

Expectations for the McFeeters Lab

- A successful career in academic research at the Ph.D. student-or-higher level requires working at least 50 hours a week in the lab - plus additional time reading at home. The extra time will develop a broad scientific perspective and ensure your work is of the highest quality.
- Some people prefer to come in late and then work late. However, you need to be in the lab by 10 AM, M-F, no exceptions. If you are going to be absent or late on more than an occasional basis and have a good reason for it, let us know.
- When you are in the lab, be efficient with your time. Do your share of general lab work, but keep working. If you are not running an experiment, you should be writing. If you are not writing, you should be reading. If you need more to do, see Hana or Rob.
- Don't be afraid to ask for help. In some cases, neither you nor anyone else in the lab will have expertise in a technique which may be "just what is needed" to address some question related to your research—don't be afraid or shy about politely approaching those who may be able to help out. Just be sure to say "thank you" afterwards and to acknowledge those who help out when you publish. Indeed, in many cases, including helpful folks as authors on your paper is appropriate and represents a "win-win" outcome for everyone involved.
- Develop efficient organizational skills including:
 - Keep a neat and detailed laboratory notebook. Future members of the lab should be able to follow your notebook and be able to figure exactly what experiments you carried out and what the details of those experiments were.
 - Computer files must also be organized and saved so that they can be identified and retrieved by others, even years after they are first prepared.
 - Maintain your own well-delineated folders on lab computers—don't leave your files scattered throughout system folders.
 - Clean your dirty glassware promptly and maintain a well-organized bench space.
 - Order needed reagents and equipment far enough in advance so that you never have to delay experiments due to the need to wait for ordered supplies to arrive.
 - Label all samples and reagents clearly and store them appropriately.
 - Discard obsolete reagents and samples. Every few months you should make an effort to review what you have in the refrigerators and freezers and get rid of outdated or no-longer-needed samples.
 - Dispose of chemicals in an appropriate manner.
- The development of good writing skills during the course of Ph.D. and postdoctoral training is essential. Your advisor is happy to work with you to hone your writing skills. Many of your peers are also happy to do so. When drafting a new manuscript, a good strategy for a trainee in the lab is to work on the first few drafts with the help of other students or postdocs (you can pay them back later by helping them!). Once you have a draft that is in reasonably good shape, this is the optimal point to give it to your advisor, with whom subsequent rounds of editing will be carried out.
- The development of good public speaking skills during the course of Ph.D. and postdoctoral training is essential. Resolve always to give a good talk.
- When preparing your talks for group meeting keep in mind that our lab is very diverse. You cannot assume that everyone already knows the background for your project. Just as you would do for any seminar you will be giving for a broad audience, you should include an introduction to your project and to the techniques you will be referring to.

- In addition to providing a good intro, it is also critical to project yourself into the minds of those in your audience so that you can present your data in a manner that they will be able to digest. Clearly label all data and include important parameters.
- When answering questions after giving a presentation, try to avoid giving a 5 minute answer to a 1 minute question.
- Always provide me with the PowerPoint file for your group meeting presentation. If the figures are of high quality, they often can later be used for publications without the need for extensive reformatting.
- You should be aware of the importance of preparing high quality figures for all presentations, both written and oral. Not only is this important so that you can present your science clearly, but the quality of figures are often used as the basis for making a first impression. When an editor receives a paper you have submitted s/he will usually glance at the figures. If they are of low quality that editor is likely to immediately view the quality of your paper with suspicion. Always prepare high quality figures for any public presentation or paper.
- For an oral presentation, part of having high quality slides is to make sure that they are labeled clearly so that the audience can easily grasp what the slide is conveying.
- Maintain a spirit of helpfulness when working with your colleagues.
 - If you make a mess, clean it up. Failure to do so is a serious infraction.
 - Help keep common areas of lab clean, even if you are not the one who made a mess.
 - Be a good host to visitors when called upon to do so.
 - Make new members of the lab feel welcome.
 - Everyone occasionally breaks things, sometimes by carelessness and sometimes completely by accident. This is completely understandable. What is critical is that when you break something you report this immediately so that a repair/replacement can be promptly arranged. Failure to report is a serious infraction.
 - Help instruct colleagues regarding lab practice and techniques when there is a need.
 - Help out with lab chores, even if they don't directly benefit your project. Do not suppose you are too high in seniority to be called on to occasionally do menial task.
 - Watch out for the safety of your colleagues- don't let them do things which are unsafe. Safety is everybody's problem!
 - Help to identify common reagents which are getting low and need to be ordered.
 - Realize that projects are never set up so that members of the lab are in competition with each other (although there are many times when members of the lab work together towards a common goal). Therefore, always think about your lab mates in a cooperative manner.
 - Understand that almost no labs are completely self-contained: at all stages of your career you are going to be called upon to share equipment, space, etc. with members of other labs. It is critical that you treat members of other labs with courtesy and respect.
- To a significant degree, science is based on the willingness of scientists to SERVE the community, without necessarily getting anything in return. The quality and integrity of scientific journals is based on the peer review (volunteer) system. So is the grant review system. You would be surprised at how devoted some of our most prominent scientists are to serving the scientific discipline and associated community in a most selfless way. So, while you will always need to avoid becoming overcommitted, make an effort to do your part when called upon to serve.
- Resolve lab conflicts in a polite manner.

