Quesnel-Vallières lab guide

This lab manual is intended for members of Mathieu Quesnel-Vallières' group at the Département d'immunologie et de biologie cellulaire at Université de Sherbrooke.

Une version française sera disponible au cours de l'année 2024.

Welcome!

Welcome to the lab! We sure are glad and proud to have you join us! This guide is meant to give you an overview of our philosophy, share expectations and provide some important guidelines. The text is written in the first person by the lab director, Mathieu Quesnel-Vallières; "I" and "me" refer to Mathieu. Sections are in no particular order of importance or organization.

Lab commandments:

- You're only as good as your controls
- You miss 100% of the shots you don't take
- Skate to where the puck is going, not where it has been
- Have purpose
- Be responsible

Work ethics

Here are some bullet points that summarize how I view scientific rigor.

- Be your own third reviewer.
- You're only as good as your controls. I wrote this already and I won't be afraid to repeat it again.
- Think twice about your experiment, do it once.
- Time and hands should be the only(ish) limiting factor. See more below on my role as PI.
- Aim for 1 meaningful result per week. This doesn't have to be a publication-level figure; it can be the successful optimization of a transfection, the completion of a construct, an RT-PCR or a Western blot giving you a definitive answer (be it positive or negative), the analysis of a set of data, to optimization of training parameters for your ML model, the processing of a new sequencing dataset, the inception of a new project put into writing or a detailed design for the next experiment…
- You own your project. By grad program rules, you must work a certain number of hours per week and are allowed a certain amount of vacation time every year… However, I recognize that we all have our preferred schedule, and that lab work allows for this flexibility. As long as you're making good progress on your project(s) and keeping on top of things, I will not keep track of your working hours.
- Working hours are flexible, but I expect the lab to be inhabited between 10am-4pm. Meetings can be scheduled between 9am and 5pm.
- Order new consumables before we run out. That means that if you use the second-to-last whatever, you should be ordering more.

- We work with each other. Leaving dirty equipment for others to clean is not cool. Moving common equipment without putting it back when you're done is not cool. Using all of the buffer without making more is not cool.
- The reason I offered you a position in the lab is because I trust you are a decent human being. Let's all be decent.

Responsibility and accountability

You are responsible for your decisions. Making a mistake is OK. Hiding a mistake is unacceptable. Being transparent and forward will save you and your colleagues a lot of time (possibly months), trouble and money.

If an experiment fails, I need to know that you are aware of a possible mistake before we start thinking about troubleshooting.

If you accidentally break a piece of equipment, I need to know right away so that we can replace the equipment before someone else needs it.

If you drop an enzyme/antibody/any other reagent or use too much it because of a miscalculation, we need to know right away so that we can replace the tube before someone else needs it.

Mathieu's role in the lab

Hands and time should be the only limiting factors to our progress, within reason. It is my job to bring you the money and resources you need to perform your experiments/analyses. Funding will always be finite, but we should strive to ask the most impactful questions and find the best way to answer them.

- Lead the lab, i.e. research direction, lab management, technical support/troubleshooting, mentoring, teaching, budgeting, PR, marketing
- Get the money
- Provide resources, expertise and network
- Put you on track to meet your next career goal
- Shelter you from excessive workload and external pressure
- Keep meetings on schedule
- Present yearly State of the Lab Address
- Do not disappoint

Grad student's role in the lab

- Take ownership of a research project and independently lead the project
- Define what you want to get from your M.Sc./Ph.D. beyond the diploma itself
- Generate results and synthesize discoveries into publications. Ph.D. students should aim for two 1st-author papers by the end of their degree
- Keep track of everything you do with a lab book. Any of us should be able to reproduce what you did based solely on your lab book and protocols
- Learn new techniques

- Support your labmates
- Apply for scholarships
- Attend group meetings
- Present seminars
- Attend seminars
- Present at conferences
- Contribute to the lab culture both as a scientist and a person
- Engage with your colleagues outside of the lab
- Reply to emails and get back to Mathieu with answers to pending questions
- Get the hell out of here as soon as you get your degree – the world is waiting for you!

COOP student/intern's role in the lab

A senior lab member will assist you throughout your internship. This person will be your primary reference in the lab.

- Don't hurt yourself
- Ask questions
- Attend group meetings
- Attend seminars
- Take time to really understand and master new techniques
- Get the controls right
- Getting clean but incomplete results is better than half-assing experiments to quickly get cheap results
- Keep track of everything you do with a lab book. Any of us should be able to reproduce what you did based solely on your lab book and protocols
- Contribute to the lab culture both as a scientist and a person
- Present your work at group meeting at the end of you internship
- Reply to emails and get back to Mathieu with answers to pending questions
- Decide whether academic research is for you
- Decide whether you want to come back to our lab for grad school

Onboarding

- Meet with Mathieu
- Get keys and room access
- [if doing computational work] Get DRAC access
- Pick bench and desk
- Fill out mentor-mentee relationship form
- Read this lab guide

Calendar and scheduling

You will be invited to join the "MQVlab" where we post information that is relevant to all group members, such as seminars, conferences, meetings and leave of absence. Please mark time slots where you know you will be unavailable/away (classes, travels, personal leaves). Personal leaves need not be detailed. For example, « MQV out » or « MQV late start » would suffice.

Deadlines

All documents are due to me two (2) weeks before the official deadline. This includes, but is not limited to, scholarship applications, abstracts, presentations and reports. This will allow me and possibly the rest of the lab to review your material and provide constructive feedback while leaving you enough time to address comments. You are responsible for communicating your deadlines to me in advance.

Group meetings

1-hour group meetings will be held on a weekly basis at a set time. Group meetings will alternate between research updates (individual presentations), round tables (quick update from each lab member) and journal clubs.

