Maimon Lab Handbook

A note from Roy

I started this lab to find out whether we can recruit the adult brain's own cells to repair damage from aging and disease. That is a REALLY hard question, and I want us to go after it with experiments and analyses that can change what people believe. I also want us to enjoy figuring things out together. Some of the best moments in science happen when someone shows a strange result, someone else asks a good question, and we leave the room with an experiment none of us came in thinking about.

I am relaxed about a lot of things day to day, and I care a great deal about whether the science is moving. It takes time to learn how the lab works, how I work, and how you work best. We will give that adjustment time and talk openly about how it is going. I ask you to take ownership of your work and show me where you need help. You can count on me to listen, work through problems with you, and invest in what you want to do next.

Life in the lab

How we treat each other? Talk to each other often. Ask what people are working on, share what you are thinking, and invite someone in when their perspective could help. Be kind and generous with your time and credit. Put yourself out there. Speak up in lab meeting, introduce yourself to visitors, and share your work with people outside the lab when you have the chance.

Celebrate each other's success. When someone gets their first convincing result, learns a difficult technique, submits a paper, wins a fellowship, or gets a job they wanted, take a moment to celebrate together. Thank the people who helped get the work there. I want everyone in the lab to feel they have people rooting for them.

Be thoughtful with your colleagues. Help when you can, ask hard questions, take questions seriously, and give people time to explain. Respect should go in every direction. I want us to enjoy being around each other, whether we are working through a stubborn result, hiking, or doing karaoke. We can work hard, laugh a lot, and take the science seriously at the same time.

Show me what you have. Tell me what you need. I will help you move the work forward, and I expect you to do the same for the people around you.

Our Christmas party

Every year before Christmas I will organize a lab party. We will take a little time to remember what happened that year, celebrate what people accomplished, and thank the people who helped. Then we will eat, hang out, and enjoy each other's company.

Life outside the lab

Sleep well, eat well, and make time for sports or whatever keeps you moving. Have hobbies and make time for the people and things you enjoy. Science matters to me, and so does having a life that makes you happy. I want you to find a balance that works for you.

Getting started

In your first weeks, I want you to get to know the people and problems in the lab. Sit with someone whose work is different from yours. Ask them to walk you through one dataset or one experimental setup. In return, explain what you know how to do and what you came here to learn. When we meet, bring a paper or a result that caught your attention and tell me what question it raised for you.

We will agree on a first piece of work you can own. That might be reproducing an analysis, learning an assay with someone who can train you, or reading enough about a problem to propose a testable question. We will

also identify the people, access, and training you need. It takes time to get up to speed. Tell me early if a missing skill, reagent, dataset, or introduction is holding you up.

Being involved in the lab

I want to see you involved. Know what the people around you are working on. If you hear a lab mate explain a problem you know something about, offer to sit down with them. If you see a result that makes no sense to you, ask them to show you how they got it. Bring papers and observations that might help someone else. Tell the group when you learn something that would save another person a week.

We study how human neural stem cells change with age and disease and how those changes might be reversed. That work needs neuroscience, cell biology, molecular biology, engineering, and computation in the same conversation. If you work at the bench, bring the computational person in while you are designing the experiment, when decisions about samples and controls can still change. If you work on the analysis, ask how the samples were collected and processed, and show intermediate results while the people who generated the data can still help interpret them. Spend some time learning each other's language.

If you are going to ask for help, make it easy for someone to help you. Show what you have, say what you have tried, and describe the decision you are trying to make. When someone helps you, close the loop. Tell them what happened and give them credit for what they contributed.

Shared lab responsibilities

Everyone should take responsibility for something that helps the lab run. We will agree as a group on what needs an owner and who will take each role. That could mean keeping a shared inventory current, coordinating equipment bookings, or helping organize lab meetings. We will keep the list on the shared Drive so everyone knows whom to ask. If you will be away, tell the group and arrange a handoff if your role needs coverage.

When we work together

Everyone is expected to be in the lab from 10 am to 4 pm on weekdays, except when they have class or have arranged to be away. This applies equally to experimental and computational researchers. You may be able to run an analysis from anywhere, but being together is how scientist catches a problem with a cell annotation, or a computational colleague spots a pattern that changes the next experiment. I encourage people to spend more time together when they can. Before each semester starts, tell me when your courses meet and add the class times to the shared lab calendar. Update the calendar and let me know if your schedule changes.

