



Lab Manual

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Welcome!

It looks like you recently joined the Aly Lab in Columbia University's psychology department. That's great! We're really glad to have you here, and will do what we can to make your time in the lab amazing. We hope you'll learn a lot about psychology and neuroscience, develop new skills (coding, data analysis, writing, giving talks), make new friends, and have a great deal of fun throughout the whole process.

This lab manual was inspired by several others, and borrows heavily from them (e.g., [this one](#) and [this one](#)). It's also a work in progress. If you have ideas about things to add, or what to clarify, talk to me (Mariam, the PI) or the lab manager.

When you join the lab, you're expected to read this manual and [sign a form](#) indicating that you have done so.

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Expectations and Responsibilities

Everyone

Big Picture

Science is hard. But it's also fun. In the Aly Lab, we want to make sure that everyone experiences a positive, engaging, hostility-free, challenging, and rewarding lab environment. To maintain that environment, we all have to do a few things.

- Work on what you're passionate about, work hard at it, and be proud of it. Be so proud of it that you have to suppress bragging (but it's ok to brag sometimes).
- Scientists have to be careful. Don't rush your work. Think about it. Implement it. Double and triple check it. Incorporate sanity checks. Ask others to look at your code or data if you need help or something looks off. It's ok to make mistakes, but mistakes shouldn't be because of carelessness or rushed work.
- If you do make a mistake, you should definitely tell your collaborators (if they have already seen the results, and *especially* if the paper is being written up, is already submitted, or already accepted). We admit our mistakes, and then we correct them and move on.
- We all want to get papers published and do great things. But we do this *honestly*. It is never ok to plagiarize, tamper with data, make up data, omit data, or fudge results in any way. Science is about finding out the truth, and null results and unexpected results are still important. This can't be emphasized enough: *no academic misconduct!*

- Support your fellow lab-mates. Help them out if they need help (even if you aren't on the project), and let them vent when they need to. Science is collaborative, not competitive. Help others, and you can expect others to help you when you need it.
- Respect your fellow lab-mates. Respect their strengths and weaknesses, respect their desire for quiet if they need it, and for support and a kind ear when they need that. Respect their culture, their religion, their beliefs, their sexual orientation.
- If you're struggling, tell someone (feel free to tell Mariam!). Your health and happiness come first. The lab looks out for the well-being of all its members. We are here to help. It's ok to go through hard patches (we all do), but you shouldn't feel shy about asking for help or just venting.
- If there is any tension or hostility in the lab, something has to be done about it immediately. We can't thrive in an environment we aren't comfortable in, and disrespect or rudeness will not be tolerated in the lab. If you don't feel comfortable confronting the person in question, tell Mariam. In any case, tell Mariam.
- If you have a problem with Mariam and are comfortable telling her about it, do! If you aren't comfortable, then tell the lab manager (for smaller issues) or another member of the psychology department (for more serious issues).
- Stay up to date on the latest research, by using RSS feeds and/or getting journal table of contents. Also consider following scientists in the field on Twitter
- Remember the lab philosophy: "We like to do good science and have fun. At the same time, but also separately". Have a life outside of the lab, take care of your mental and physical health, and don't ever feel bad for taking time off work.

Small Picture

There are a few day-to-day things to keep in mind to keep the lab running smoothly.

- If you're sick, stay home and take care of yourself. Because you need it, and also because others don't need to get sick. If you're sick, reschedule your meetings and participants for the day (or the next couple of days) as soon as you can.
- You aren't expected to come into lab on weekends and holidays, and you aren't expected to stay late at night. You *are* expected to get your work done (whatever time of day you like to do it).
- Show up to your meetings, show up to run your participants, show up to your classes, and show up to lab meetings. You do not have to be in at 9am every day – just show up for your commitments, and work the hours you need to work to get stuff done. (Note: the lab manager is expected to keep more regular hours than other lab members)
- Make sure the door to the lab is locked if no one is inside. Turn off the lights if you're the last one leaving for the day.
- Keep the lab tidy. Eating in lab is fine, but clean up food waste, crumbs, spills. Put lab equipment back where you found it. Keep common areas uncluttered.
- Dress code is casual (and you can dress up if you want!) but not *too* casual. When interacting with participants or presenting your work, don't wear pajamas and sweat pants – but jeans are totally fine.

