Choosing a Lab

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The lab is a place in which you spend much of your life in. The work you do in your lab and the perspective you get on how to do science may influence the rest of your career. Choosing a lab is an important decision, so take it seriously and make it carefully. Different stages in your scientific career have different purposes. Choosing a lab can therefore have different considerations depending on the stage of your studies. For example, the purpose of a good rotation is NOT to achieve results, but rather to get to know a lab- and see if it's a good fit for you, as well as learn new schools of thought.

The precise subject is less important than learning how to do science (and keep sane) by being close to good (and supportive) scientists. So – how do you take such an important decision?

FIRST: KNOW YOURSELF. What is your personality and work style?Labs are not one size fits all. Some scientists excel in labs where others would flounder. One of the most important relationships you are going to have in the next few years is with your PI - so seriously consider what kind of mentor it is you're looking for. Do you work better with a PI who is very hands- on or would you prefer a PI who lets/expects you to solve your own problems? Do you want a PI who motivates you by encouragement or by criticism? Would you prefer a large lab or one that is smaller?There are no right or wrong answers; just be aware of what you prefer. And consider that personality and work style conflicts are probably the most common reasons why scientist leave labs, so choosing a PI and lab that are a good fit for you is essential.

What are your research interests? What areas of research really interest you? Which labs are doing research that you find compelling? If you choose thesis work that you find interesting and exciting, you will enjoy discussing your research with others. You will enjoy thinking up experiments to test your ideas and carrying them out. You will enjoy reading journal articles, going to seminars, and attending meetings in your field. By the end of your thesis work, you will be an expert in your area, and you will have enjoyed getting there. Don't try and choose a lab based on what other people find interesting or what is considered "hot" at the time you make your decision. Styles in science change fast and by the time you finish your time in the lab no one knows what will be in the center of interest. If you feel like biology is too big and wide to decide what interests you, try to define at least several parameters:
1. What kind of science do you find rewarding - basic or applied?
2. Are you a risk-taker in which case you may prefer a lab that conducts nonstandard, risky research, or do you prefer to go with safer options in which case mainstream research may fit you better?
3. What do you enjoy telling to others that you read or "science gossiping" about with your friends. Is it cool animal behavior? The environment? New technologies? Stem cells? This gives an excellent insight into what you are really interested in.
MOST IMPORTANT: When you read the latest paper from a lab, think: DO I WISH I WOULD HAVE DONE THAT WORK?

What are your career goals? What would you eventually like to do with your training? Are you interested in doing research in industry or academia? What are the skills you want to learn –experimental, mathematical, or other skills? Think about the kinds of research that are compatible with your career goals.

SECOND: KNOW THE LAB Here are a couple of aspects to think about when looking at a lab:
Research area: Are you interested in the area? Will it fit with your career and life goals? Is it interesting to others?
Publications: What journals does the PI publish in? Are the journals peer-reviewed and well-respected? Is there a history of the lab publishing something every (or about every) year? Ask for a list of lab pubs!
Track record: How many students has the lab had? How many have graduated with what degrees and how long has it taken them? What are they doing now?
Lab size and age: Would you prefer to join a lab that's already fully functional and running, or would you like to join a younger lab where you'll have a more active role in shaping the lab's personality? Are you looking for a large lab, where you'll get input from many outlooks and backgrounds, or will you thrive in a smaller lab, where you'll get more personalized attention from the PI? Keep this in mind for context on other questions like pubs

Physical resources: Is the lab well equipped (including equipment, lab space, computers, meeting space)? Do the students spend the majority of their time doing research, or dealing with the technical details around research (making buffers, mediums, filling tip boxes, etc.)? Is the lab well-funded?

People resources: Are there enough people in the lab to help you out/ make it fun to work?

Lab meetings: Does the lab have them?Are they regularly held?Are they effective in providing useful feedback from others on your project?

Safety: How safety conscious is the lab? Do you prefer a lab that is a super-stickler for every safety regulation or do you prefer a lab that is more relaxed about safety?

Work style: Some labs are absolutely silent. Some labs play music or the radio loudly. Will it drive you nuts if someone else in the lab likes playing loud music that you dislike? Do members in the lab have cleaning duties? Does everything in the lab have a proper place? How much neatness or disorder do you prefer?

TRUST YOUR FEELINGS, LUKE!

THIRD: KNOW THE PI. A good advisor will serve as a mentor as well as a source of technical assistance. A mentor should provide, or help you to find, the resources you need (financial, equipment, and psychological support); introduce you and promote your work to important people in your field; encourage your own interests, rather than promoting their own; be available to give you advice on the direction of your thesis and your career; and help you find a job when you finish. They should help you to set and achieve long-term and short-term goals.