Travel is totally fine with advance coordination. Working from home occasionally is fine too when you need quiet for writing or analysis. If your experiment needs attention in the evening or on a weekend, it is your responsibility to plan for it. Arrange any necessary coverage in advance and make sure the person covering knows what needs to happen.

I judge research progress by the quality of the data, analyses, and thinking you bring to the group.

Outside employment

I expect PhD students and postdocs in my lab to treat their research and training as their primary professional commitment. My expectation is that you do not take a second job while you are in the lab. If you are considering outside paid work, including consulting or an internship, talk to me before accepting it so we can review your program or appointment terms and any applicable NYU, funding, and work authorization requirements.

Time away and email

When I send you an email, I expect you to respond during working hours. If you need time to check something, send a quick acknowledgment and tell me when you can follow up.

Email me at least two weeks before planned time off so I can plan around it. If you are sick or need to care for a sick child, email me when you can. It is okay to be sick and take the time you need. Email me about urgent issues too, so we have a dated record and can coordinate. I expect no after hours replies. Keep track of time sensitive work and flag anything that needs someone else's attention.

Keep me updated on how the work is going and how you are doing. Tell me what is moving, what changed, what is stuck, and where you need help. I want to hear about exciting results, failed attempts, delays, and mistakes. Bring routine updates to our one on ones and email me sooner if something needs attention before we meet.

Keep your lab mates in the loop too. Tell the people working with you directly when your plans or results affect their work, especially if they are waiting for data, sharing equipment, or covering an experiment. Check in with each other and ask how things are going.

We have shared **WhatsApp** group for the lab. Volunteers are welcome to help manage it. A volunteer can help add new members and keep announcements and seminar links easy to find. Use the group for quick coordination and discussion. Email me for time sensitive issues that need my attention.

Working safely

If you have not been trained and authorized to do the work safely, stop and ask before you start. Watching someone once or reading a protocol is a first step. Get hands on instruction from an authorized person and confirm with the lab manager or with me when you are ready to work independently. The same expectation applies when you switch to a new instrument, material, procedure, or space.

Use NYU Tandon's SciShield to check your assigned safety training and track completion. Complete the NYU and lab specific training that applies to your work before starting it. If you are unsure what is required or your status looks wrong, ask the lab manager. Know where to find the current procedure, what protective equipment and containment it calls for, how waste is handled, and what to do if something goes wrong. Human tissue, cell culture, animal work, chemicals, and specialized instruments each come with their own requirements. Check that your work, including any changes you propose, fits the relevant approvals and facility rules. Ask before bringing in a sample, sharing materials, or changing an approved procedure. Apply for C14 certificate ASAP.

Wear the personal protective equipment (PPE) required for the space and the task every time you do the work. Check the posted requirements and the approved procedure. If you are missing anything or unsure what protection you need, stop and ask before you begin.

Plan evening and weekend work around the same requirements. If a task needs supervision or trained coverage, arrange it ahead of time. When equipment is damaged, a sample is mislabeled, or you are unsure of a hazard, pause and get help. Anyone in the lab can call a stop when something looks unsafe, including when I am the person doing it.

For an immediate danger, injury, or exposure, follow the posted emergency procedure and get help immediately. Once people are safe, notify me and the lab manager and follow NYU reporting procedures. Report close calls too. They give us a chance to fix a problem before someone gets hurt. During onboarding, walk through the space with the lab manager and find the posted emergency contacts, exits, and safety equipment. Use the official Tandon safety and compliance resources, training guidance, and emergency procedures.

Keep the lab clean and organized

Clean your bench and shared equipment after use, label and put away your materials, and leave the space ready for the next person. If you make a mess, clean it up promptly if it is safe and you know how. If you are unsure what spilled, how to clean it, or whether it is safe, stop and come get me or the lab manager. For a hazard or exposure, follow the emergency procedures above.

Lab meetings and individual meetings

Lab meeting is the most important meeting of the week, and everyone is expected to attend. When we host a visitor and I ask the lab to be there, everyone is expected to attend. I will let you know in advance. Come ready to welcome the visitor, join the discussion, and ask questions. If you have a class or another unavoidable conflict, tell me as soon as you know. We currently meet on Thursdays at 2:30 pm. If we need to change the time, I will let everyone know and update the lab calendar. If you are presenting, bring pizza for the group. Please be on time. We are all very busy. If you are late - you own $5 for our lab savings.

