirements of the University or external agencies. Students must maintain full-time status to hold an assistantship, defer loans, and/or receive financial aid.

## **Time Limit for Earning Degree**

### **THIS IS BEING REVISED**

#### **8-year time limit for earning the doctoral degree**

All requirements for the doctoral degree must be completed and the degree awarded within eight years after admission and matriculation to the graduate program, or a more restrictive time frame specified by the program. Students who are unable to complete the degree within the time limits described above may petition the program and collegiate unit for one extension of up to 24 months.

## **Leave of Absence**

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

If a leave of absence is necessary, you need to notify the DGS and the Student Personnel Coordinator (Sue). You must file a [Leave of Absence Request](#) with the College of Biological Sciences. Students who do not obtain a college-approved leave of absence prior to interrupting enrollment (excluding summer) may be terminated. Active status requires students to enroll for both fall and spring semesters.

Students with a college-approved leave of absence are eligible for reinstatement if they file a [Leave of Absence Reinstatement](#) form with the College of Biological Sciences prior to the term in which they intend to enroll. The student must re-enroll the term immediately following the expired leave (excluding summer), and must return to the same major and degree objective.

## **Vacation/Sick Leave Guidelines**

Graduate assistants receive paid leave for University holidays; however they do not qualify for paid vacation leave. **Vacation time can be arranged on an individual basis with your faculty mentor.** Graduate Assistants are entitled to paid sick leave, not to exceed two weeks (10 days) of consecutive pay for absences caused by illness or injury to themselves, a dependent child, or the dependent child of a same sex domestic partner. Students needing a leave of absence other than sick leave (e.g., due to military service, prolonged illness or complications after child birth), must contact the Director of Graduate Studies and program coordinator, to discuss options under University guidelines. For complete University policy, please see: <http://policy.umn.edu/Policies/hr/Hiring/GRADSTUDENTEMPLOYMENT.html>

## **Readmission**

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

Students whose active student status has lapsed and who wish to resume graduate work must seek readmission to their graduate program. Readmission is not guaranteed, and colleges and programs may add conditions to the readmission (e.g., course grades older than a specified number of years may not be included in the degree plan).

<http://www.grad.umn.edu/admissions/readmission/index.html>

## **Transfer Credits**

Students may request from the program and Graduate School transfer of graduate level course credits. Generally, MCDB&G will only allow transfer of 4 credits towards the degree but may allow more under the discretion of the DGS. The transfer courses will be included on the Graduate Degree Plan form. Transfer of graduate credit is not allowed for courses taken before the awarding of a baccalaureate degree.

### **Minor degree in another graduate program**

If a MCDB&G PhD student wishes to obtain a minor in another graduate program, you need approval from your advisor and DGS. Send the following to the DGS to be reviewed – approval email from advisor, approval email from the other program and program requirements to obtain a minor.

## **COMBINED DEGREE PROGRAMS**

### **MD/PHD PROGRAM**

<http://www.med.umn.edu/mdPhD/>

The MD/PhD Program combines coursework and biomedical research culminating in a dissertation and PhD degree and clinical training resulting in an MD degree. The goal of the MD/PhD Program is to link biomedical sciences and clinical practice to provide a basis for optimal research and patient care. MD/PhD students who have a strong, fundamental interest in the analysis of disease at the molecular and genetic level and who anticipate a career as a clinical or basic biomedical research are encouraged to pursue their PhD training with faculty in the Graduate Program in Molecular, Cellular, Developmental Biology and Genetics (MCDB&G). When students enter the MCDB&G program they are considered 2nd year students. The training is completed in the following sequence:

Phase 1 (years 1-2): Pre-clinical coursework. Students take extensive pre-clinical coursework, select an area of basic biomedical research, and choose an advisor to supervise the PhD dissertation. Three laboratory rotations are completed in Phase 1. MD/PhD students who choose to enter the MCDB&G Graduate Program are invited to participate in the MCSB Program Retreat at Itasca (in August of year 2). MD/PhD students who enter an MCDB&G laboratory for their dissertation research must do so no later than the fall semester of their 3rd year.