Guidance level: Are students expected to completely develop their own project or does the PI get them started? Is the lab a"sink or swim" environment or does the PI try to offer ideas and assistance when a project isn't going well? How hands-on, hands-off, or micromanaging is the PI?

Expectations of students: "What is expected of a student in the lab?" Ask both the PI and the students in the lab. Do the answers match? If they don't match be careful.

Honesty and trustworthiness: Does the PI do what they say they will? Can you trust them to give you credit for the work you do? Does the PI have your best interests in mind? Will the PI look out for you professionally and personally? Can you always believe what they say?

Communication style: Is the PI confrontational or non confrontational? Is the PI flexible or inflexible?

Temperament: Is the PI moody or even-tempered? Are they generally an optimist or pessimist? Does the PI play favorites or treat everyone the same? Does the PI motivate students by praise and encouragement or by criticism and blame? Are these done in public or private?

Management competence: Does the lab run smoothly? Will your work constantly be interrupted by having to take care of administrative duties that the PI has failed to address?

Accessible or inaccessible: Is the PI physically present or traveling every other week? Is the PI in the office, the lab, or in meetings all day long? Can you speak with them if necessary?

Approachable or unapproachable: Do people feel comfortable talking with the PI?

Scientific reputation: Is the PI well thought of by her/his peers? Are the PI's scientific beliefs shared and/or respected by others in the field? Is this a PI with a reputation for groundbreaking work?

Collaborations and contacts: Does the PI collaborate with other groups? Does the PI have contacts that will help you further your career goals?

FOURTH: KNOW YOUR PROJECT. While the project offered to you at the beginning of your rotation has been thought up by the PI, you should be certain that you're happy to be conducting this line of research. Try not to go after a project just because you think it touches upon a scientifically fashionable subject, or because you would like to learn the techniques it involved; hot subjects will change with times, and some techniques can be picked up in weeks. (although other techniques take years to master). Make sure that you're excited by the topic; do you think that it's relevant and interesting? When you read a paper on this subject, do you feel engaged,or are you just flipping forward to see how many more pages there are? The topic first thought up at the beginning of your work may be the stepping-stone for your later work. Try and think if you can attack this topic from several angles, and connect it to several systems. At the same time, the beginning stages of your research should be as simple as possible - look for projects that will allow you to glean the most amount of information in the least amount of time. Building systems from scratch can be immensely rewarding, but take into account that even deceptively simple systems can have their kinks that must be worked out before any data can be collected. Finally, if you have a project that you think might be wonderful - don't be afraid to suggest it to the PI.

Choosing a rotation lab is very confusing. Often students will not have prior experience in research or working in a lab environment, do not yet have solid ideas of what they want to do in science and are not given enough tools to assess the quality of laboratories. This all is in addition to the fact that there are many labs to choose from and

pressure (external and internal) to make the "best" choice. Remember: there is no "best" choice. Different labs fit different people and you never know where you will thrive. SO...make sure you choose a lab that you are happy to go to. However, one of the best tools to figure where you'll be happy is gaining experience both in lab work and in how different lab style suits you. Give yourself the opportunity to be exposed to new ideas and new attitudes, which can only be done when you've been attending seminars and talking to people about their work.

Questions to ask other students:

1. Are you happy with your project? The PI? The lab equipment? The department?
2. Would you recommend this lab?
3. Does the PI keep your best interests in mind? Do you feel that you are developing into a good scientist in the lab? Do they encourage your ideas or only promote his own?
4. How do you think that the PI is thought of in her/his field? In the University?
5. Does the PI react well to your suggestions for experiments or directions for your project?
6. How does the PI handle it when the project has setbacks or isn't working?
7. What level of your participation for deciding directions for your project is expected/allowed?
8. Do ~~grad~~ students work primarily with other students in the lab, with the PI, or on their own?
9. Do you feel that the PI pays enough attention to your project? Do they have enough time to give everyone's project sufficient attention? Or are they too busy?
10. What do you think about the scientific ideas that the PI has? Are they well thought out? Practical? Innovative? Are they of interest to other scientists?
11. Does the PI help students find positions, etc.., after graduating from the lab?
12. Does the PI support students to apply for prizes and fellowships?
13. Is the PI hands-on or hands-off, moody or even-tempered, have favorites or treat everyone the same etc. (see if these answers match what the PI has said and your experience in the lab.)
14. What do you think is the best thing about the PI? The worst?
15. Is there anything about the PI that drives you nuts?
16. What participation levels in journal clubs, seminars are expected?
17. What participation level in writing journal articles is expected?
18. What other training do people in the lab get (writing reviews, reviewing papers, giving journal clubs, writing parts of grants)?
19. Is attendance at international meetings encouraged?
20. Is it acceptable to have interest/activities/children outside of lab?
21. What is "work?" (some PIs measure work only by what experiments get done, not other activities such as reading articles, thinking about your project, attending seminars/journal club, or TAing.)