- Be on time. Especially when you are running participants – in fact, show up 15-20 minutes early to set everything up. And be on time for your meetings: respect that others have packed days and everyone's time is valuable.

Principal Investigator

All of the [above](#), and I promise to also...

- Support you (scientifically, emotionally, financially)
- Give you feedback on a timely basis, including feedback on project ideas, conference posters, talks, manuscripts, figures, grants
- Be available in person and via e-mail on a regular basis, including regular meetings to discuss your research (and anything else you'd like to discuss)
- Give my perspective on where the lab is going, where the field is going, and tips about surviving and thriving in academia
- Support your career development by introducing you to other researchers in the field, promoting your work at talks, writing recommendation letters for you, and letting you attend conferences as often as finances permit
- Help you prepare for the next step of your career, whether it's a post-doc, a faculty job, or a job outside of academia
- Care for your emotional and physical well-being, and prioritize that above all else

Post-Docs

All of the [above](#), and you will also be expected to...

- Develop your own independent line of research
- Help train and mentor students in the lab (both undergraduate and graduate) when they need it – either because they ask, or because I ask you to
- Present your work at departmental events, at other labs (if invited), and at conferences
- Apply for grants (e.g., NRSA, K99). Though I will only hire you if I can support you for at least one year, it's in your best interest to get experience writing grants – and if you get them, you'll be helping out the entire lab as well as yourself (because you'll free up funds previously allocated to you)
- Apply for jobs (academic or otherwise) when you're ready, but no later than the beginning of your 4th year of post-doc. If you think you'd like to leave academia, that's completely ok – but you should still treat your post-doc seriously, and talk to me about how to best train for a job outside academia
- Challenge me (Mariam) when I'm wrong or when your opinion is different, and treat the rest of the lab to your unique expertise

Graduate Students

All of the [above](#), and you will also be expected to...

- Develop your dissertation research. Your dissertation should have at least 3 substantial experiments that answer a big-picture question that you have. Much of your work has to be done independently, but remember that others in lab (especially Mariam!) are there to help you when you need it
- Help mentor undergraduate students in the lab when they need it – either because they ask, or because I ask you to. Undergrads can also help you collect data.
- Present your work at departmental events, at other labs (if invited), and at conferences
- Apply for grants (e.g., NRSA or NSF grants). It's a valuable experience, and best to get it early.
- Think about what you want for your career (academia – research or teaching, industry, science writing, something else), and talk to Mariam about it to make sure you're getting the training you need for that career
- Make sure you meet all departmental deadlines (e.g., for your exams and thesis) -- and make sure Mariam is aware of them!
- Prioritize time for research. Coursework and TAing are important, but ultimately your research gets you your PhD and prepares you for the next stage of your career.

Lab Managers

All of the [above](#), and you will also be expected to...

- Work on your own research project (developed with Mariam's help)
- Help new lab members adjust to the lab by answering whatever questions they have that you can answer. If you can't answer, direct their questions to Mariam
- Maintain IRB protocols for the lab (writing them, renewing them), archive old consent forms, keep any required paperwork up to date and organized
- Oversee the hiring, scheduling, and training of undergraduate research assistants
- Maintain the lab website and lab wiki, update the lab manual, add lab events to the lab calendars, manage the lab Dropbox, check the lab e-mail address (alylabcolumbia@gmail.com; take care of any e-mails that you can, forward the rest to Mariam)
- Give new lab members access to the lab wiki, lab GitHub, lab calendars, and add their experiments to the lab Dropbox
- Assist with the recruitment and scheduling of participants, including patients
- Assist lab members with data collection and analysis (behavior, fMRI, and/or patient studies)
- Be in the lab on a regular basis -- more than other lab members, your presence in lab when others are around is essential. This means you probably shouldn't work 7pm to 3am -- try 9am to 5pm or 10am to 6pm, with flexibility depending on your out-of-work schedule (e.g., doctor appointments)

Undergraduate Students

All of the [above](#), and you will also be expected to...