Phase 2 (years 3-6): The student becomes a member of the MCDB&G program, functioning in every respect identically to those MCDB&G students admitted in the PhD Program. This includes attending MCDB&G retreats, journal clubs, laboratory meetings, research reviews, seminars, national and international meetings, and authoring original scientific papers. MD/PhD students are also eligible to hold elected office within the MCDB&G student governance system and represent the MCDB&G Program on University or College committees. Like all graduate students, MD/PhD students are encouraged to apply for private research fellowships and Graduate School Doctoral Dissertation Fellowships. During Phase 2, MD/PhD students are financially supported through a combination of fellowships, training grants and individual research grants. MD/PhD students are paid the stipend and have benefits identical to those MCDB&G students in the PhD Program. During Phase 2, the MD/PhD program requires the student to commit 4h/week over a 36-week period to clinic time with a physician scientist. Fulfillment of the PhD component of the MD/PhD Program with a degree in MCDB&G requires completion of specialty coursework, dissertation research culminating in the writing of a thesis, and satisfactory completion of both the Preliminary and Final Exams.

### Coursework

The major in MCDB&G requires 16 credits from A-F graded classes. Because pre-clinical course work is not graded A-F, there is a method to convert the pre-clinical non-graded scores to A-F grades. Pre-clinical course work can be transferred if those classes are deemed appropriate. Typically, MD/PhD students must take a minimum of 3 additional credits (a minimum of 1 additional class) graded A-F for the MCDB&G Ph.D. degree. This

additional coursework should be related to your emphasis within Molecular, Cellular, Developmental Biology and Genetics (i.e. the additional coursework is intended to facilitate your thesis research) and will be determined by the Student Review Committee in consultation with your thesis advisor and the DGS. In the 1st year of Phase 2 (year 3 of the MD/PhD program), students will therefore typically take 1 additional class. MD/PhD students should plan their MCDB&G coursework in consultation with their advisor and then relay a plan to the DGS before entering the program.

#### Preliminary Exam & TA

Based on the student's background and after consultation with the advisor and DGS, the student will complete the requirements for the Written and Oral Preliminary Exam in the spring of either year 1 or year 2 of Phase 2. Following satisfactory completion of the Preliminary Exam, students will continue with full-time research, typically 3-4 years. During this time MD/PhD students will serve as a teaching assistant (TA) in an MCDB&G course for 1 semester during Phase 2. The TA assignment is determined by the DGS and may be either a laboratory- or lecture-based experience.

#### Final Oral Exam

At the end of Phase 2, students will complete their Final Oral Exam with Thesis Defense and be granted their PhD.

Phase 3 (year 7): Clinical rotations and MD. Approximately 64 weeks of clinical rotations conclude the Combined Degree Program, at the end of which the MD degree is awarded. In Phase 3, or earlier, students link with a clinical-discipline advisor who is responsible for keeping them in touch with clinical medicine and research.

#### **JD/MS OR JD/PhD PROGRAM**

<http://www.jointdegree.umn.edu/>

The PhD and MS requirements for the JD/PhD and JD/MS are the same as those for students pursuing only the PhD, with the important exception that some courses can be "cross counted" for credit in both programs.

For PhD students, the written and oral prelim exams are generally taken late in spring semester of the first year in the PhD portion of the program.

#### **MS DEGREE REQUIREMENTS**

The MCDB&G program does not admit students with the intention of obtaining a Master's degree. There are reasons, however, that students do chose the MS option after entering the PhD program. In this case, you can choose between a Plan A (with thesis) and a Plan B (non-thesis) degree. In either case, you will need a minimum GPA of 3.0 to graduate.

#### **Typical Master's Degree Course Work**

**Years One and Two:** The course work plan varies depending on when you opt to switch to the MS program. Typically, courses taken during Years One and Two are the same as those taken by all other students who entered the MCSB PhD program. After the decision to switch to an MS track, you should meet with the DGS and with your advisor to make sure you have the correct distribution of credits to graduate with an MS degree.

### **Teaching experiences**

All MS students will TA one semester, not to include the first and last years. Credit for teaching experience is obtained through registration for 1 credit under the designator MCDG 8950, Teaching Practicum.

### **MS Degree Examining Committee**

Consists of three faculty members:

- Two members (one of whom is the advisor) must be members of MCDB&G.
- The third member of the committee must be a graduate faculty member in another graduate program

### **Time limit for earning degree**

All requirements for the master's degree must be completed and the degree awarded within the shorter of five calendar years after initial enrollment in the graduate program or the more restrictive time frame specified by the program.

