

GRADUATE STUDENT AND POSTDOCTORAL FELLOW ADVISING STATEMENT

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I am committed to training researchers from diverse backgrounds as they become independent scientists. I also strive to prepare advisees for a variety of careers both within and outside academia. This document outlines the expectations I have for advisees in the lab. It also outlines what advisees can expect from me.

THESIS

- **TOPIC ORIGIN:** I expect students to design thesis projects according to their interests, but I expect that projects will be geared toward understanding metabolism and/or physiology of archaea. When a student starts in a lab, we will discuss possible thesis topics. While I like students to come up with ideas, this discussion is important to ensure topics are viable. The thesis topic will evolve over time as a student gains mastery.
- **ORIENTATION:** I expect thesis topics to be primarily hypothesis driven. Occasionally, question-oriented approaches are useful to generate hypotheses, but this shouldn't be the main approach.
- **THESIS vs. PUBLICATION:** A thesis should start with a review of the relevant literature followed by chapters that describe individual projects within the broader framework of the thesis. I expect that most, if not all, of these chapters will be submitted as publications to peer reviewed journals.

PUBLICATIONS: Publishing is essential for communicating results. I expect that advisees are working towards publications throughout their time in the lab. When possible, manuscripts should be prepared and submitted when a project is completed; often this is well before the written thesis is finalized. By the time they graduate, I expect students will have multiple manuscripts published, in press, in review, or in preparation. A published record of success is important for most career paths, and a robust publication record ensures advisees are competitive for fellowships.

AUTHORSHIP: Authors on a manuscript will have contributed to the project in a substantial way. This can be through performing experiments in the lab, analyzing and interpreting data, writing portions of the manuscript, etc... Discussions about who should be listed as an author, and in what order, should occur as soon as possible in the manuscript drafting process. However, it is essential that all authors understand that these discussions are not binding and authorship can change as a project develops. Any changes to authorship after initial discussions will require mutual agreement from all involved.

CAREER PATHS: I expect advisees to communicate with me early and often about potential career paths and interests. Interests evolve over time, so constant dialog is essential. It is important that I know interests so I can help advisees pursue appropriate opportunities.

LAB GROUP MEETINGS: I expect my advisees to attend weekly group meetings. I expect

everyone will participate by presenting regularly, asking questions of others, and offering feedback or advice when appropriate.

INDIVIDUAL MEETINGS: I expect advisees to keep me updated on progress in research, coursework, and service activities. I am flexible in how this is carried out, but I generally expect to hear from advisees weekly. When I am on campus, my office door is open and advisees are free to come talk at any time.

INDEPENDENCE: I expect that advisees will work independently in the lab. I will provide more guidance to advisees initially, but it is my expectation that advisees are capable of functioning as independent scientists by the time they leave the lab. I will work closely with students to design experiments and interpret data for their first projects in the lab. After a student passes their candidacy exam, I expect that they are intimately familiar with the literature and can generate their own hypothesis, experiments, and interpretations. I will provide feedback as needed.

NATIONAL MEETINGS: Attendance at national meetings serves multiple purposes. They are an opportunity for advisees to expand their professional network and are essential for receiving initial feedback on a project from an external audience. In addition to student's professional development funds and travel grants, I maintain laboratory funds for these meetings.

GRADUATE STUDENT STIPENDS: In collaboration with the various graduate programs, I guarantee funding for five years. Part of this comes from departmental TA assignments as a required component of degree programs. It is my intent to provide RA funding for the remainder of this time; if for some reason circumstances change and this is not possible, other funding sources (TA, fellowship) are available. I expect advisees will apply for fellowships when possible. This is good for the advisee as it demonstrates an ability to secure external funding, and it is good for the lab as it frees up resources.

COURSEWORK: Coursework is an excellent opportunity for graduate students to expand their knowledge base. I expect that students will finish university required coursework in their first 3-4 semesters. Useful courses are those that teach the basics of microbial physiology, biochemistry, molecular biology, or skills like scientific communication. In the event coursework beyond this is required, I will work with student to apply for workshops or external courses. I also expect that advisees will pursue training in the techniques necessary to successfully perform their research.

RESEARCH FUNDING: Maintaining continuous funding for research activities is a group effort. This will primarily come from research grants to the lab.

GRANT PROPOSAL WRITING: Grant writing is an essential skill for most career paths. I expect advisees to gain experience in grant writing by pursuing external opportunities (fellowships, travel grants) and assisting with larger research grant applications.

ORIGINAL LITERATURE: Students should be intimately familiar with the literature pertaining to their thesis topic. Additionally, I expect advisees to have general curiosity and read broadly on other topics. Weekly lab meetings consist of a paper presentation and a research presentation. I expect advisees to read these papers. I also expect advisees to regularly attend and participate in

at least one journal club.

TEACHING and MENTORING: Teaching a subject is one of the best ways to gain mastery of the material. Students will gain teaching experience as part of their degree program. Additionally, I expect advisees to mentor others (younger graduate students, rotation students, undergraduates) in the lab.

PERSONAL LIFE: Maintaining relationships with family and friends is essential for mental health and wellbeing. It is important for advisees to maintain interests outside of the lab. Time away from the bench and computer is important to “recharge” and maintain personal and professional happiness.

TIME MANAGEMENT: I expect a lot of advisees in the lab. Therefore, time management and efficiency are essential. I don't have strict requirements for how much time an advisee must be in the lab, but I expect advisees to make consistent progress on projects. Some weeks will need more time and effort than average and some weeks will require less.

RELATIONSHIPS WITH OTHER ADVISEES: The lab runs smoothly when advisees communicate and work towards common goals. Relationships in the lab should be supportive, not competitive. Advisees should be eager to help others when the opportunity presents itself. Early career students should seek out advice from late career students and postdocs, and students and postdocs should be generous with providing advice and help.

DEPT./UNIV. SERVICE: The university relies on input and effort from individuals at all career stages. Therefore, I expect advisees to provide service to the department and university when appropriate. However, it is important to remember that advisees are in the lab to learn about microbiology and gain skills in performing research and analyzing, interpreting, and communicating data. Therefore, service activities should not require more than an hour or so of effort per week. If advisees are interested in activities that will take more time than this, I am open to discussing on a case-by-case basis.

ETHICS: Advisees should familiarize themselves with the University of Minnesota's code of conduct: http://regents.umn.edu/sites/regents.umn.edu/files/policies/Code_of_Conduct.pdf

RESOLVING CONFLICTS: Communication is key to resolving conflicts. Communicating early and often is ideal. If an advisee is uncomfortable communicating directly with others about an issue, they should not hesitate to come talk with me. If you are uncomfortable speaking with me for any reason, or if there is an issue with me, you can contact others for confidential advice. Katie Fixen has agreed to advise people in the lab, or you can contact the department head, your DGS, the college HR lead, or the Office of Student Conflict Resolution. If you want the conversation to remain anonymous, make sure to indicate this at the beginning of the conversation and be aware that certain issues require reporting (<https://policy.umn.edu/operations/misconductreporting>).

INDIVIDUAL DEVELOPMENT PLAN: I expect advisees to maintain a development plan and share this with me to the extent they are comfortable doing so. It is essential for advisees to have clear goals in mind so I can help them better prepare to achieve these goals.