- Assist other lab members with data collection and analysis (unless you are working on your own independent project under the mentorship of another lab member, in which case you should work on that)
- Develop your weekly schedule by talking to your graduate student mentor or your post-doc mentor. You should be coming in every week, and scheduling enough time to get your work done
- If you are earning course credit for research, you must also attend lab meetings when your schedule permits, present at one of these lab meetings, and submit a write-up of your research by the end of the semester

Code of Conduct¹

Essential Policies

The lab, and the university, is an environment that must be free of harassment and discrimination. All lab members are expected to abide by the Columbia University policies on discrimination and harassment, which you can (and must) read about [here](#). Essential policies of Columbia University can be accessed [here](#).

The lab is committed to ensuring a safe, friendly, and accepting environment for everybody. We will not tolerate any verbal or physical harassment or discrimination on the basis of gender, gender identity and expression, sexual orientation, disability, physical appearance, body size, race, or religion. We will not tolerate intimidation, stalking, following, unwanted photography or video recording, sustained disruption of talks or other events, inappropriate physical contact, and unwelcome sexual attention. Finally, it should go without saying that lewd language and behavior have no place in the lab, including any lab outings.

If you notice someone being harassed, or are harassed yourself, tell Mariam immediately. If Mariam is the cause of your concern, then reach out to the department chair or another trusted faculty member in the department.

Taking Photos & Videos

We respect the privacy and comfort of lab members by only taking photos or video recordings of them with their explicit knowledge and consent. This is especially important in situations where a lab member would otherwise not be aware of you taking a photo and therefore cannot object if they do not want you to – e.g., if they are wearing one of our VR headsets or are being scanned. To avoid ambiguity about when a lab member is vs is not aware of photos being taken, we ask

¹ This was adapted from the code of conduct found [here](#) and [here](#).

that everyone obtain consent from lab members before taking photos or videos, and obtain consent again before posting any images on social media. This is done to respect others' privacy and acknowledge that people have varying degrees of comfort related to being photographed and especially with having those photographs shared on social media.

The goal of this is to foster an environment where everyone feels safe to be who they are, take risks, and have fun, without worry or self-consciousness. If someone wants to be photographed doing something fun or silly in lab events, and consents to be photographed, by all means go ahead! Just please respect the privacy of those who do not want that.

On a related note, you cannot photograph your participants during an experiment. We do not have IRB approval to do this. If you would like a photograph of someone demonstrating your experiment, ask a lab member if they would feel comfortable being photographed while demonstrating what a participant does in an experiment.

Scientific Integrity

Research (Mis)conduct

The lab, and Columbia University, is committed to ensuring research integrity, and we take a hard line on research misconduct. We will not tolerate fabrication, falsification, or plagiarism. Read Columbia's policies on the conduct of research carefully (main page [here](#), institutional policy [here](#), more information [here](#)).

A big problem is why people feel the need to engage in misconduct in the first place, and that's a discussion that we can have. If you are feeling pressured to succeed (publish a lot, publish in high impact journals), you should reach out to Mariam and we can talk about it – but this pressure is something we all face and is *never* an excuse to fabricate, falsify, or plagiarize. Also, think about the goal of science and why you are here: you're here to arrive at the truth, to get as close as we can to facts about the brain and behavior. Not only is research misconduct doing you a disservice, it's also a disservice to the field. And it risks your entire career. It is never right and never worth it. Don't do it.

Reproducible Research

If you gave someone else your raw data, they should be able to reproduce your results exactly. This is critical, because if they can't reproduce your results, it suggests that one (or both) of you has made errors in the analysis, and the results can't be trusted. Reproducible research is an essential part of science, and an expectation for all projects in the lab.