Students who are unable to complete the degree within the time limits described above due to extraordinary circumstances may petition the program and collegiate unit for an extension of up to 12 months. Students must obtain the approval of their advisor/s and program DGS, and submit the petition by the deadline.

- If a petition is approved, the student is notified in writing of the expectations for progress and for the month/year of degree conferral.
- If the petition is denied, the student is notified in writing that he or she will be terminated from the graduate program upon expiration of the limit.

Students who have been terminated under such circumstances may apply for readmission to the program, however readmission is not guaranteed.

### **PLAN A: Master's Degree with Thesis**

The Plan A option is intended for students who have completed a body of work of sufficient breadth and depth to warrant a Master's thesis. This does not need to rise to the level of a PhD thesis, but should represent a significant contribution to the field. Instructions for preparing a Plan A Master's Thesis can be found at: <http://www.grad.umn.edu/students/masters/index.html>

### **Credit requirements for Plan A**

**20 or more course credits plus 10 Thesis Credits** (MCDG 8777)

2/3 of total course credits must be graded A-F

### **Thesis to Reviewers**

Once completed and approved by your advisor, distribute your Master's thesis to your Committee. You need to give your readers a minimum of two weeks to read the thesis. Your Committee will determine whether the thesis is acceptable for defense. If acceptable, the Committee (and your advisor) will sign the Thesis Reviewer's Report form (see above under Degree Completion Steps) which needs to be submitted to the Graduate School before the defense date can be set officially. Signing the Thesis Reviewer's Report form indicates that the reader has judged that the thesis is ready for oral defense - and only that. The reviewer may have reservations and after the oral examination may vote to fail the candidate for the MS degree. However, this is rare and the annual student evaluations are designed to guard against

such a possibility. If the thesis is judged to be unacceptable for defense, specific reasons will be communicated to the student in writing and the thesis will need to be revised.

### **Final Examination**

This Final Exam is primarily the thesis defense, although the questions and discussion may cover related areas as well. The first portion of all final oral examinations is a one-hour seminar given by the student covering the thesis research. It is up to the student whether they want to make this seminar publicly announced and all interested faculty and students are invited or close it to only the committee members. The second portion of the examination will consist of additional questions to the candidate from the members of the examination committee. The second section of the examination is not open to the public.

### **PLAN B: Master's Degree Without Thesis**

In this case the student needs to write a scholarly, original report on the subject of their choice. Usually, students select a topic directly or closely related to the project they have worked on in graduate school, either during a rotation or during their time spent in the laboratory they selected for their thesis work. The report should be approximately 15 pages in length.

### **Credit requirements for Plan B:**

**30 or more course credits.** Ten credits are chosen at the discretion of student and advisor.  
2/3 of total course credits must be graded A-F

### **Project Report and Oral Examination**

- There is no official format for the Plan B report. Basically, it should be a scholarly and original document that thoughtfully discusses an important scientific topic that you and your advisor agree upon. It should include an introduction that explains the significance of the topic, a review of the literature or an analysis of a specific aspect of the area and a discussion regarding questions of current or future endeavors.
- Once completed and approved by your advisor, distribute your Plan B report to your Committee.
- The oral examination for a Plan B report is limited primarily to a discussion of the written document. The aim of this examination is to determine whether you have command of the subject you have chosen and can lead an in-depth discussion of the topic.

### **MINOR IN MCDB&G**

For a minor in MCDB&G, students need to take 12 credits in the program, graded A-F, and obtain a GPA not below 3.0 from these classes. The following courses are required, but substitutions may be allowed for these courses with the approval of the DGS:

GCD 8151 Cellular Biochemistry and Cell Biology  
GCD 8131 Advanced Genetics and Genomics  
GCD 8161 Cell Biology and Development  
GCD 8920-2 Computational Genomics OR GCD 5005 Computer Programming Biology

## HELPFUL TOOL

### **GRADUATION SCHOOL MASTERS COMPLETION STEPS, TIME FRAMES AND FORMS**

The following steps are your responsibility. Everything is done online. Go to - <http://www.grad.umn.edu/students/forms/masters/index.html>

#### **Assign Members to Master's Final Exam Committee**

- Complete at least one month prior to exam  
<http://www.grad.umn.edu/students/assignmasterscommittee/index.html>

