

MacLean Lab PhD student Advising Statement

*Department of Pharmacology and Physiology
University of Rochester*

Purpose of This Document

The point of this document is to improve communication and increase transparency as we work together. It lays out general guidelines, ground rules and expectations. It is also flexible and can be updated as needed.

General Guidelines

The overall goal of the lab is to be an outstanding location for the study of ion channel structure/function relationships, currently focusing on ASICs and iGluRs. There are two elements to being a great lab. First, to produce high quality science. Second, to be a desirable place to work and train.

For the first element, high quality science, it is my firm belief that high quality science comes from thinking clearly about high quality data. To get this high quality data, I emphasize excellence, rigor and transparency in experimental design, execution, analysis and reporting.

For the second element, a lab can be considered a desirable training location if people enjoy their time there and prosper in the next career stage using their acquired skills. I also believe people tend to do better science when they enjoy their working environment and grow in their scientific independence. To that end, my lab emphasizes collegiality, helpfulness, openness of ideas and feedback, and a certain amount of joviality. To help ensure people do well after the lab, I stress frequent experience in written, oral and visual (ie. figures) communication.

In sum, I want trainees to do great science, to enjoy doing that science and to be able to communicate that work effectively to others.

Specific Guidelines

The guidelines below are aimed at achieving the goals above.

Working hours

It is effectively impossible to do well in your PhD by spending fewer than 40 hours a week in the lab. PhD students are expected to be in the lab 9am to 5pm (or equivalent), plus weekends as needed. This is the bare minimum. I have no doubt you'll find you need to be working closer to 50 hours per work (and occasionally *much* more!) to be really successful. I don't say this to be a cruel task master eager to squeeze the work out of my students. I say it because I want you to be successful and this is what it takes. There are many many talented, smart students working this hard and harder on their PhDs at other universities. Whether you see it or not, you are competing with them for results, for fellowships and, ultimately, for jobs.

There are many exceptions such as exams in course work, significant writing assignments or writing qualifying proposal/fellowships, life events, the odd exceptionally beautiful summer Friday, DMV visits, etc. But in general, students should be in the lab full time, working on experiments, reading papers, going to seminars and learning. A senior and very accomplished electrophysiologist told me "you cannot catch fish if your pole (electrode) is out of the water".

It is important to distinguish 'being in the lab' from 'being productive in the lab'. I have seen many students (some were classmates!) who get to work at 9:30 or 10 am, amble around all morning chatting or getting coffee, checking emails, etc. They don't start their experiments until after lunch then wind up staying until 9 or 10 pm at night to finish before launching the cycle again the next day, all the while complaining about being in the lab so long. This is silly. Of the many skills learned in a PhD, time management is one of the most useful. Learn it early and learn it well.

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Time off

Vacation.

This is the policy in the handbook: “Students are permitted two weeks of vacation time (10 business days) each calendar year, plus 7 official holidays in accordance with University policy. Semester breaks are not automatic holidays.” I think this policy is too restrictive. My policy is to take a week or two for Christmas/winter break, a few days for thanksgiving and a week or two during the year. If you’re on vacation more than this and your work is slowed as a result, we will revert back to the handbook policy.

If your vacation involves crossing an ocean (eg. to go home for a visit) then you should certainly be gone longer than two weeks. But a month is probably too long unless there is writing, analysis or other such work which can be done remotely. And then there should be very clear tasks to get done.

In all cases, please let me know of your vacation plans as they develop. And please avoid going on vacation during the month before we submit a major grant on your topic.

Illness, Family situations and other

If you are pretty sick, stay home. If you have a family situation or other emergency, take time to deal with it. Just please send me a message to let me know.

Family Leave Policy

Graduate students are provided up to 8 weeks of paid leave following the birth or the adoption of a child. For more information, see the family-friendly policy page. Time off for Parental Leave will also count towards the annual entitlement for Paid Family Leave (PFL) and Family Medical Leave (FMLA). All leaves will concurrently. Additionally, both parents are eligible for Paid Family Leave. More information about PFL and FMLA can be found on the Office of Human Resources leave administration web page.

Conduct of Research

Research practices

“All trainees are expected to explicitly reject questionable research practices, and conduct their research in a way that is transparent, rigorous, and ethical. They should be familiar with, and abide by, the University of Rochester’s [Policy on Research Misconduct](#). Academic misconduct can be reported online at <https://www.urmc.rochester.edu/about-us/values-culture.aspx>.”

If you have a question about something in the lab being a questionable research practice, please ask a more senior member of the lab or myself. As mentioned in the ‘General Guidelines’, I emphasize excellence, rigor and transparency in experimental design, execution, analysis and reporting. If you feel something is falling short or uncertain why we do something a certain way, we should discuss it. Similarly, if you feel something is unnecessarily rigorous and inefficient, tell me and we can discuss.