For results to be reproducible, the analysis pipeline must be organized and well documented. To meet these goals, you should take extensive notes on *each step* of your analysis pipeline. This means writing down how you did things every step of the way (and the *order* that you did things),

from any pre-processing of the data, to running models, to statistical tests. It's also worth mentioning that you should take detailed notes on your experimental design as well. Additionally, your code should also be commented, and commented clearly. We all know what it's like to sit down, quickly write a bunch of code to run an analysis without taking time to comment it, and then having no idea what we did a few months down the road. Comment your code so that every step is understandable by an outsider. Finally, it is highly encouraged that you use some form of version control (e.g., Git in combination with GitHub) to keep track of what code changes you made and when you made them, as well as sharing code with others. The lab's GitHub is <https://github.com/alylab>.

Reproducibility is related to replicability, which refers to whether your results can be obtained again with a *different* data set. That is, if someone ran your study again (with a different group of participants), do they get the same results? If someone ran a conceptually similar study, do they get the same results? Science grows and builds on replicable results – one-off findings don't mean anything. Our goal is to produce research that is both reproducible and replicable.

Authorship

Like other labs, we will follow the APA guidelines with respect to authorship:

"Authorship credit should reflect the individual's contribution to the study. An author is considered anyone involved with initial research design, data collection and analysis, manuscript drafting, and final approval. However, the following do not necessarily qualify for authorship: providing funding or resources, mentorship, or contributing research but not helping with the publication itself. The primary author assumes responsibility for the publication, making sure that the data are accurate, that all deserving authors have been credited, that all authors have given their approval to the final draft; and handles responses to inquiries after the manuscript is published."

At the start of a new project, the student or post-doc taking on the lead role can expect to be first author (talk to Mariam about it if you aren't sure). Mariam will typically be the last author, unless the project is primarily under the guidance of another PI and Mariam is involved as a secondary PI – then Mariam will be second to last and the main PI will be last. Students and post-docs who help over the course of the project may be added to the author list depending on their contribution, and their placement will be discussed with all parties involved in the paper. If a student or post-doc takes on a project but subsequently hands it off to another student or post-doc, they will most likely lose first-authorship to that student or post-doc, unless co-first-authorship is appropriate. All of these issues will be discussed openly, and you should feel free to bring them up if you are not sure of your authorship status or want to challenge it.

Old projects

If a student or post-doc collects a dataset but does not completely analyze it or write it up within 3 years after the end of data collection, Mariam will re-assign the project (if appropriate) to another person to expedite publication. If a student or post-doc voluntarily relinquishes their rights to the project prior to the 3-year window, Mariam will also re-assign the project to another individual. This policy is here to prevent data (especially expensive data, e.g., fMRI) from remaining unpublished, but is meant to give priority to the person who collected the data initially.

Human Subjects Research

Adherence to approved IRB protocols is *essential*, and non-adherence can lead to severe consequences for the entire lab (i.e., we may lose permission to run any research on human participants). All lab members must read and comply with the IRB consent form and research summary for any project that they are working on. If you are not on the IRB, you cannot run participants, look at the data, analyze the data, or be in any way involved with the project.

Lab members must complete [CITI Training](#) and save their certificate. To be added to an existing IRB, talk to the lab manager and present them with your CITI certificate. If your project does not fall under the scope of a current IRB protocol, talk to Mariam and the lab manager about writing a new one or filing an amendment to an existing one. You *must* ensure that you have IRB approval to run your study before you begin (which means that you either submitted an IRB protocol that got approved, or your name was added to an existing or amended IRB).

If a participant falls ill, becomes upset, has an accident with lab equipment, or experiences any problems while you are conducting your research, you must notify me and the lab manager as soon as possible. We may need to report this information to the IRB and/or funding agencies.