#### **Complete Graduate Degree Plan**

- Submit at least one semester prior to anticipated graduation

#### **Request Graduation Packet**

- Request packet at <http://www.grad.umn.edu/students/masters/index.html>
- Packet will include the Grad Application for Degree form and Reviewers' Report form

#### **Submit Graduate Application for Degree**

- Found in your Graduation Packet
- Submit to One Stop by the first business day of anticipated month of graduation

#### **Submit Reviewers' Report (Plan A only)**

- Submit prior to master's final exam to obtain the Final Examination Report form

#### **Submit Final Exam Report**

- Submit no later than the last business day of anticipated month of graduation

#### **Submit Thesis (Plan A only)**

- Submit by the last business day of anticipated month of graduation. Consult Graduation Packet for formatting guidelines

#### **Commencement**

- The Commencement Ceremony is in April/May. Emails are sent to all students in Feb/March



## **APPENDIX A - STUDENT ACADEMIC CONDUCT**

**Egregious misconduct is considered sufficient grounds for the assignment of a failing grade in a course or dismissal from the graduate program. Several examples of academic misconduct are given below:**

- Copying answers from another student's examination paper during a closed book examination.
- Consulting lecture notes, the textbook, or a summary of important notes to oneself (a crib sheet) while writing a closed-book examination.
- Copying answers from another student's examination paper for a take-home examination.
- Collaborating with other students in the course of developing answers to take-home examinations through discussion of the exam questions and their answers.
- Permitting someone else to read and/or copy your answers to a take-home examination in order that they might better understand the question.
- Submitting a paper written wholly or in part by someone else to meet course requirements for a term paper or other technical writing.
- Failing to adequately reference sources of information or ideas used in the preparation of a term paper or other technical writing.
- Submitting fabricated data in place of experimentally determined results in a laboratory experiment.
- Selectively modifying data points so that experimental results more closely approximate the expected result.
- Selectively reporting only one set of data from a collection of equally valid sets of data in order to support a favored hypothesis.

## APPENDIX B. MCDB&G FACULTY AND THEIR RESEARCH 2017-18

<b>Kate Adamala</b>	We are combining top-down and bottom-up approaches to synthetic biology; we use tools of protein engineering and molecular biology, together with novel synthetic cell technologies, to understand and modulate biological processes in complex systems.	kadamala@umn.edu
<b>Frank Albert</b>	We study the genetics of complex traits: how variation in genome sequences influences individual molecular, cellular and organismal features. We also seek to understand the evolutionary forces that shape genomic diversity.	falbert@umn.edu
<b>Vivian Bardwell</b>	Transcriptional regulation in cancer and sex determination	bardw001@umn.edu
<b>Bruce Blazar</b>	Prevention of graft-versus-host disease (GVHD), development of new strategies to enhance immune recovery after transplantation. Prevention of tumor/leukemia relapse, gene therapy & tissue repair	blaza001@umn.edu
<b>Ran Blekhman</b>	Population, evolutionary, and medical genomics; understanding how human genetic variation affects phenotypic diversity and complex disease; computational genomics and metagenomics	blekhman@umn.edu
<b>Lihsia Chen</b>	Cell adhesion, signal transduction, cytoskeleton, and <i>C. elegans</i>	chenx260@umn.edu
<b>Duncan Clarke</b>	Yeast Cell Cycle Control.	clark140@umn.edu
<b>Sean Conner</b>	Clathrin-mediated endocytosis; mammalian intracellular membrane trafficking	sdconner@umn.edu
<b>Naomi Coutemanche</b>	Structure, assembly and dynamics of actin-based cytoskeletal networks	ncourtem@umn.edu
<b>Karen Echeverri</b>	Molecular and cellular mechanisms of regeneration.	echev020@umn.edu
<b>Aaron Engelhart</b>	The research in the Engelhart laboratory is directed towards better understanding nucleic acid folding and function in order to advance two broad themes: 1) the development of novel nucleic acid-based imaging, analytical, and diagnostic technologies and 2) the elucidation of unanticipated roles for nucleic acids <i>in vivo</i> .	engel0213@umn.edu
<b>Jim Ervasti</b>	Molecular Basis of Muscular Dystrophy; Role of Actin in Cell Polarity	jervasti@umn.edu
<b>Michael Farrar</b>	Signal transduction and lymphocyte development	farra005@umn.edu
<b>Laura Gammill</b>	Cytoskeleton and Cell Motility, developmental mechanisms, neuroscience, and regulation of gene expression	gammi001@umn.edu
<b>Melissa Gardner</b>	Chromatin mechanisms and dynamics; Quantitative fluorescence microscopy	klein0091@umn.edu
<b>Dan Garry</b>	Regenerative medicine, cardiogenesis, and stem-cell biology	garry@umn.edu
<b>David Greenstein</b>	Fundamental and fascinating developmental processes of meiosis and fertilization using <i>C. elegans</i>	green959@umn.edu
<b>Tim Hallstrom</b>	How Rb/E2F1 mediated apoptosis is regulated in normal and cancer cells	halls026@umn.edu
<b>Rueben Harris</b>	The causes and consequences of programmed mutagenesis	rsh@umn.edu
<b>Tom Hays</b>	Cytoskeletal and cell motility, developmental mechanisms	haysx001@umn.edu
<b>Kristin Hogquist</b>	Molecular mechanism of cell-fate determination in T cells	hogqu001@umn.edu
<b>Peter Igarashi</b>	Kidney development, transcriptional regulation, microRNAs, primary cilia, polycystic kidney disease (PKD)	igarashi@umn.edu
<b>Stephen Jameson</b>	Development and regulation of “killer” T lymphocytes	james024@umn.edu
<b>Yasuhiko Kawakami</b>	Understanding the molecular and genetic mechanisms of vertebrate limb development and apply the study to elucidate the mechanisms of congenital limb in human and limb regeneration	kawak005@umn.edu
<b>Nobuaki Kikyo</b>	Nuclear reprogramming in somatic cell nuclear cloning and stem cells	kikyo001@umn.edu
<b>Dan Knights</b>	Our computational microbiology lab develops methods that bring precision medicine to the microbiome. We apply those methods to find patterns in microbial communities that predict and diagnose human diseases, and we use those patterns to develop novel therapeutics and diagnostics.	dknights@umn.edu