Record keeping

Reproducibility is the heart of the scientific method. Keeping good records, such that people can figure out what you did and reproduce it, is essential to good science. But there is a big difference between making it technically possible to puzzle out what you did and making it easy. Keeping great records so that it is clear and easy to figure out and reproduce will make you a better scientist and lab colleague!

Lab notebooks are partly for you, to remind you of what you did 6 months or 2 years ago, but they are also for me and the next person. Be kind to future you and those who follow. Keep a clear notebook. Every page should be dated. The top should have a clear description of the goal of the experiment or the related project. Writing should be clear and legible for others. For ephys, you should also include the cDNA transfected (inc. mass and time), the solution configuration, file names, sweeps for each solution. If you have a particularly nice recording, make a note in the book that it is a candidate ‘Figure trace’. If something odd or interesting appears, make a note and discuss it in the lab notebook.

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Please note that all lab notebooks (electronic or physical) are the property of the lab, not the student, postdoc or staff. Data is also property of the lab.

Data management

All original data should be found in at least two places. Generally, one will be the computer on which the data was recorded, esp. for ephys, and the other will be the URM Box drive. If you're unsure how best to implement this for new data types, please let me know and we will find a solution.

For any given project or publication, I will set up a Box folder in PROJECTS. An example path would be PROJECTS-> ASICs->Funny Currents. Within that final folder (ie. Funny Currents), will be at least four subfolders: *Data*, *Analysis*, *Text* and *Figures*. This is a very useful way to keep track of things as projects evolve over time. *Data* is a place to save all primary data, *Analysis* is where we store all the excel or origin files used for a set of experiments or project. *Text* is for storing the manuscript(s) text, the Endnote libraries, and any reviews/responses. *Figures* is where we build figures for publication, grants, etc. Generally, I like to sketch out the figures for a project early on to act as a rough template. As we collect data and refine the experiments, we will fill in the sketches with actual figures. The best way to save the figures is sub folders for each figure with the figure title as the folder title. Do not title a subfolder as Figure 1. Use the caption title.

Communication

The default method of electronic communication is the lab Slack channel. Responding to messages outside of work hours is purely optional and no one in the lab is under any obligation to respond outside work hours. We all need our down time. More official communications or anything worthy of documentation should be done using URM email. If there is an emergency (ie. lab fire or flood), please call or text me, regardless of time.

Cleaning

We do a group cleaning of the lab every year. Everyone participates by cleaning their immediate area, whatever major equipment they mainly use, emptying unneeded items from the fridge/freezers, defrosting, backing up data, and other tasks as needed.

Lab meeting

Currently, lab meetings are Friday mornings at 9:30am in the Fenn room. All graduate students and postdocs present with a rotating schedule. You can present a paper or data and it is expected that everyone will alternate between the two (ie. once you do a paper, on your next turn you would present your own data). All data presentations should be uploaded to Box -> PRESENTATIONS -> Your name -> Dated folder. These will be accessible by anyone in the lab.

Students will do a practice presentation in the lab meeting at least a week before public presentations. This means a week before your literature review, research seminar, qualifying exam proposal, annual meeting and any talk at a conference. You can do as many practices as you want but you must do at least one a week in advance. This gives time to incorporate feedback. This is also a great place to practice fielding questions, especially questions harder than you will get in the public forum. Bear in mind "Cry in the dojo, laugh on the battlefield".

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Relationships

Advisor-trainee relationship.

Advising students and postdocs in their work is the most important aspect of my job. I will always make time for it. If there is anything you would like to discuss, please stop me in the lab, come by my office or send me a Slack message or email. I will get back to you, almost always within 24 hours. If it takes longer, please send a reminder. You're not bothering me. It's my job and I appreciate the reminders.

There are three exceptions to this. Vacation, the two weeks of Stats class and the two weeks preceding a major grant submission.

Trainee relationships.

As in the 'General Guidelines', I want our lab to be a place people enjoy being in. That means having great lab mates to work with. This, of course, requires that we all be great lab mates to each other. I expect all trainees to be collegial and helpful in their interactions with each other, to give honest feedback and to accept constructive criticism in the spirit with which it was given. Being a good lab mate also means leaving a space better (or at least not worse) than you found it. If you make a mess, clean it. If you use the last of a buffer, make new stock (or if time is an issue, mention on Slack that X buffer is out and you will make more tomorrow). If you fill a reservoir, empty it and if you empty a pipette box, replace it.

In addition to working together as peers, from time to time you will need to mentor or train others. Training others is an important part of your own training. Explaining things often clarifies your own understanding or exposes weak points you were unaware of. And building a record of training or mentoring more junior people can be helpful in the job market. It is highly likely you will have a chance to help train a more junior graduate student or undergrad during your time in the lab. This will be a lot of work but can be incredibly rewarding.