Bring work in progress. Show us the raw data, the puzzling result, the plot you are unsure about, or the experiment you are trying to design. Give people enough context to understand what you did and why. Go slowly. A question from someone outside your specialty can be the one that reveals the biggest assumption. Everyone should ask questions. Be direct about the science and respectful toward the person presenting. We will mix prepared presentations and troubleshooting with open sessions where we can throw ideas around, laugh, and follow an unexpected question. End the discussion by deciding what to do next and who will do it.

Plan on at least one hour with me each week

Some people and projects benefit from meeting more often. Ask for more time when you need it. Bring slide deck every time so we can look at the work together. Include the relevant data or analysis, what you think it means, and what you need to decide. If you have no new data, bring what you tried, where you got stuck, and what you propose to do next. We will leave with a concrete list for the following week.

Small group meetings

If you share a project, a dataset, or a problem with a few people in the lab, set up time to work through it together. Bring the people who can help make the next decision. Pull up the actual images, code, or data. Before you leave, agree on who is doing what and share any decisions that affect the rest of the lab.

Seminars and talks

Make time to attend relevant seminars and research talks. If you see a talk that someone in the lab would find useful, share the link, time, and a sentence about why it caught your eye. If you hear an idea or method that could help a project, bring it back to the group.

What to bring to a research discussion

For a new result, put the question on the first slide. Show the actual data and explain what each point represents, including how many independent samples you have and what was done to them. Say what you think the result supports, what else could explain it, and what you would do next. Show us enough of the work to ask a real question. A short deck with clear figures is plenty.

When we set aside time to jam, bring a question that is still open. This could be a cell population you cannot explain, a method you think we could adapt, or two observations that seem to contradict each other. Give the room time to think before we decide what to do. If an idea survives the discussion, write down the smallest useful next step and who will take it on.

Leading projects and contributing to each other's work

Each project has a lead. The lead keeps the work moving, knows the data, and asks for help early. Everyone should expect both to lead and to contribute. You may help someone solve an assay or interpret a dataset this month, and they may help you get your project across the finish line next month. We should talk early about what each person is contributing and revisit credit as the work changes.

PhD students should discuss side projects and major shifts with me before starting. We will decide together when you are ready to take on a new direction and how it fits with your main project. Postdocs have more latitude to pursue their own ideas. Tell me before you start so we can discuss the work and what it will take to support it.

I give people room to run their work. I expect you to tell me when a project is stuck or when you disagree with my advice. I bring experience and will make decisions about lab direction. You can give me direct feedback and ask me to explain my reasoning. If progress stalls, we will meet more often and work out what needs to change.

Helping someone else do the work

If a lab mate asks for help, sit down with them and look at what they are actually doing. Explain why you make each choice, let them try it, and check that they can do it on their own. If you are mentoring an undergraduate, give them a piece of work they can understand and own. Agree on the next step and tell them when you will check in. If the work requires safety training or supervision, confirm that those are in place first. Give people credit for the work they do.

Designing a project and keeping it moving

When we start a project, write down the question, why it matters, what we know already, and the first result that would change our thinking. Decide what the independent unit is. In our work, thousands of cells can come from a small number of donors or animals. Say which claims the design can support, what the comparison groups are, and what would count as a convincing result. Discuss these choices before committing scarce samples or substantial time.

What good science looks like here

Think before you run the next experiment or accept the answer a plot seems to give you. What would change your mind? What else could explain the result? Which control would help you decide? Ask those questions in meetings, including when the result is mine or when everyone seems to agree. Take a chance on an unusual idea and make it concrete enough to test.

Push for a better experiment. Build the assay that lets us answer the question directly. A surprising negative result is worth bringing to the group when we can trust the data and learn from it. Show your controls, keep track of what you tried, and explain how you got from the raw data to your conclusion. Good data keep the lab moving because they give everyone something real to think about, question, and build on.

Read consistently and know the work in your field. I may ask what you read today or what paper changed how you think about your project. If you do not know something, say “I do not know.” Then ask the question. That applies whether you joined yesterday or have been working on the problem for years.