<b>Deanna Koepf</b>	Cell cycle regulation, Ubiquitination and proteolysis, Genetic mechanisms of tumorigenesis	koepf015@umn.edu
<b>Michael Kyba</b>	Stem Cell Biology: regulatory pathways, disease and therapies, Transcriptional control of mesoderm development	kyba@umn.edu
<b>David Largaespada</b>	Identification and understanding of genes involved in cancer development	larga002@umn.edu
<b>Gant Luxton</b>	Nuclear/cytoskeletal interactions; their formation, regulation and dysfunction in disease	gwgl@umn.edu
<b>Kim Mansky</b>	Focus on signaling and transcriptional mechanisms that regulate osteoclast differentiation	kmansky@umn.edu
<b>Lou Mansky</b>	Cell and molecular biology of HIV and HTLV	mansky@umn.edu
<b>Scott McIvor</b>	Gene therapy for genetic disease and cancer using viral and non-viral vectors	mcivo001@umn.edu
<b>Linda McLoon</b>	Craniofacial muscles in health and disease	mcloo001@umn.edu
<b>Joe Metzger</b>	Integrative systems biology of cardiovascular function, Cardiac genetic engineering and experimental cardiac gene therapy	metzgerj@umn.edu
<b>Branden Moriarity</b>	My lab works on pediatric cancer genetics, immunotherapy, and gene therapy using cutting edge technologies, including DNA transposons, TALENs, and CRISPR/Cas9.	mori0164@umn.edu
<b>Chad Myers</b>	Computational biology and functional genomics - Machine learning for integrating diverse genomic data to make inferences about biological networks	cmyers@umn.edu
<b>Hiroshi Nakato</b>	Molecular and genetic analysis of Drosophila development	nakat003@umn.edu
<b>Tom Neufeld</b>	Developmental control of growth and cell proliferation in Drosophila	neufe003@umn.edu
<b>Michael O'Connor</b>	Cell-cell interactions in growth, differentiation, and development	moconnor@umn.edu
<b>Rita Perlingeiro</b>	Mechanisms controlling lineage decision and reprogramming, and application to regenerative medicine	perli032@umn.edu
<b>Mary Porter</b>	Regulation of dynein-based motility	porte001@umn.edu
<b>Daniel Schmidt</b>	Our group invents and applies protein engineering technologies to study fundamental functional principles of natural and artificial living systems at a cellular level.	schmida@umn.edu
<b>Yoji Shimizu</b>	Lymphocyte and tumor cell adhesion, migration and signal transduction	shimi002@umn.edu
<b>Jeff Simon</b>	Animal development; control of gene expression; chromatin mechanisms	simon004@umn.edu
<b>Shiv Sivaramakrishnan</b>	Protein acrobatics - Study of protein function via protein engineering; Focus on cell signaling and motor proteins	sivaraj@umn.edu
<b>Nik Somia</b>	My laboratory is interested in understanding the lifecycle of retroviruses and use this information 1) to identify new drug targets for HIV, 2) to develop better vectors for gene therapy and 3) to use these vectors for gene discovery.	somia001@umn.edu
<b>Guisheng Song</b>	microRNAs in the pathogenesis of non-alcoholic fatty liver disease (NAFLD), obesity, insulin resistance and liver cancer, with the goal to develop novel therapeutic approaches for these disorders.	gsong@umn.edu
<b>Tim Starr</b>	Understanding the genetics of cancer in order to develop individualized, targeted therapies	star0044@umn.edu
<b>Meg Titus</b>	Molecular genetic analysis of unconventional myosin function	titus004@umn.edu
<b>Jakub Tolar</b>	Stem Cell Gene Therapy	tolar003@umn.edu
<b>Brian Van Ness</b>	Cancer transgenic mouse models and pharmacogenomics	vanne001@umn.edu
<b>Dan Voytas</b>	Plant genome engineering through homologous recombination; retrotransposable elements and genome organization	voytas@umn.edu
<b>Chester Whitley</b>	Evaluate retroviral-mediated gene transfer in hematopoietic cells and reversal of the disease process in vitro thus providing the impetus to initiate clinical trials of gene therapy	whitley@umn.edu
<b>Masato Yamamoto</b>	Cancer gene-therapy and virotherapy	yamam016@umn.edu
<b>David Zarkower</b>	Molecular genetics of sexual differentiation, germ cell development, and testis cancer	zarko001@umn.edu