Lab Resources

Wiki

The lab wiki (<https://osf.io/mdh87/wiki/home/>) is, well, a wiki for the lab. It has all of the information you need to get started, including tasks that need to be done upon arrival, day-to-day housekeeping duties, forms and flyers, programming and stats tips, information about accessing the high-performance computing cluster and lab servers. Edit it when you obtain information that will be useful for others to know! Ask the lab manager to be added as a member.

Slack

Slack will be used as the primary means of lab communication. There are two Slack workspaces for the lab: one just for us (alylab.slack.com) and one shared with Chris Baldassano's lab (alyssano.slack.com). Use the former if there are things to share that are only relevant with the Aly Lab. Use the latter if there are things to share with the broader Alyssano labs.

Notes for the Aly Lab Slack. When posting messages or looking for updates, check the appropriate channel: #general for lab announcements, #lab-meetings for notes or communication related to lab meetings, #papers for sharing links to lab-relevant papers and discussing them, #code-tips for sharing wisdom on code writing or asking (and answering) the coding questions of others, #fmri-methods for sharing wisdom on fMRI data collection / analysis or asking (and answering) the fMRI questions of others, #stats to ask and answer questions about statistical analyses, and #random for non-work-related chatting that is best kept out of the work-related channels.

Try to keep each channel on topic, so that people can subscribe only to the channels that concern them. For messages to one person or a small group, use direct messages. If you have to send attachments (e.g., papers) or send messages that include out-of-lab recipients, use e-mail. If it's an emergency and Mariam isn't responding on Slack, e-mail her.

Full-time lab members should install Slack on their computers and/or phones. Part-time lab members should also check Slack regularly. You should of course feel free to ignore Slack on evenings and weekends – and Mariam probably will, too!

Dropbox

The lab has a shared Dropbox account that is used to store experiment code, so that you can run your experiment on any computer that has access to the lab Dropbox folder. The lab Dropbox is also used to store documents and files for general lab use (e.g., IRB documents, stimuli, demographics forms, etc), though the lab wiki will also have that information. Contact the lab manager when you want to add something to the lab Dropbox.

GitHub

The lab's GitHub (<https://github.com/alylab>) should be used to share code, stimuli, and data with the world. Only share data after you've spoken to Mariam (we don't want to share the data too soon, before you've had a chance to look at it thoroughly yourself). When you share code, make sure it's *flawless*, because we don't want to distribute buggy code to the world! Have other lab members check it if possible. Ask the lab manager to get access to the lab's GitHub.

Google Calendars

The lab has many Google calendars.

1. Aly Lab calendar: *used to keep track of lab events, including any lab meetings just for our lab, and birthdays!*
2. Alyssano Lab Meeting calendar: *used to keep track of joint lab meetings with the Baldassano lab.*

3. Aly Lab – Travel Schedules calendar: *used to indicate travel dates (e.g., “Mariam away” for August 1-7), so that other people know when you aren’t available. You are not obligated to put down your travel dates, but they are useful for planning purposes (e.g., Mariam will know not to bother with lab meeting if no one is around; or if she is writing a grant, it helps to know if you will or won’t be available to provide data, etc).*
4. Aly Lab K-Space calendar: *used to reserve time in the lab’s desk in K-Space in the Jerome L. Greene Science Building (MBBI). This desk is useful to use if you will be at MBBI for extended time and need a place to work (e.g., between fMRI scans, or between a scan and a talk).*
5. Aly Lab Running Rooms calendar: *used to reserve time in the experiment running rooms*
6. Aly Lab MacBook calendars: *used to reserve one of the two MacBook laptops. Laptops should be used for running experiments first and foremost (e.g., patients, fMRI). If they are available and not in use for an experiment, you may also use it for meetings, etc.*

E-mail

We have a lab listserv for sending e-mails to the entire lab when necessary (alylab@columbia.edu). Contact the lab manager to get added to the lab listserv.