Mentor-mentee relationship

You will be asked to fill out a mentor-mentee relationship form shortly after you join. This will help me tailor the kind of guidance I offer to you. You should also make it clear to me what your next career move will be, when you know it. This way I can help you get there and take measures to plan the transition.

One-on-one meeting time is scheduled for each one of you on a weekly basis. You may decide to use this time or not, depending on whether you need it. I may request that we meet if I find it necessary, especially in the early stages of your project(s). The person who calls the meeting should share an agenda beforehand.

Techniques and facilities

Expertise or access to equipment should never be a limiting factor to the research questions we decide to pursue. We already have extensive in-house experience with a vast array of cell biology and molecular biology techniques as well as bioinformatics. State-of-the-art techniques can be learned from our local or international colleagues.

The FMSS and UdS offer platforms and services to perform anything and everything we might need, from high-throughput sequencing to proteomics, from optical and electron microscopy to molecular imaging. Ask me if there is something you want to do and we will find the right person to talk to.

Time off/vacation/leave of absence

You should let me know when you plan to be away for vacation or when events leave you unable to attend a meeting or finish a time-sensitive experiment. We (the rest of the lab) can arrange to continue your experiment if you will only be gone for a short period of time and meetings can be re-scheduled.

I do not need to know that you will be coming in late or leaving early because of a dentist appointment or whatever if your absence won't interfere with a meeting or an important experiment.

We will need to discuss during group meeting whether we want to use a lab calendar to share each other's schedule (course work, meetings, vacation, etc.)

Communication

We will need to discuss during group meeting whether we want to use a project management tool such as Outlook Groups or Slack to communicate, or just plain old emails + walking to the office/lab for an actual in-person exchange

Emails

Emails can be very sensitive. Writing good emails is hard. Try to keep it short and to the point. As a rule of thumb, it is always better to cc everyone who might be affected by the content of an email, even if the message is not directed at them. Asking for my advice before reaching out to another PI is good practice. CC'ing me on lab business and project emails is always a good idea – it will often prompt people get back to you or take action faster. It is better to discuss sensitive subjects in person or over the phone rather than email.

Some resources on how to write emails:
https://drexel.edu/graduatecollege/professional-development/blog/2018/October/12-tips-for-writing-effective-emails/
https://studentnews.manchester.ac.uk/2020/10/27/how-to-write-an-academic-email/

I will not send emails outside of extended business hours (6:00-18:00) or on weekends, except if we have a deadline to meet. I do not expect you to respond to emails outside of business hours, except if we have a deadline to meet.

Sexual violence, discrimination and harassment

Recognizing patterns of sexual violence, discrimination and harassment is necessary to actively contribute to a safe work environment. I would like all of us to take some time to familiarize ourselves with the ESSIMU report on sexual violence at UdS:
https://www.usherbrooke.ca/respect/fileadmin/sites/respect/documents/ESSIMU_rapport_UdeS-1.pdf
… and use the training offered at UdS:
https://www.usherbrooke.ca/respect/violences-a-caractere-sexuel/formations

Whatever the situation, I encourage you to speak up. I will always be ready to listen and provide support to the full extent of my capacities. Resources are also available at UdS to help you:

- https://www.usherbrooke.ca/respect/violences-a-caractere-sexuel/urgence-et-ressources#acc-11662-3191
- https://www.usherbrooke.ca/respect/harcelement-et-discrimination/ressources

Lab safety

We have all dropped a bit of phenol on the bench (or our wrist), mixed acids a bit too fast and maybe not under the hood, or taken too much pleasure in accidentally being exposed to xylene/DEPC/acetone fumes. Yet, it is important to remind ourselves that our health is more important than our experiments. Wear proper PPE and be safe:
https://www.usherbrooke.ca/smsp/securite/securite-en-laboratoire/tenues-ete

Please have the lab safety office number saved on your phone and please contact them and me to disclose any spill/hazard/exposure:
819 821-7626 (Santé et sécurité au travail)
819 821-7699 (Sécurité et prévention)

For other emergencies: 511 (from an FMSS phone) or 819 780-0811
For security: 819 346-1110 x14121

Conferences

Conferences are a unique opportunity to make your work and yourself known and meet international colleagues. If done well, a few days of conference can bring you more than six months of work. Grad students and postdocs will be encouraged to attend at least one meeting a year. Talks/posters will be practiced with feedback from the lab **two weeks** prior to conference start. I will also coach you before your first conference to make sure you get the most out of it. You are expected to come back with a list of interesting talks and/or posters that you saw and give an overview of the main findings at group meeting following your return. Now go out there and have fun!

Socializing

You will often find me partaking in social events organized at IRCUS/UdS/conferences. I encourage you to do the same. These events are some of the few occasions we have to meet and exchange with our colleagues outside of the lab.

Lab social events will be organized periodically. The nature of these events will be discussed between lab members. Whatever we do, **I promise I will never post awkward lab photos on the web**. There is nothing more cringe than scientists having fun in a social setting – no one needs to see this.

Alcohol might be available and consumed by some lab members during social gatherings. You should never feel encouraged or forced to drink.

Therapeutic and recreational use of cannabis is legal in Canada and is at your discretion, as long as you can still operate properly. Note, however that the *Politique de santé et sécurité en milieu de travail et d'études specifies* that members of the UdS community must « *s'abstenir de participer à une activité, d'accomplir un travail ou d'effectuer une tâche lorsque ses facultés sont affaiblies par l'alcool, la drogue, incluant le cannabis, ou une autre substance similaire, et que cet état représente un risque pour sa santé, sa sécurité, son intégrité physique ou celle des autres* ».

Music

I do not judge. Except for music. I will be a heckler to listeners of poor music.

Do you think something is missing in the lab guide? Let me know!