## **APPENDIX C. Safety Training, Stipends and Paychecks**

1. **Safety Training:** Federal, state and local regulations require all graduate students to undergo safety training. Requisite training forms can be found at the Department of Environmental Health and Safety website: <http://www.dehs.umn.edu/>
2. **Stipends:** MCDB&G students receive a set annual stipend as determined each year by the executive committee. Any salary other than the set stipend (including bonuses) needs prior approval from the DGS.
3. **Paychecks:** University employees (including student employees) are paid on a delayed bi-weekly payroll system. Pay periods are 2-weeks long, beginning on a Monday and ending on Sunday, 14 days later. Direct deposit is encouraged. To authorize direct deposit, go to your MyU account under My Pay.

## **APPENDIX D: EMPLOYMENT INFORMATION AND TUITION BENEFITS**

### **Graduate Assistants Employment Office**

Office of Human Resources, 200 Donhowe Building

Phone: 612-624-8647 Fax: 612-625-9801

email: [gaesinfo@umn.edu](mailto:gaesinfo@umn.edu)

<http://www1.umn.edu/ohr/gae>

Policy and guideline information pertaining to graduate assistantship employment is available online (<http://www1.umn.edu/ohr/gae>) or from your hiring department. **Please be aware you are responsible for knowing the policies and guidelines applicable to your appointment as a graduate assistant.**

If you have F-1 or J-1 visa status, federal law prohibits the University from employing you more than 20 hours per week (50% time) during scheduled class periods and finals weeks. Exceptions exist if you have been authorized for 'practical or academic training'. Consult with the Office of International Student and Scholar Services over these matters. Note that in most cases at least 40 hours of thesis research per week, excluding course-work, will be required to gain adequate progress to the PhD degree.

## **APPENDIX E: HEALTH AND DENTAL INSURANCE BENEFITS**

Graduate Assistant Health Benefits Office  
N-323 Boynton Health Service  
612-624-0627  
email: [gradins@bhs.umn.edu](mailto:gradins@bhs.umn.edu)  
<http://www.shb.umn.edu/>

Students taking at least six credits are required to carry hospitalization insurance. Graduate assistants with 25% appointments or more can obtain health and dental care benefits by enrolling in the Graduate Assistant Health Care Plan. Once you are enrolled, your coverage will continue as long as your appointment remains at 25% or more. **If you have coverage Spring semester, you will be covered through the summer. You will have coverage to the end of your graduation month.** This is also true if you leave the program without graduating. You do have the option of purchasing continuing coverage at your own expense.