We also have a lab listserv for sending e-mails to the lab meeting group. Everyone on alylab@columbia.edu is also on alylabmeetings@columbia.edu; but there are some people on the lab meeting listserv that aren’t members of the lab, and are just interested in attending our lab meetings. Talk to the lab manager if you want to be added to the lab meeting listserv.

Everyone on alylabmeetings@columbia.edu is also on alyssano@columbia.edu. This latter listserv is for joint lab meetings between the Aly Lab and Chris Baldassano’s lab.

There is also a lab e-mail account that only the lab manager and Mariam can access (alylabcolumbia@gmail.com) -- people often contact the lab (e.g., if interested in participating in studies) through that email address.

General Policies

Hours

Being in lab is a good way of learning from others, helping others, building camaraderie, having fast and easy access to resources (and people) you need, and being relatively free from distractions at home (e.g., your bed or Netflix). That said, hours in academia are more flexible than other jobs -- but you should still treat it as a real job (40 hours/week) and show up to the lab. My primary concern is that you get your work done, so if you find that you are more productive at

home (lab-mates can be chatty sometimes), feel free to work at home occasionally. If you have no meetings, no participants, and no other obligations that day, it might be a good day to work at home – but you can't do this all the time, and I expect to see everyone in the lab on a regular basis.

The only exception to this is lab managers / research assistants, who must keep more regular hours and be in lab 5 days a week (excluding vacations, doctor appointments, family issues, etc). I expect lab managers / research assistants to be in about 8 hours a day, starting around 9am or 10am and ending around 5pm or 6pm.

For graduate students, I understand having to be away for classes and TA-ing, but show up to the lab on a regular basis when you don't have those obligations.

To encourage lab interaction, try to be in most weekdays during 'peak' hours (assuming no other obligations) – e.g., between 11am and 4pm. This is not a hard rule, you can work at home occasionally, and I understand other obligations. But keep it in mind.

PI Office Hours

In addition to weekly meetings (see below), and occasionally dropping by the lab, you can find Mariam in her office. Her door is almost always open; if it is, feel free to ask for a chat. She will always say yes, though sometimes she can only spare a couple of minutes. If her door is closed, assume that Mariam is either gone, in a meeting in her office, or does not want to be disturbed – so please send a message (Slack or e-mail) rather than knocking.

Meetings

Weekly Lab Meetings

Weekly lab meetings (~1.5 hours each) are meant to be a forum for trainees to present project ideas and/or data to get feedback from the rest of the group. Projects at any level of completion (or even not yet started!) can benefit from being presented. These lab meetings can also be used to talk about methods, statistical analyses, new papers, and career development. For paper discussions, everyone must come to lab meeting having read the paper and prepared with comments and questions to contribute. Some weeks we may explore a particular issue and have people read different papers – in that case, come to lab meeting having read your paper and be prepared to summarize it for the group.

Each trainee (RA, students, post-docs) is expected to present at least once every semester. These meetings are informal, and you can do what you wish with your slot – just be prepared to contribute something substantive. Lab members are also expected to attend every meeting (obviously, illnesses, doctor appointments, family issues, etc are a valid reason for missing a

meeting). Undergraduate students are encouraged to attend as often as possible (assuming it fits in their course schedule).

Occasionally, we may have joint lab meetings with other faculty in the department – these may be combined with our weekly lab meeting or an additional meeting. We will also use lab meetings (or ad-hoc scheduled meetings) to prepare for conference presentations and give people feedback on job talks or other external presentations. Lab meeting agendas and notes will be kept in the #lab-meetings channel on Slack.

Individual Meetings

At the beginning of each semester, we will set a schedule for weekly meetings. Each full-time lab member (RAs, graduate students, post-docs) will have a one-hour slot set aside to meet with Mariam. If scheduling conflicts arise (e.g., because of travel), we can try to reschedule for another day that week. If there is nothing to discuss, feel free to cancel the meeting or just drop by for a brief chat.

Mariam will meet with undergraduate students every other week (or according to need); post-docs and graduate students should meet with their undergraduate mentee on a regular basis.

