Useful documents to provide to lab members:

1. **Welcome document**

I use letterhead and a memo format.

To: New Lab Members Date:

From: PI name

Re: Lab Goals and Policies

Intro paragraph about the goals and mission of your research group (technical and educational). What skills and abilities can students expect to develop? What do you expect them to contribute?

Useful information for getting started in the lab and clear communication of expectations

Topics to cover:

Safety

What training is required, how can students schedule it, who is the lab safety representative, what standard operating procedures should lab members follow to maintain a safe working environment?

The difference between laboratory research and laboratory classes

Problem sets are designed to have right and wrong answers and laboratory exercises are designed to work every time and demonstrate a scientific or engineering principle that is already well understood. Good laboratory research delves into areas that are not yet well understood. We focus on asking good questions, formulating testable hypotheses, designing and executing controlled experiments (only vary one thing at once!), and quantitatively analyzing data without a bias towards a particular “answer”. Many experiments will fail and our challenge is to learn from these and iteratively improve. While more experienced lab members have ideas about what to try, please remember that in research, the whole point is that **no one really knows yet**. Your brains, creativity and willingness to innovate (try, fail, and try again) are valued and encouraged.

Lab organization

Give an overview of the space and facilities. What are the expectations re: shared versus individual bench space, work areas, and supplies? How are supplies stocked and re-stocked? When something is running low, who is responsible for re-ordering and what lead time is required? How is instrument time scheduled?

Learning techniques

Logistics—is training required before using certain equipment? Who provides the training?

Philosophy and good citizenship—e.g. Learning from each other is one of the great benefits of working in a research group. When a more experienced group member teaches you a technique or how to use an instrument, the goal should be learning how to safely and correctly do the task *independently* next time. Once you’re an expert, volunteering to teach newer lab members is much appreciated.

Laboratory notebooks and data storage

What are your expectations? What kind of lab notebooks and data storage procedures should everyone use? Why is this important? How do you want things backed up? What safeguards have you implemented against ransomware attacks?

Include a note about how lab notebooks and data are the property of the institution, the department, and the lab rather than the property of the individual. With resources (grants, contracts) comes accountability.

Control experiments, calibration curves or other quantitative characterization practices, replicates for statistical analysis of data, and reproducibility

Can replace this heading with whatever is most important in your line of work—items that beginners may overlook or cut corners on that would render their work inconclusive and unpublishable.

Doing background reading

Notes on the importance of reading the scientific literature. What resources does your institution provide? How can students access them?

Guidance on searching the literature: what are the methods you use to stay up to date? Emphasize the importance of doing so in order to become a domain expert.

Do you expect lab members to set aside time for this, and at what intervals (daily, weekly)? Different levels of reading (scan of title+abstract, scan of title+abstract+figures, deep reading)

Does your group use a citation management program?

What are the journals they should look to as good examples of places where the lab would like to publish? Familiarizing themselves with articles in these journals will give students a better idea of what they should be aiming for.

Online resources and group email list

e.g. shared spreadsheets for ordering supplies, instrument signup links, group email list and how to gain access to these things

Group meetings

What are your expectations of presenters and audience members? How often will each lab member present?

Scheduling and Vacation

Do you have expectations about when lab members will be in lab? What are the department/university’s policies regarding vacation? What kind of notice do you require?

1. **Authorship guidelines**

How is authorship determined? What are your thoughts on how to decide where the bar is and whether it has been met?

At what points during the process of doing and writing the work up for publication will authorship and author order be negotiated and re-negotiated if appropriate?

What are the explicit responsibilities of the first, middle and last author? List all of the steps from conceiving the study to making figures to writing/revising the text to formatting it according to the journal’s guide to authors to writing the cover letter and uploading to the journal’s online system. Specify who exactly is responsible for each task. What’s the procedure if the first (or other) author is not meeting these expectations?

1. **Preparing manuscripts for publication and the peer-review process**

How does one choose an appropriate journal? Explanation of Aims and Scope, Guide to Authors (including categories of article formats), Impact factors, Editors and Editorial Boards.

Would you like for students to suggest a couple of articles to examine as examples together when debating where to send an article? This can head off mismatches between a manuscript in preparation and the expectations of the targeted journal.

What is your preferred writing process? Outlining as soon as there’s an idea for a paper? Outlining after preliminary results have been collected? What do you want to appear in the outline? Do you want to agree on figures before beginning to draft text? Do you have preferred formats for figures and visuals?

The inclination of most beginners is to try to write from the beginning (title, abstract, intro…). Is this acceptable to you?

What kind of turn-around time can students expect from you in terms of feedback on drafts?

How does one choose reviewers to suggest?

What are effective ways to respond to peer reviews?

An example/toolkit assembled from one of your published papers (outline, first draft, commented draft, revised draft, every final piece formatted and assembled for submission, cover letter, reviewer suggestions, communication from the editor after review--including reviews, and point-by-point response to reviews) can help students understand the process and expectations.

1. **Best practices for collaborations**

Varies by field and kind of project, but cover expectations regarding communication, data sharing, and how to go about valuing and acknowledging everyone’s contribution.

1. **Directions and expectations for maintaining a lab culture collection (all biological materials and cell lines made by the lab or obtained from other labs)**

What should be deposited and when? What documentation should be supplied with each contribution to the collection? Where is it stored? Is there a duplicate collection for backup purposes? Who is charge and who may access it?

1. **On-boarding process in your lab**

How are projects chosen? Is there a “boot camp” to learn skills? Starter projects followed by more substantial projects? How frequently will you meet and how do you want these meetings structured?

1. **Finishing up in the lab**

Do you want papers submitted by some time prior to graduation? What is your policy for work that is not completed by graduation? Will another lab member continue it and what are the implications for authorship?

For undergraduates and summer students, should they supply a work product of some kind before leaving the lab? What are your lab checkout procedures?