You can use AI

You are responsible for everything you bring to a meeting or put into our work. Check the code, calculations, claims, and references yourself. Be ready to explain what the tool did, why your approach makes sense, and how you verified the output.

Keeping records people can build on

Keep records as you go. A lab mate should be able to tell which sample or dataset you used, what changed from the previous run, where the original data live, and how you made the figure. For bench work, record sample identifiers, dates, reagents, deviations, and failed runs. For computational work, keep the code and parameters that produced the result and document the software environment and input version. Keep raw data intact.

Use the shared lab Google Drive for project records.

Upload your meeting slide deck, raw data, figures, proposals, and manuscripts to the relevant project folder as you work so I can see them. Include analysis files and protocols where they help someone understand or reproduce the work. If raw data must stay in another approved location because of size or access restrictions, put a note in the project folder explaining where the data are and how authorized lab members can access them. Its also great backup for our data.

The Drive also holds shared lab records, including the minus 80C freezer inventory etc. Update the inventory when you add, move, or remove samples so someone else can find them. If a record or sample location is missing or incorrect, flag it to the lab manager and update it if you know the correct information.

Show the group how a result was produced while you still remember the details. When you hand off an assay or analysis, walk the next person through it and point out the parts that tend to fail. If you discover a mistake in a figure, sample label, or analysis, tell the people using it promptly so we can correct the record together.

Interviewing prospective lab members

When we interview someone who may join the lab, everyone should join the group interview, meet the candidate, and vote on whether they would be a good fit. I will let you know in advance. Give the candidate time to ask you about the lab and what it is like to work here. After the interview, send me a brief note with your vote, what you observed, and any questions you still have. Focus on the candidate's research interests, how they reason about their work, and how they might contribute to and learn from the group. Keep your feedback confidential. I will consider the group's input when making the decision.

Skills and reading for lab members

Everyone should build enough Python fluency to open and run a notebook, load a dataset, make a basic plot, and explain what the code is doing. If you are new to Python, we will agree on a first task using data from your project. If you develop analyses for the lab, document them so someone else can rerun them.

Build a working understanding of genomics, spatial transcriptomics, neural stem cell biology, nervous system development, and adult neurogenesis. Learn what the methods measure, what they miss, and what evidence would distinguish a cell state from a change in cell identity or lineage. Use lab meetings and journal discussions to learn across specialties.

Consider taking my NYU Tandon course, BE GY 6353, Neuroengineering Foundations: Cells, Systems, and Technologies.

The following are suggested books:

Origins of Neuroscience: A History of Explorations into Brain Function
Principles of Neural Science, 6th edition
Development of the Nervous System, 4th edition
Neural Engineering, 3rd edition
Theoretical Neuroscience: Computational and Mathematical Modeling of Neural Systems

I have all books in my office feel free to borrow.

Two podcasts I recommend:

The Stem Cell Podcast for conversations about stem cell research.
Night Science for conversations about how scientists come up with ideas.

If an episode makes you think of something we could try or discuss, share it with the group.

Applying for funding together

I want you to learn how to get an idea funded while you are here. Bring fellowships, travel awards, pilot calls, or other opportunities that fit your interests to our meetings. I will help you decide which ones make sense and how to turn a broad idea into a proposal someone can evaluate. Start early enough that we can think together and revise. Flag anything that needs a collaborator, a letter, a budget, or institutional review.

For a first conversation, bring the call, the deadline, and a short sketch of the problem, the gap, your idea, and the evidence we already have. We can work through what a skeptical reviewer would ask and what preliminary result would make the application stronger. Take ownership of the draft when it is your fellowship. I will work through the logic and the writing with you.

I also want trainees involved in relevant lab proposals. That may mean developing an aim together, preparing a figure from your project, or helping shape a collaboration. We will talk about what you are contributing and how the proposed work fits your goals. If an application comes back unfunded, we will read the feedback together and decide what to revise, test, or take somewhere else.

Writing, presenting, and giving credit

Start writing while the project is underway. Put the main figures in order, write down the claim each one supports, and show where the story is still missing evidence. Bring that outline to a meeting while we can still change an experiment. Give lab mates enough context and time to give thoughtful feedback on drafts and talks. Talk with me and the people involved about authorship as soon as we can see the likely contributions. Revisit the conversation if someone takes on a larger role or the project changes direction. Keep track of the work that goes into the paper, including experimental design, sample collection, analysis, software, writing, and revision. Bring up a credit concern early so we can discuss it with the people involved.