Deadlines

One way of maintaining sanity in the academic work is to be as organized as possible. This is essential because disorganization doesn't just hurt you, it hurts your collaborators and people whose help you need. When it comes to deadlines, tell your collaborators as soon as possible when you know when a deadline is, and make sure they are aware of it the closer it gets. Don't be afraid to bug them about it (yes, bug Mariam as well).

Give Mariam at least one week's notice to do something with a hard deadline that doesn't require a lot of time (e.g., reading/commenting on conference abstracts, filling out paperwork, etc). Give Mariam *at least* two weeks' notice to do something with a hard deadline that requires a lot of time (e.g., a letter of recommendation). For manuscript revisions and invited paper submissions (which have hard-ish deadlines), give her as much time as you can, because these will require multiple back-and-forths.

For manuscript submissions (i.e., no hard deadline), you can still bug Mariam to give you feedback if she hasn't responded in a week or two – papers are important!

Presentations

Learning to present your research is important. Very few people will read your papers carefully (sad, but true) but you can reach a lot of people at conference talks and posters. Also, if you plan on staying in academia, getting a post-doc position and getting a faculty position both significantly depend on your ability to present your data. Even if you want to leave academia, presentations are likely to be an important part of your job. Additionally, every time you present your work, you are representing not just yourself but the entire lab.

It is therefore highly encouraged that you seek out opportunities to present your research, whether it is at departmental talk series and events, to other labs (within or outside of Columbia), at conferences, or to the general public. If you are going to give a presentation (a poster or a talk), be prepared to give a practice presentation to the lab at least one week ahead of time (two weeks or more are advisable for conference presentations, and *many* weeks ahead of time are advisable for job talks, which require much refining). Practice talks will help you feel comfortable with your presentation, and will also allow you to get feedback from the lab and implement those changes well in advance of your real presentation.

Templates for posters will be available, and you can use those as much or as little as you'd like. Some general rules for posters should be followed: minimize text as much as possible (if you wrote a paragraph, you're doing it wrong), make figures and text large and easy to see at a distance, label your axes, and make sure different colors are easily discriminable. Other than that, go with your own style.

Mariam is also happy to share slides from some of her talks if you would like to use a similar style. You'll get a lot of feedback on your talks in any case, but other people's slides might be helpful to you as you are setting up your talk. As with posters, feel free to go with your own style as long as it is polished and clear.

Recommendation Letters

Letters of recommendation are extremely important for getting new positions and grants. You can count on Mariam to write you a letter if you have been in the lab at least one year (it's hard to really know someone if they have only been around for a few months). Exceptions can be made if students or post-docs are applying for fellowships shortly after starting in the lab.

If you need a letter, notify Mariam as soon as possible with the deadline (see Deadlines for guidance), your CV, and any relevant instructions for the content of the letter. If the letter is for a grant, also include your specific aims. In some cases (especially if short notice is given), you may also be asked to submit a draft of a letter, which will be modified based on Mariam's experience with you and anything else that has to be added. This will ensure that the letter contains all the information you need, and that it is submitted on time.

Data Management

Storing Active Datasets

Lab data can be stored in one of three places:

1. Lab server(s): fMRI data, behavioral data, and (separately from data and coded so that data are not identifiable) electronic consent forms, demographics forms, questionnaires
2. Shared Dropbox folders (*not* the Aly Lab Dropbox) can be used to share small datasets and/or code with collaborators
3. Habanero (Columbia's new HPC cluster) can be used to store small amounts of data as you are running analyses on it – it is *not* for permanent storage, as we only have a limited amount of space there

Although the servers are backed up, the backup is only on-site – so make extra backups! Each lab member should back up raw data on an external hard drive, as well as the code needed to reproduce all analyses. You should not store data locally on your computer (but having data in a Dropbox folder synced to your computer is ok).