Finally, consensual intimate relationships sometimes develop between trainees. When this happens, it is also important to be open and transparent about such relationship so that the individuals can be protected and potential conflicts of interest mitigated. To protect personal privacy, I will keep any such disclosures confidential if the involved parties so wish. Individuals are not permitted to enter into an intimate relationship with any person over whom that exercise academic authority. I expect all lab members to follow the guidelines of the [Faculty Policy on Intimate Relationships](#).

Department participation

Communication and networking are hugely helpful skills for future job searches. Trainees should take every opportunity to develop their communication skills. This means asking questions in seminars, presenting posters at retreats or other departmental functions, presenting papers in the signaling journal club, giving live lab demos to incoming students, going to lunches with speakers and just generally participating in department life. Not only are these good opportunities to learn, talk science and network but they are also good occasions to cultivate reference letters. I expect trainees to participate in all these activities.

Conflict resolution

To some extent, conflicts within a group are inevitable. To repurpose an old adage about health care, "an ounce of communication is worth a pound of intervention". If you have concerns about your interactions with me or another lab member, please do not hesitate to discuss it with me. If you wish our conversation to be confidential, please tell me that at the outset and I will keep it confidential. If you are uncomfortable discussing with me for any reason, there are [many other people you could talk to](#).

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Professional Development

Publications

The goal for PhD students is to publish at least three high quality first author papers during their degree (middle author papers will very likely happen but they aren't your main focus). The first project will be pretty well defined and laid out by me. During the second project, I expect the student to begin contributing more to the overall project direction, writing and figure making. I hope that the final project will be mainly driven by the student.

Conferences/Meetings

There are four conferences our lab routinely attends. The main two are Biophysical Society meeting and iGluR retreat. Funding permitting, I hope that all lab members can attend at least one each year. The other two conferences are Society for Neuroscience meeting and the ion channel Gordon conference. If the lab is paying for you to go to the conference, I expect you to present a poster or talk (or provide a very good reason not to). If you are paying for the conference using your own funding, I encourage you to present but the decision is yours. I do reserve the right to veto a presentation or particular data if I judge it imprudent to reveal that work in public at that time.

Funding

It's my job to keep the lights on, but students getting a fellowship are a huge help. Moreover, applying for funding, be it NIH, AHA or other, is a very useful skill set. It's essential for an academic career and also important for industry (you will need to justify the drug you're working on to the higher ups!). Further, putting together a grant is a very good means of collecting data in publication-ready format, clarifying your thinking, and getting experience in written communication. I expect all PhD students and postdocs to apply for funding as soon as practical. This is generally once you have produced a paper or pre-print from the lab.

Career Development

I am deeply committed to helping trainees move towards their career goals. Gaining technical competence in some methods can help, but the more critical skills are learning how to design and trouble shoot experiments in general, learning how to assess scientific studies and developing critical thinking, communication and time management skills. There are vital for most post-PhD career paths so I prioritize those. Others skills, such as didactic teaching or a course on python programming, may only be relevant for certain career paths. If you feel you need additional training in a specific area for your career plans, please tell me and we will work on a solution to get that training or experience.

It is very important to think about your career plans early. You can't turn back the clock so think about what you want for your career. Then decide what skills or accomplishments you need to get there, usually by finding commonalities in what others have done. Then work at getting those skills or accomplishments. This is the best way of achieving your career plans. It is also important to periodically re-evaluate your plans and progress and keep my apprised. I can only help if I know your plans!

Expectations prior to graduation

The CMPP program expects students to have submitted a first author paper prior to graduation. I expect students from my lab to publish at least one very high impact first author or several strong first author papers (eg. one Nature paper or three JGPs). In addition, students will have to complete all the CMPP program requirements such as course work, TA/tutoring requirements.

Leaving the lab

Before you leave the lab, you must document everything. This means reorganizing samples in the freezer so others can find, fully updating the plasmid and primer inventories, throwing out samples that will not be needed, cleaning your bench. Most importantly, every student must pull all primary and analyzed data from their rigs (or other sources) and put it on a designated SSD (or whatever quantum storage crystal we use in the future).

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Commitment of mentor-mentee after graduation

It's not over once you graduate! I am happy to continue to help your career path after graduation. This could be as simple as my writing updated reference letters but could also be discussing your next move, particular experiments, connecting you with others or just help with statistics! I also expect you to occasionally help with locating reagents or data (hopefully not too hard), providing insight into experimental details or just general feedback. Importantly, I want people to finish-up papers or projects before they leave. Once someone leaves, it is much harder to finish something up.