**A student with a 50% appointment will receive a 95% subsidy of premium for his or her own coverage. Students will be billed their portion of the premium costs once each term (directly to the students account).** The Graduate Assistant Insurance plan also includes office visit co-pay for enrollees. The University contributes part of the cost of dependent coverage. **Outside insurance** - If you already have insurance through your parents or spouse and you don't want to participate in the Graduate Assistant Health Care Plan, bring the name of your insurance company or HMO and your policy number to the Graduate Assistant Health Benefits office (N323 Boynton). **You must call their office (612-624-0627) every semester you register to tell them you have outside insurance.**

## **APPENDIX F: FELLOWSHIPS AND AWARDS**

A number of graduate fellowships and awards based on academic and research merit are available to new and currently enrolled grad students through the Graduate School. Information may be obtained from the Graduate Fellowship Office, 314 Johnston Hall, 612-625-7579 or via the web at <http://www.grad.umn.edu/fundingtuition>

### *Privately funded Fellowships*

The Graduate School administers several privately funded fellowships. Please see the Graduate School fellowship website (listed above) for a current listing of available privately funded fellowships. Application deadline is December 1.

### *Doctoral Dissertation Fellowships*

Candidates must be nominated by the MCDB&G graduate program to an all-University Graduate School competition. Fellowships are awarded to students who have passed the written and oral prelim exams by March and will have completed all program coursework by the end of the spring semester of the year they will be nominated. The internal MCDB&G program deadline will be announced by email and is in February of each year.

### *Best Dissertation Award*

Candidates must be nominated by the MCDB&G graduate program to an all-University Graduate School competition recognizing the University's top recent Ph.D. graduates by presenting 'best dissertation' awards. Current and former students who will have been awarded the Ph.D., or who will have successfully defended and officially submitted their

dissertations to the Graduate School will be eligible to be nominated. The recipients receive an honorarium of \$1,000. The internal MCDB&G program deadline will be announced by email in March of each year.

*Torske Klubben Fellowship for Minnesota Residents*

Students currently registered for credit in the University of Minnesota Graduate School who are official state-of-Minnesota residents may apply. The award is open to individuals who have an interest in or connection with Norway and/or its culture. Deadline: March 1

*The University Medical School*

The Medical School administers several research awards each year. For a current list, see the **student honors and awards section** of their website - <http://www.med.umn.edu/about/honors-awards/student-awards>. Applications are typically due in January.

*Milne Brandenburg Award*

The Brandenburg Award recognizes exceptional thesis research by graduate students in the basic biomedical sciences. The Biomedical Sciences Ph.D. Graduate Programs Council in the Medical School will coordinate the selection process. The award will be presented in the spring and each award will include a \$6,000 award. Applicants must have at least one published or in press first-authored publication in a peer-reviewed scientific journal focused on the applicant's thesis research. Applications are typically due the first week of February.

<http://www.med.umn.edu/about/honors-awards/student-awards/beatrice-z-milne-and-theodore-brandenburg-award>

*Carol H. and Wayne A. Pletcher Graduate Fellowship*

The College of Biological Sciences (CBS) announces the Carol H. and Wayne A. Pletcher Graduate Fellowship annually in August. This one-year, \$2500 fellowship is supported by an endowment established through a generous contribution from Carol H. and Wayne A. Pletcher. Their fellowship supports outstanding female students pursuing doctoral studies at the College of Biological Sciences. Candidates must be nominated by the MCDB&G graduate program.

Students may also submit applications for fellowships through agencies that are external to the University of Minnesota. Students should consult with their advisors about submitting applications for highly competitive fellowships from the NIH, NSF, American Heart Association, etc. ***Submission of fellowship proposals to external agencies require consultation with your advisor and the GCD grants submission staff to coordinate the preparation and submission of proposals. Additional salary and/or bonus payments need prior approval from the DGS and HR.***