Data Organization

If you have already run several independent projects and have a data organization structure that works well for you, feel free to use it. If not (or if you are looking for a change), the following structure is recommended (based on [Neuropipe](#)):

- projectName/subjects
 - individual directories for each of your participants
 - projectName/subjects/{subj}/analysis
 - subject-specific analyses (e.g., 1st and 2nd level analysis – at the run level and experiment level)
 - projectName/subjects/{subj}/data
 - raw data for that participant, with the following directories...
 - behavioralData (for, well, behavioral data)
 - eyetrackingData (if applicable)
 - nifti (raw nifti files / raw MRI and fMRI data)
 - rois (participant-specific ROIs)
 - projectName/subjects/{subj}/design
 - timing files for that participant, with different directories for the different GLMs you're running (and the different runs in the experiment)
 - projectName/subjects/{subj}/fsf
 - if you're using FSL, put the .fsf files here. If you're using SPM or something else, save the files for setting up preprocessing and GLMs here
 - projectName/subjects/{subj}/scripts

- Matlab, Python, R, or bash scripts that you used for that participant. You should keep the 'template' scripts elsewhere, but you can store scripts you modified specifically for that participant here
- projectName/scripts
 - template scripts and that you may modify for each participant, as well as scripts and functions used for all participants and group analyses
 - recommend making subdirectories for each type of analysis (e.g., behavior, pattern analysis, functional connectivity, univariate)
 - if you have scripts that are the same for each participant, you can have symbolic links for them in your participant-specific scripts directories
- projectName/results
 - figures with main results, powerpoint or keynote presentations, manuscripts if you wish
- projectName/notes
 - detailed notes about the design, analysis pipeline, relevant papers, etc
- projectName/group
 - group analyses
 - recommend making subdirectories for each type of analysis (e.g., behavior, pattern analysis, functional connectivity, univariate)
- projectName/task
 - code for your behavioral experiment, stimuli, piloting information
 - if you are running your presentation code out of Dropbox, it will still be good to have a copy of the code here (but you can keep the stimuli only on Dropbox if you'd like)

When you leave the lab, your projects directories should be set up like this, or something similarly transparent, so that other people can look at your data and code. You *must* do this, otherwise your analysis pipeline and data structure will be uninterpretable to others once you leave, and this will slow everyone down (and cause us to bug you repeatedly to clean up your project directory or answer questions about it).

Archiving Inactive Datasets

Before you leave, or upon completion of a project, you must archive old datasets and back them up. We will develop the instructions for this when we reach our first inactive dataset ☺

Open Science

We're all for open science, so lab members are encouraged (well, required) to share their code and data with others, whether they are in the lab or outside of it. Within lab, you can share your code and data whenever you like. But do not share your code or data with the outside world until

you think (and Mariam agrees) that the lab has finished working with it. This gives us an opportunity to work with the data to meet our needs (including grant needs!) before releasing it for other people to use. Generally, we will try to make our data and code publicly available within one year of publishing the results (longer if work on the dataset is ongoing). Currently, the best option for sharing smaller datasets might be the [Open Science Framework](#), and the best option for sharing MRI datasets is [OpenfMRI](#) (let the lab know if you find others).

We will also share our work with the world as soon as we ready, which means preprints! The lab policy is to upload a preprint of a manuscript simultaneously with initial submission to a journal. The preferred preprint servers are [bioRxiv](#) and [PsyArXiv](#). We will also put PDFs of all our papers on the lab website, and you should share PDFs of your paper with whoever asks.

Funding

Funding for the lab currently comes from Mariam's start-up package from Columbia University, as well as a few grants. If you need to buy something, or have to charge a grant for something, let Mariam know and she will oversee the process.

At some point, you will likely be asked to provide a figure or two for a grant Mariam is writing, and/or provide feedback on the grant. Relatedly, you are entitled to read any grant Mariam has submitted, whether it is ultimately funded or not. Aside from being a good opportunity to learn how grants are written, this will also allow you to see her vision for the lab in the years ahead. Feel free to ask Mariam to see any of her grants.