Making figures together

Bring an early figure to our meeting and I will sit with you and work through it. Start by telling me what you want the reader to see. Put panels in the order you would explain them. Label axes, units, groups, and scale bars where relevant. Show what each point represents, how many independent samples you have, and what the error bars mean. Use consistent colors and make sure the labels are readable at the size people will see them. Save an editable version and keep a record of where the underlying data are.

How we read and evaluate papers

Start with the claim that matters most. Find the figure that carries it and explain in your own words what was measured and what was compared. Ask whether the controls and the independent samples support the conclusion. Then tell us what you believe, what you are still unsure about, and what result would change your mind. End by asking what we can use from the paper in our own work. For a manuscript review, distinguish concerns that change the conclusion from suggestions that would simply make the paper clearer.

Papers

PhD students: My expectation is that you have a manuscript in print by the time you graduate. We will plan the project and writing timeline early enough to work toward that goal.

Postdocs: We will plan our work together one appointment year at a time, with clear goals for what you can accomplish and what support you need from me.

Conferences

I will fund one conference per manuscript when you have data to present. If you are traveling for a meeting, I encourage you to take a few days off to explore the city. Coordinate those days in advance.

Biomedical Engineering PhD milestones

In the first year, plan coursework with me. Plan for the required student seminars and departmental colloquia.

Take the doctoral qualifying exam between the end of the first year. Passing allows you to begin registering for dissertation research credits. Work with me to form your dissertation guidance committee within six months of passing the qualifying exam. Prepare a research proposal with preliminary data and pass the proposal examination by the end of the third year. The committee meets annually to review progress.

When me and your committee agree you are ready, send the written dissertation to the committee at least one week before the defense. The defense includes a public presentation and questions, followed by a private discussion with the committee. Use the department guidance and confirm your dates with the BME program.

Building toward your next role

I want you to leave this lab as someone people are excited to hire, fund, or work with. By the time you start applying, you should be able to explain a scientific question you helped shape, a hard problem you solved, what the evidence shows, and what you would do next. Work toward having papers, talks, code, methods, or other outputs that let people see what you can do and what you contributed.

For academia, we can work on a research direction you can articulate independently, fellowship or grant writing, and practice explaining your ideas to people outside your specialty. For industry, we can identify roles that interest you and work on how to show the value of your experimental, computational, or collaborative experience. Tell me early when you want to apply so I can help you prepare, make relevant introductions, and write a letter grounded in work I have seen you do.

Use conferences to meet people whose work matters to you. Look at the program before you go, practice telling someone what you are working on, and think of a few people you would like to meet. When you return, bring the group a result, method, or conversation that changed how you think about your work.

Feedback, disagreements, and getting unstuck

If something is off, bring it up early. Tell me what is happening, where you need a decision, and what you think would help. I want you to be able to say that an experiment is going badly, that my advice did not work, or that you need more direction. If I am concerned about progress, I will tell you what I am seeing and we will agree on what to try next and when to check in.

When you disagree with a colleague, start with the actual point of disagreement. Look at the sample records, the code, or the data together if that is where the issue lies. If the problem is about workload, behavior, or credit, say so and ask me or the lab manager for help as appropriate. For a concern you cannot comfortably raise with me, you can reach out to your program leadership or the relevant NYU office.

Motivation and fit

If you are losing motivation, tell me early. We can talk about what is making the work hard to engage with and try something concrete, such as clearer goals, more contact with me, or a change in the work you are doing.

We will give it time and check in again. If it still feels like a poor fit, I will help you think through what would suit you better and support you in finding a path that fits your goals.

NYU counseling and mental health support

If you are having a hard time, you can reach out directly to a counselor. You are welcome to tell me what support you need from me. How much you share about your health is up to you.

Students: NYU Counseling and Wellness Services offers free, confidential short term counseling. Tandon students can call 646-997-3456 for an appointment at the Brooklyn Student Health Center at 6 MetroTech Center. For support at any hour, call the Wellness Exchange at 212-443-9999.

Staff and Postdocs: NYU's Employee Assistance Program offers eligible employees and dependents five free counseling sessions. NYU also offers free, confidential consultations with its onsite counselor, in person or by telehealth.

I am always here for you.

Roy

[redacted]

LETS GO!