**Note: Always contact one of the GCD grants submission staff before submitting applications.**

## **APPENDIX G. HELPFUL WEB ADDRESSES**

- Graduate School Doctoral Degree: Performance Standards and Progress: <http://www.policy.umn.edu/Policies/Education/Education/DOCTORALPERFORMANCE.html>
- Graduate School website: <http://www.grad.umn.edu>
- Graduate School Handbook: [http://www.policy.umn.edu/Policies/Education/Education/DOCTORALPERFORMANCE\\_AP\\_PC.html](http://www.policy.umn.edu/Policies/Education/Education/DOCTORALPERFORMANCE_AP_PC.html)
- Advising, Counseling and Resolution: Advising and grievance resolution may be sought through your advisor, the Director of Graduate Studies, the Department heads, the Graduate School, and the University Senate Judicial Committee. The following links provide possible contacts:
  - Office for Students with Disabilities: <https://diversity.umn.edu/disability/>
  - University Counseling and Consulting Services: <http://www.uccs.umn.edu/>
  - Counseling and Advisory Services for International Students: <http://www.iss.umn.edu/>
  - University Grievance Office: <http://www1.umn.edu/ocr/>
  - Student Dispute Resolution Center: [www.sos.umn.edu](http://www.sos.umn.edu)
- Boynton Health Service: <http://www.bhs.umn.edu/>
- Council of Graduate Students (COGS), 303 Johnston Hall, <http://www.cogs.umn.edu>
- Graduate Assistant Health Benefits, N-323 Boynton Health Service, 612-624-0627 or email: [gradins@bhs.umn.edu](mailto:gradins@bhs.umn.edu), <http://www.shb.umn.edu/>
- Graduate Assistant Employment Office (GAE), 170 Donhowe Building, 612-624-8647 Fax: 612-625-9801, web at <http://www1.umn.edu/ohr/gae/>
- Graduate School Catalog: <http://www.catalogs.umn.edu/grad/index.html>
- Graduate School Forms: <http://www.grad.umn.edu/students/forms/doctoral/index.html>
- Graduate School Student Services: One Stop office, Bruininks Hall, 612-625-3490, <http://www.grad.umn.edu/current-students/gssp>
- Housing: <http://www.umn.edu/housing/>
- International Student and Scholar Services, 190 Hubert H. Humphrey Center (HHH), 612-626-7100, <http://www.iss.umn.edu/>
- Libraries: <http://www.lib.umn.edu/>
- MCDB&G Graduate Program: <http://mcdbg.umn.edu>
- Mutual Roles and Responsibilities for Faculty and Graduate Students: Guidelines: [http://www.policy.umn.edu/Policies/Education/Education/DOCTORALPERFORMANCE\\_AP\\_PD.html](http://www.policy.umn.edu/Policies/Education/Education/DOCTORALPERFORMANCE_AP_PD.html)

- Parking and Transportation Services Office, 511 Washington Avenue SE, at 612-626-7275 or on the web at <http://www1.umn.edu/pts/>
- Registration: <http://onestop.umn.edu/onestop/registration.html>
- Scholarships and Financial Aid, 210 Fraser Hall, 612-624-1665, [http://www.onestop.umn.edu/onestop/Financial\\_Aid/Scholarships.html](http://www.onestop.umn.edu/onestop/Financial_Aid/Scholarships.html)
- Center for Writing: <http://writing.umn.edu/sws/>

#### University of Minnesota Policy Statements:

- Graduate School Policies and Governance  
<http://policy.umn.edu/alphabetical-list-policies>
- Academic Code of Conduct:  
[http://regents.umn.edu/sites/regents.umn.edu/files/policies/Code\\_of\\_Conduct.pdf](http://regents.umn.edu/sites/regents.umn.edu/files/policies/Code_of_Conduct.pdf)
- Board of Regents, Academic Freedom and Responsibility:  
[http://regents.umn.edu/sites/regents.umn.edu/files/policies/Academic\\_Freedom.pdf](http://regents.umn.edu/sites/regents.umn.edu/files/policies/Academic_Freedom.pdf)
- Graduate Assistant Employment Policies:  
<http://policy.umn.edu/hr/gradstudentemployment>
- Student Conduct Code:  
[http://regents.umn.edu/sites/regents.umn.edu/files/policies/Student\\_Conduct\\_Code.pdf](http://regents.umn.edu/sites/regents.umn.edu/files/policies/Student_Conduct_Code.pdf)

#### **EQUAL OPPORTUNITY STATEMENT**

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation. Inquiries regarding compliance may be directed to the Office of Equal Opportunity and Affirmative Action, 419 Morrill Hall, 100 Church Street S.E., University of Minnesota, Minneapolis, MN 55455, (612) 624-9547.