Life Beyond Graduate School

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Outline

- Finding a post-doc, important things to look for and ask
- Developing your own research project(s)
- Getting ready for a faculty position

- CV's for academia vs. industry, what to emphasize
- Preparing for job interviews- academic and industrial
- Closing thoughts

Finding a Post-doc

Start EARLY— 6 months to 1 year is very appropriate

Where to start?

- Advertised positions in scientific journals or at conferences
- Area of research interest
- Location in country

Finding a Post-doc cont'd

- Do a literature search on people of interest
  - ✓ Look for number and quality of publications
  - ✓ Make sure that they are a senior person
  - ✓ For older papers on topics of interest to you, look at the first author and do a lit search on them (they may have left that lab and taken the project with them)

Finding a Post-doc cont'd

- Write letters

The cover letter should not be more than 1 page and it should include information about:

1) The reason for your letter (you are interested in xyz project that they do in their lab). You should not choose a postdoc based on the ability to learn a technique. Techniques are means to an end, not the end.
2) What your research accomplishments have been so far
3) What you would like to do in their lab

Finding a Post-doc cont'd

- Don't be afraid to write to people who don't have any advertisements out for open positions

  ✓ Often they have unadvertised openings, or they know of someone who is leaving within the next year, or they just got a new grant, etc.

- Wait a reasonable length of time before following-up on an application for which you have not received a response (~4wks).

  ✓ Sometimes people just don't respond; but often times, they are out of town, or there is a grant deadline etc., that causes them to delay replying.

Finding a Post-doc cont'd

Now you have been asked to visit the lab for an interview. They also ask that you give a seminar, sometimes informally to just the lab, and other times, more formally to the whole department.

- Know your audience.
- Prepare the background and introductory material in your seminar accordingly.
- Your ability to communicate verbally is being analyzed here, as well as your quality as a good scientist.

Finding a Post-doc cont'd

An interview for a post-doc is not just one-sided - you are also evaluating them- the lab and the PI.

- Most often, the PI of the lab arranges your interview so that you have one-on-one time with members of the lab without the PI being present. This allows for more comfortable exchange of information. If this is not in your schedule, you should request to meet with people in the lab.

Meeting with the lab

You should ask very straight-forward questions about things that are critical to your future goals. For example:

- ✓ What kind of relationship do you have with the PI? Is it difficult to find time to talk to him (do you need appointments, or is his door always open)?
- ✓ When you show him data, does he discuss implications and suggest additional experiments to support the idea?
- ✓ Does he allow you the freedom to do experiments of your choosing on your schedule, or does he tell what, when and how you should do them?

Meeting with the lab cont'd

- ✓ How does he interact with people in the lab (does he give equal attention to all who need it, no favoritism)?
- ✓ Do you have lab meetings? How often? What is the format?
- ✓ Does the PI keep up on the literature and talk to you or show you new papers that are relevant to your work? What is the manuscript procedure- who writes it, are there several drafts etc.?
- ✓ Does he have a life outside of lab- a family, some other commitment besides science?

Meeting with the lab cont'd

- ✓ What has the relationship been between the PI and previous post-docs who have left as far as you can tell?
- ✓ How does the lab work- does everyone have their own project, are there many collaborative projects, or is it one project and whoever gets the answer first wins?
- ✓ How are authorship, project "lines" and collaborations determined? By you or the PI? Does he ask your opinion?
- ✓ What kinds of letters of recommendation does he write?

Meeting with the lab cont'd

- ✓ Do lab members attend any national meetings?
- ✓ If you had to choose a post-doc all over again, would you come here? Why or why not?
- ✓ What would you say are the positives and negatives about working here?

Meeting with the PI

While meeting with the PI, you should also ask many of the same questions you asked the lab members. Others may include:

- How many post-docs have you trained?
- Where are they now?
- What kind of relationship do you have with them?
- What is your policy regarding taking my project with me?

Meeting with the PI cont'd

- Are you a hands-on type of manager, or do you let people do their own thing (within reason)?
- (Notice if there are there pictures in his office)
- What is your policy on manuscripts? (who writes them, is there a lot of data that doesn't get published if it isn't a Nature paper, do you work together on multiple drafts so that it is a learning process etc.)
- Do you often give your post-docs the chance to review manuscripts and papers that you receive so that they can learn from you?