- Do not let a one day crisis turn into a two day crisis. Deal promptly and decisively with problems, whether they are of your own making or whether they are visiting you uninvited.
- Celebrate the accomplishments of your peers, one day they will likewise celebrate yours.
- Respect the value of your colleague's time and don't imagine that your time is more valuable than theirs.
- When teaching another person a laboratory technique, realize that they are much more likely to learn the technique if the student is the one who does the hands-on experiment. This is as opposed to you (the teacher) doing it while they merely look on. This is true both in the wet lab and when running instrumentation, include the NMR spectrometers. Yes, it may seem to take a little longer to teach this way, but in the end it saves time because the student learns faster and is less likely to need to be shown repeatedly.
- Serious matters are often best dealt with face-to-face conversation.
- Do not leave dangling ends dangling. When a project is near completion, complete it! When a paper is almost done, finish it! It is usually best to finish a major endeavor before moving on to something new.
- We do not believe in publishing "minimal publishable units" (MPUs) just to publish as many papers as possible. This does not mean that we do not sometimes publish communications, short papers, or methods papers. However, every paper should tell a significant story, not just deposit data.
- Plan to write and *submit* your papers on your research *before* you leave the lab and move on to another position. It is very very difficult to write and submit a paper once a student or postdoc has moved on to another position. Factor this imperative into planning the timing of your work, job searches, and moving dates. *If you leave it to someone else to finish your project then in all likelihood the person who finishes the project will be first author of the resulting paper.*
- Avoid losing focus on your primary project. Focus, focus, focus. Some people are naturally good multi-taskers and can efficiently do two things (or sometimes more) at once, some people are not. However, everyone has to avoid losing focus on priorities.
- Develop the ability to be fully aware of the "big picture" while at the same time being focused enough on your own work to bring it to full and prompt fruition.
- Think far down the road: What are your long term professional objectives? What steps will you need to take over month and even years to attain those objectives? What lab would you like to postdoc in some day?
- When conducting experiments, an analyze-as-you-go approach is often the most powerful. For example, if you are doing a titration, it is good to plot the progress of the titration as you go along, rather than waiting until after completing the experiment to seriously look at the data. This approach allows you to either to make on-the-fly adjustments in the experimental procedure in response to the data turning out to be different than expected (for example, maybe you need to go to higher ligand concentrations to achieve saturation than you expect) or to terminate experiments that aren't working at all at an early stage.
- When designing an experiment, always think hard about what the appropriate positive and negative control experiments are and make sure you include such controls. If you are having

trouble seeing what the appropriate control experiments would be please see Rob or Hana for advice.

- When developing or applying a new method for the first time it is almost always best to find a simple “model” system to test it on before moving on to the real application you have in mind. For example, if you want to test out a new method for phosphorylating purified proteins it is best to try this first with a small water soluble protein before attempting to phosphorylate a complex membrane protein.
- Your best analytical tool is your own common sense.
- Be very wary of automated software that is used for data analysis. Don’t assume, a priori, that the automated software will necessarily analyze things properly. When embarking on a lengthy analysis it is usually best to analyze at least some data manually and confirm that the automated routine gives you the results that you *know* to be correct.
- Do not “cherry pick” data. For example if you run an experiment 3 times and you get only one set of results that make sense, you need to know what went wrong the other 2 times before you can conclude that the “good” data reflects the *correct* (not just desirable) result.
- Always save your old data and do so in a form that will be accessible far into the future. You never know which data you will need access to at a future date and so you need to save it all.
- When you have opportunities to seek your own funding (fellowships, scholarships paying your way to meetings, etc.) do so. It is important to get some experience in seeking funding (writing grants) under your belt and it looks good on your CV—obtaining a competitive fellowship is akin to securing your first grant.
- When applying for a grant, fellowship, or job, it is important to know what the application deadline is and make sure that you contact everyone who will need to contribute to that application far in advance of the deadline: reference letter writers, grants administrators who will need to process application forms, collaborators who need to supply a letter, CV etc. People are really busy, so they will appreciate being given as much advance notice as possible regarding their contributions.
- Deadlines are your friends. They help you to focus and they terminate endless fine-tuning that is a temptation to perfectionists.
- Requesting letters of reference: Throughout your career you will need to get letters of reference from other scientists who know your work. It is very important that you request letters as far in advance of deadlines as possible. Do not assume your letter writers can drop everything to write and submit a letter for you today that is due tomorrow.
- When scheduling meetings via the internet (such as thesis committee meetings), try to do this as efficiently as possible. I generally suggest first finding two days that will work (within a 2 or three week window) for all participants and then finding a time on one of those days that will work. Requests that are hopelessly vague such as “Let me know your schedule in the month of September” will not be warmly received by most faculty.
- Before any paper on research from our lab is submitted, it is my policy to send it to the entire group for final review before submission. If you have any concerns regarding authorship (who’s an author or not; and/or order of authors) this is the time to have a frank discussion about this with your preceptor, not after the paper is submitted.

- When the time nears for you to move on to bigger and better things, you will be presented with an “exit task list” of things you should complete before departing (things like organizing samples/plasmids you will be leaving behind, providing records such as lab notebooks, locations of key computer files, etc.). Completing the items on this checklist is very important.
- The following is stated with kindness: keep in mind that your advisor is not your parent and your lab is not your family. This does not mean that you won't build deep and lasting friendships in the course of your time in a lab. However, to imagine that the personal commitments being made to you by your advisor and professional peers are akin to those made in a well- functioning family may lead to serious disappointments.
- Finally, a scientific career can and should be fun. Very fun. Moreover the relationships you build should last well beyond your years in this lab. It is sincerely hoped that your time in this lab will be fun and will lead to many new friends for life.

* Thanks to Chuck Sanders for the idea. Many of these expectations are modified, with permission, from his.

Words to live by:

“The difference between the right word and the almost right word is really a large matter — it's the difference between a lightning bug and the lightning.” Samuel Clemens

To see a World in a Grain of Sand, And a Heaven in a Wild Flower,
Hold Infinity in the palm of your hand, And Eternity in an hour. Auguries of Innocence, William Blake