Mentor-Mentee Compact for the Mudumbi Lab

Updated 11/25/2024

Goals: Our research goals are to understand the mechanistic underpinnings of cell surface receptor mediated signal transduction, with a particular focus on how kinetics define biased signaling. While the expertise of the lab lies mainly in using advanced microscopy methods (single-particle tracking, smFRET, super-resolution microscopy, etc.) to address these questions, we remain open to expanding our technical repertoire to use the best tools to help us find the answers to our research questions.

We are a TEAM and will all work closely and collegially to achieve our research and professional goals. As with each team, we have specific roles and responsibilities:

> My primary responsibilities include designing projects and providing big picture direction for our research, disseminating the knowledge that we collectively obtain (in national and international venues), obtaining funding, writing/editing/publishing manuscripts, and providing mentorship - both scientifically and professionally.
>
> Your primary responsibilities include contributing to project design, designing and performing experiments, analyzing data, preparing figures for presentations and publications, and writing/editing manuscripts.

Ultimately, our goal as a lab and as a team is to perform cutting-edge and impactful research that will move the field of signal transduction forward. We should work together in a manner that will be mutually beneficial for all of us professionally while still having fun in the process. I fully believe that a healthy work environment can provide a nurturing place for us all to think deeply about science and remain excited about our work regardless of the difficulties that are inherent to the scientific endeavor.

Expectations: Because our relationship is a two-way street, this section will cover some of the expectations I will have for you as well and some expectations I (and hopefully you) have for me.

> **My expectations for you:**
>
> - Learn how to critically think about our research. This includes thinking about outstanding questions in the field – there are many – as they pertain to your projects as well as projects of other lab members.
> - Learn how to plan, design, and execute high quality scientific research.
> - Learn how to present your work in a public setting. This includes lab meetings, departmental seminars, and national and international meetings.

- Learn how to document your work.
- Be honest, ethical, and enthusiastic about our research work.
- Show up.
    - We all have different schedules, but, remember that this is still a job and to be successful we have to put in the time and effort that is required to produce high quality research.
    - We are privileged to have jobs with high flexibility. Use that to your advantage, but don't abuse your privilege. Some days will be longer than others. Make the ***best*** use of your time. If you're not doing bench work, there is always data analysis, reading, writing, and learning in general. We are academics in an academic environment, use that to your advantage!
- Have clear and open communication with me about your needs in the lab and from me.
    - Respond to emails or Slack messages with reasonable promptness during the work week.
- ASK QUESTIONS! I don't expect anyone to know everything, we are all here to learn!
- Be engaged with our research group as well as the research community at Vanderbilt and the broader national/international research community.
- Treat your labmates, equipment, lab funds, and other colleagues and staff with respect.
- Take advantage of the various expertise (cores, PIs, etc.) at your disposal.
- Take advantage of the career development opportunities at Vanderbilt.
- Apply for funding opportunities. This is not only helpful to the lab, but will be in your best interest as well!
- Work hard – persevere – don't give up!

Expectations for me:

- Provide tailored mentorship and sponsorship in the lab and beyond.
- Provide an intellectually stimulating environment where you can be creative, enthusiastic, and successful in tackling interesting scientific questions.
- Provide guidance/feedback where I can, and help you find guidance/feedback when others are better suited for your needs – this pertains to both research and professional needs.
- Independence to develop your own ideas, experiments, and research interests.

- Open and clear communication about my needs and expectations from you.
    - Respond to emails or Slack messages with reasonable promptness during the work week.
- Publishing in a timely manner when possible.
- Working with you – in advance – to determine authorship in an equitable manner.
    - This will include having conversations throughout the project lifetime to discuss any potential author additions, deletions, or reordering in a manner that is fair and equitable for all the parties involved.

Ownership: It is ultimately your job to take ownership over your educational and/or work experience, and you will be doing yourself and others a disservice if you don't.

- You have the primary responsibility to attain your academic goal. This can include earning your degree, landing your job (postdoc, faculty, industry, etc.), publishing papers, applying for graduate or medical school, etc.
    - To do this you will need to be self-motivated, engaged, scientifically curious, and have strong ethical standards.
- Meet with me as frequently as needed.
    - We should initially have a discussion about the frequency of our one-on-one meetings and find a mutually agreed upon frequency to meet. The frequency should be no longer than once every month. We can, upon further discussion, alter this frequency as we see fit.
    - During these meetings we should discuss not just successful experiments, but, perhaps more importantly, experiments that have not been working or that you are troubleshooting. We will also use this time to evaluate the project, next steps, and brainstorm new experiments or directions. This is also a great time to discuss your professional and/or personal goals and questions and we can brainstorm ideas as to how we can help you meet or answer them.
- Read primary literature. The only way we can be successful, design the appropriate experiments, and perform impactful research is to keep up with our field(s) of research by staying on top of the literature. To be successful, topics you should follow closely include: EGFR, ErbB receptors, RTKs, receptor mediated signal transduction, single-molecule microscopy methods, smFRET papers, and advances in dyes and dye chemistry. More topics may be relevant depending on your projects and interest.

