

Lab manual for PhD students

PAN group on Genetic Innovation

Supervisor: Peter Andersen

Department of Molecular Biology and Genetics (MBG), Aarhus University

Welcome to the group!

The purpose of this document is to openly communicate and document the mutual expectations connected to being a PhD student in our group. Please read this carefully and bring up if you find some of this to not match your views or if you find something missing. I am very happy to discuss any part of this. Best, Peter

The vision

The vision of our lab is two-fold:

1. To make new and exciting discoveries about animal germline genome regulation
2. To develop the skills and careers of students and postdocs.

These two aspects are interdependent: a major driving force of scientific progress is enthusiastic students and postdocs embarking on each their own scientific journey of training through discoveries. I am convinced that these goals are best reached in an environment where scientific discussion, thinking, freedom, collaboration and experimental possibilities are as open as possible. We therefore put a strong emphasis on motivation, independent thinking, openness and personal fit with the current lab members when recruiting people to our lab. We don't micro-manage, but instead put a lot of effort into developing skills of project management, experimental craftsmanship and data analyses with all trainees

General expectations

Lab harmony

Please be considerate of your colleagues in the lab. A non-exhaustive list of ways to be considerate:

- Regardless of their career stage, be respectful to everyone in the lab. Science is a team effort, and we all rely on each other to be as successful and productive as possible.
- **Everyone is a role model.** Regardless of your role, people will look to you and copy some of your behavior. Be aware of this impact and responsibility and see it as your chance to nudge our group habits in a positive direction.
- Keep your own stash of reagents, stuff and general mess at your own bench and don't take media, pipettes, tips, etc. from someone else without their permission.

- If a reagent is running low, check for backup reagents and order new ones as needed. Never leave an empty tube in the freezer.
- +1 Rule: when cleaning up, clean up or put back one more item than your own mess covers.
- Some inspiring resources on nurturing a productive and harmonic group:
 - o [TED talk](#) on productive groups and chickens

Safety at work

It is essential that we take proper care to avoid accidents and injuries while working in the lab. Before starting lab work, you will join our lab manager, Mie Aarup, on a safety instruction tour in the building as well as a general introduction safety rules and how we organize our daily work in the lab. For everyone's safety and feeling of security, it is important that we all adhere to our common set of rules. Feel free to bring up suggestions for how to further improve our work habit in this regard at our weekly lab meetings.

Career development

In addition to making research discoveries, developing a good career trajectory is a primary goal for students and postdocs in the lab. We strive to make you aware of the many possibilities to develop this, including opportunities for contributing to writing (articles and grants), participating in courses, conferences, and other networking events, mentoring other trainees, etc. Make the most of these opportunities to explore and shape the career trajectory that fits you the best.

See also: <https://phd.au.dk/for-current-phd-students/career/>

Scientific integrity

Very important: never selectively exclude or manipulate data to achieve a desired result. Even if done by ignorance, it constitutes falsification and can have lasting consequences for everyone involved. Avoid plagiarism: never copy text for your own writing without quotation marks and proper referencing – even avoid copying from your own previous publications (self-plagiarism).

Please also see: <https://mbg.au.dk/en/research/responsible-conduct-of-research/>

Reading and writing

Keeping up with the literature relevant to your project is essential. Given the spread of projects and topics in the lab, you cannot rely on anyone else to identify important papers for your project. I strongly recommend establishing regular read habits.

Similarly, writing is really important for your project. Not just towards the end of a project, but also as a project development and management tool. I believe this to be true at every training level from bachelor student to postdoc and at every project stage, from day one to final publication. Writing impacts how we think about our project, how we build publishable 'stories' and therefore also will guide how we design our experiments throughout a project. For more info on how we go about writing, please see our page on writing in our electronic labbook system.

Working hours and time off

We all work at different levels of efficiency at different times of the day and through regular weeks and phases of higher intensity near deadlines. What really matters here is not the specific hours or everyone else's schedule and habits, but your own productivity. While maintaining this freedom (and the accompanying responsibility), please be in the lab at least during core work hours (roughly 09:00 to 15:00) to facilitate mentorship, meetings and discussions. Please put it on the whiteboard and let Peter and Mie know if you plan to work from home or take time off for a full day or more so we can plan around it. Importantly, while you *will* need to work hard to be competitive for whatever you chose to do for your future career, you also need to find a consistent balance that goes well with not only your ambitions, but also your health and sanity – it's a marathon, not a sprint.

Working language

Feel free to speak any language with anyone around, but please switch to English in non-private conversations if anyone around does not speak your language. Keeping English as our working language will allow everyone to take part and contribute to our chats and discussions.

Issues arising

If something starts nagging, bring it up early, so we can take care of issues before they grow big. This is especially important in regards to your own well-being (please see <https://phd.nat.au.dk/for-phd-students/preventing-and-managing-stress/>)

General advice on doing research

- Perfect is the enemy of good enough: balance your efforts
- End your day by planning the next one. This way you know exactly where to start when you get into the lab the next morning.
- Read your protocol from start to finish and check if you have the things you need before you start your experiment.
- Shit in – shit out. Sloppy analyses or half-failed experiments rarely give interpretable results but can consume a lot of time and resources. Plan your analyses and experiments well. Always include negative and positive controls for relevant parameters when possible. Consider whether going ahead with suboptimal samples or data is not a likely detour.
- Keep notes from all meetings you go to, including seminars. Otherwise time and ideas risk being lost.

Expectations and aims – PhD students

Key aims of a PhD

- Learning the craft of scientific research, including project management, critical thinking, experimental design and execution, data analysis and communication (written and verbal).
- Uncover important new knowledge and share it. At the end of a PhD, one should be able to *make a statement* that couldn't have been made before. This statement should be shared by paper publication in scientific journals.

Project management

- We define your project together. This is based on an important biological question that you would like to address that falls within the broader research area and expertise of the lab.
- You will become the main driver of the project with as much input and support as needed at the different stages from my side.
- Steering a project requires independent drive and initiative. Use the hive mind of the lab/institute in the everyday and at meetings and presentations.
- Plan ahead. Always plan the next day's work before leaving for the day and keep written plans (in some form) for the coming week, month and quarter

Communication

- Weekly 1-on-1 meetings of 15-60 minutes as needed. This is for in-depth feedback and discuss results and future plans. If you send me a brief meeting agenda ahead the meeting, I will do my best to prepare accordingly.
- If my door is open (which it mostly is), feel free to come discuss/ask whatever needed. It is often much better to get the quick input in the moment than waiting for the weekly meeting.
- Half-year meetings: every half year we have a meeting of whatever length needed, where we step back and talk about the bigger picture of your PhD. Not about data and experiments, but about your career track/wellbeing/plans/etc. This is a chance to identify/make needed corrections to the track of your education and our work together.
- Be open about your project in our local community of the lab and the institute (share results, ideas and methods). This not only contributes to a fun research environment, but also builds your network and creates opportunity for important input.

My responsibilities to you

In addition to the commitments mentioned above, you can expect that I will do my best to:

- Help make sure that your project is well-structured and realistic
- Ensure that you have access to the resources needed to perform the research for your project (knowledge, reagents, equipment).
- Aid analysis and data interpretation.
- Support your career goals (be it teaching, consulting, industry, academia, etc.)