Lab Expectations – M.S. Student Edition

Mission

Welcome to the lab! The Nanoscale Immunoengineering Lab works at the interface of materials science, nanotechnology and immunology to develop new tools to engineer the immune system to improve human health. This is a highly interdisciplinary endeavor, and so our success is rooted in building a strong team of scientists and engineers.

We have the following central goals as a lab:

- Conduct high-quality science
- Train each lab member to be a successful researcher
- Create an intellectually stimulating, collegial and inclusive work environment
- Promote STEM education through outreach and science communication

My primary role as your M.S. research advisor is to help you determine what your research interests are, and to help you prepare you for your next career move. I am committed to helping you to identify your long-term career goals and helping you to realize them, whether they be in academia, industry, science policy or beyond.

To achieve our goals, we need to establish effective and transparent communication with one another. This document is a framework for communicating and aligning expectations with one another. Please also refer to the Lab Handbook (when I am done drafting it) for a more thorough breakdown of working in the lab.

What You Can Learn About in our Lab

Engineering: Learn to synthesize & characterize nanobiomaterials. This will involve learning techniques relevant to bioconjugation, microfluidic nanofabrication, microscopy, dynamic light scattering and rheological techniques.

Immunology & Biology: Learn the way the immune system works and current techniques for studying key processes of innate and adaptive immunity. Techniques in this area will include flow cytometry, ELISA, histology, and spatial multi-omics. Depending on your project area, you will also gain expertise in particular disease biology, like cancer or Alzheimer's disease. In most cases, students working on disease applications will need to be comfortable working with animals.

Communication: The cornerstone of a successful research career is communication skills. You can discover the most amazing things in the world, but if you can't help others understand your findings it won't do much good. M.S. students can learn techniques for improving their writing, oral presentation and data visualization skills.

What graduate students can expect from me

- **Mentorship** – I will advise and strategize with you on how to approach research and career goals, whatever they may be. I will also help you to determine career goals if you are uncertain about what you want to do long term. Rest assured, I am committed to mentoring you now and in the future. I will also be receptive to feedback on my mentorship approach.

- Sponsorship – I commit to use my influence and position to advance your research and career. This includes amplifying your accomplishments, advocating for you, defending you, and connecting you to others who can help advance your interests.

- **I will be available to you to facilitate progress on your research, so expect:**
    - Regular meetings each week to talk about progress and challenges.
    - Assistance with project and time management strategies.
    - Help interpreting data and results.
    - Feedback on research plans, written documents, oral presentations, and data visualizations.
    - Editing of research manuscripts.

- **I will foster an inclusive, safe and intellectually stimulating work environment**
    - I will take seriously any difficulties you bring to my attention regarding our lab's culture.
    - I will organize periodic meetings to discuss justice, diversity, equity and inclusion topics and ways to meaningfully improve the culture of the lab, department, university and our neighborhood.
    - I will assist in managing interpersonal conflicts when they arise and where appropriate.

What I expect from Masters students:

- **Approach research with a collaborative, team-science mindset**
    - I see collaboration as vital for this line of work, given its interdisciplinary nature. This means team-based research both within the group with other lab members and outside of the group with collaborating labs.
    - **Respect personal and cultural differences of others** – we are a melting pot of identities, so I expect introspection and reflection on topics of diversity, equity, and inclusion.
    - Participate in lab retreats and in team-based decision making processes, where we define lab responsibilities and update *Lab Expectations* and the *Lab Handbook* documents.
- **Seek out healthy ways to grow and develop as a scientist**
    - Take initiative to cultivate deep theoretical understanding of your research area through independent learning, reading of the literature, journal clubs, and attending seminars/conferences.
    - **Learn to manage your time with the goal of accomplishing research goals while also maintaining a healthy work-life balance.** While I don't proscribe specific work hours, I do expect you to dedicate a meaningful amount of time in the lab to achieve your goals. It is important to recognize that your time in lab will be different from PhD students, and that is OK.
    - Develop a resilient mindset – research is hard and will challenge you. Finding ways to deal with these challenges in a healthy way is critical.
    - Build a team of mentors to help you with your research and career goals. I should not be your only mentor!
    - Engage with professional development opportunities.
- **Improve skills in research and in communication**
    - Learn and master the technical skills relevant to their research.
    - Work to improve oral, written, and visual communication skills.
    - Prepare for our weekly one-on-one meetings to discuss progress and current challenges.
    - Engage in annual individual development plan meetings to assess progress and to give feedback on my mentorship approach.

- Support the growth of the lab
    - Write and submit research manuscripts if your work yields sufficient results to tell a story.
    - Be ambassadors for the lab and for Columbia when engaging with the press, on social media, or at conferences.
- Be a good lab citizen
    - Be thoughtful and courteous to others.
    - Participate in general lab responsibilities.
    - Maintain a high standard of scientific integrity.
    - Keep and maintain an organized lab notebook and backups of data.
    - Participate in weekly lab meetings.
    - Communicate primarily through our Slack channel.
- Keep up with personal responsibilities
    - Keep track of and satisfy academic requirements & deadlines for your degree.
    - Let me know when you are going on vacation, and to arrange for someone to cover your responsibilities in your absence.
    - Transparency regarding interpersonal situations that disrupt/impact lab culture. This includes conflicts with others or close personal relationships (see Lab Handbook).