- Be knowledgeable about the policies surrounding your respective programs. Postdocs and graduate students should be engaged with the BRET office and the ASPIRE program.
- Reach out to other mentors. While it is my job to be your primary mentor, I am limited by my own experiences and knowledge. It is in your best interest to try and find other mentors that can provide you a balanced perspective on problems or experiences that are unique to you.

Our Team: We value a lab culture that is emotionally supportive, inclusive, and respectful of diverse backgrounds and experiences. We will all strive to create an environment where every lab member will feel comfortable in our group as their authentic self, regardless of race, gender, sexuality, nationality, political affiliation, or religion. We will also work to support every member of the Mudumbi lab by creating a work environment where teamwork is not just encouraged but expected. Our day-to-day work will be with others in a group setting; therefore, the dynamics of our group will have a huge impact on how each member feels about themselves, their job, and their research. Each member of the Mudumbi lab will be an important and key contributor to these dynamics – therefore, I encourage everyone to:

- Respect your labmates.
    - Respect everyone's individuality and our individual differences in values, personalities, and work styles.
    - If a difference of opinion arises between you and a labmate or me, first seek to have a conversation with the party involved. If you cannot resolve the issues, come to me, or if the issue is with me and cannot be resolved, reach out to resources such as the Director of Graduate Studies, the Department Chair, auxiliary mentors or other trusted faculty.
- Strive to be the very best lab citizen.
    - We have a lot of common equipment, supplies, and stocks, and they all have their places. Please wash things you have dirtied, return things to their proper locations, and update the order list if we are running low on a supply (please ***do not*** wait until you take the very last item before placing an order).
    - Follow your lab duties and chores – tissue culture room cleaning duties, responsibilities for certain pieces of equipment, etc.
    - Please keep your own lab bench and work areas clean and clear
    - Be mindful and use equipment for the time that you have booked it. If you are running late or need to change schedules, inform the appropriate people before or after you on the schedule.
- Attend and actively participate in all group meetings and journal clubs.

    - This does not mean only paying attention when it's your turn to present. Be attentive and provide feedback and insight into your labmate's projects.
    - Be attentive! Using your phone or computer to browse or do other work is not respectful to your fellow labmates.
- Be a part of the larger scientific community. Some examples to consider:
    - Be on departmental committees.
    - Be on national society committees.
    - Be on university committees.
    - Science communication and outreach.
    - Pay attention to issues of inclusion in STEM and strive to actively defeat exclusionary or discriminatory attitudes and behaviors in our environment.
- Be a good collaborator.
    - Engage in collaboration within and beyond our group.
    - Treat everyone you meet with respect: custodial staff, PIs, postdocs, students, research assistants, etc.
- Acknowledge the efforts of collaborators.
    - In your slide presentations, posters, and manuscripts, it is imperative that we acknowledge the individuals that have helped us along the way.

Research skills:

- Experimentation: Vanderbilt is an amazing place full of opportunities to learn new research skills. You may pick up these skills from labmates, but many new skills will come from collaborators, trainees in other labs, core lab personnel, etc. Please take advantage of these opportunities while also being respectful of their time.
- Presentations: It is in your best interest to challenge yourself and grow as a scientist and person by finding opportunities outside of what I, the lab, or the department provide you or require of you. The more you present your work, the better you become at thinking about it, and at presenting in general.
- Literature: Keep up with the current literature. Try and carve out a few hours every week to search PubMed or Google Scholar for topics related to your work and the lab's scientific interests in general. Read these articles and share them with your labmates to actively engage each other in the pursuit of scientific knowledge and excellence.
- Lab notebooks: We will be using Benchling as our digital lab notebook. It is imperative that you have a very thorough and organized lab notebook. Your protocols and experiments should be understood by me or future trainees 10 years from now when you are long gone from the lab doing bigger and better things! Digital notebooks have the advantage of being able to upload gels, images, figures, etc., take use these features! If you've written data on a napkin

in the lab, take a picture, upload it, and annotate it! You should be writing your experimental details as you go and should keep your notebook up to date each day.

- Training others: Mentoring and training other students (undergrads, rotation students, summer students, new graduate students, etc.) is a valuable experience for everyone and should be embraced as an opportunity to grow your mentorship and training skills.

Yearly IDP evaluation: Every year, we will sit down and discuss your goals, progress, and level of contentment. This will provide us a way to decide how we can change your training (if need be) to address any gaps that we identify in either your performance or mine.

Please note that this is a living document that we, as a lab, will modify on a regular basis.