Meeting with the PI cont'd

- Can I write an NRSA or other type of grant to support my salary?
- Are there any opportunities to participate in teaching?
- Is there anything else that I

Identifying the right mentor

Issues to consider in choosing a mentor:

- Think about how the lab members answered your questions- were they direct, or did they avoid the central question, did everyone give consistent answers, did you feel like they were being truthful? Do you think you would fit in? Can you picture yourself working/living there?
- What kind of relationship do you think you can develop with the PI? Collegial or adversarial- do your personalities match or clash?
- Will you have the freedom to do your own work and pursue things that are interesting to you? Will there be problem taking your project with you?
- Do you think that you can find an aspect of the work done in the lab that you can separate off to form the foundation for a faculty position?

Identifying the right mentor cont'd

- What is the environment like with regard to research interactions both with respect to the lab itself and the department/school as a whole? (Is each department its own little world, and are there large obstacles to being able to go to the lab down the hall to learn a certain technique, or borrow a reagent, or is it very easy to cross departmental lines)?
- Are there avenues available for you to continue to learn about research in other areas? Is a seminar series for example available, and do they have outside speakers?
- If you plan to have a family while doing your post-doc, do you think he will be supportive?
- Does he have a life outside of the lab?

Identifying the right mentor cont'd

- Is this person someone who is high profile/well-known in his field so that a letter of recommendation from him, and the fact that you worked with him will elevate you above the other job applicants?

  ✓ Recent estimates for a tenure-track faculty position at a major research university indicate that for each position vacancy, there are 200-300 applicants. You need to make sure that you have things in your resume that will make you stand out in the pile, and that will at least get you short-listed.

Developing your own research

- There is no magic formula for this, a lot of the success comes from being lucky and perceptive enough to choose a “good” project.
- You should put a great deal of thought into what kind of project you want to do. Depending upon where you want to end up after your post-doc, you should choose a project accordingly.

  ✓ For example, if you plan to go into a liberal arts/4 year college type of teaching environment, you may want to develop a project that does not require inordinate amounts of money to keep the research going (e.g. transgenic mouse colonies) as those types of schools tend to give you quite a bit less money for starting up the lab.

Developing your own research cont'd

- You should choose a project that you can foresee as being of fundable interest for at least the next 10 years. It will be important that 4 or 5 years from now, when you are looking for jobs, that the general research area or question will still be of widespread enough interest to enable you to both get a faculty position and NIH funding.
- If you end up working on a project for some time that you think just isn't working, or it isn't going to get you where you want to be, you need to be able to change gears and work on something more productive. Therefore, you should have at least a couple of projects going at the same time, so you can easily shift.
- It would be wise to have a good solid project, as well as one that may be a little more high risk, but high payoff.

Developing your own research cont'd

- In this same vein, you need to make sure that you have chosen the kind of mentor that will give you the type of support/help/encouragement you will need to do this. It is important to know when enough is enough, and cut off the project if it is not working.

- Your graduate work was the time to comfortably/leisurely explore new techniques, ideas, etc.; your post-doc should be a time for productivity. Learning new techniques and even fields of research should be very quick because you have already got so much experience in other related areas.

- Work hard and be tenacious. Develop your hypotheses based on a foundation of data (either your own, or from the literature), and don't be afraid to test them... this is very often from where great projects arise that you can take with you.

Getting ready for a faculty position

- Make sure you are not applying for jobs too early in your training. Most places nowadays prefer at least 4 years of post-doc experience.

- Make sure your CV is the strongest it can be. Don't have a list of manuscripts in preparation and hardly any that are already published. Make sure that they are at least submitted.

- Ideally, one poster presentation should be one paper, so make sure you don't just have pages and pages of published abstracts with few publications that parallel.

Getting ready for a faculty position cont'd

- Make sure that you have some teaching experience. It looks very good to have done some teaching while doing your post-doc, even if you do it at the local community college in the evenings. Mentoring undergrad students, or rotating grad students also helps.
- Having had your own grant as a post-doc also looks good.
- Of course, high quality publications are paramount.
- Excellent letters of recommendation are also critical, so make sure that the people you ask will write you GREAT letters, not mediocre or potentially negative ones.

Getting ready for a faculty position cont'd

- Make sure you have the support of your primary mentor- a letter from him will be necessary not only for obtaining a job, but also for applying for grants etc., for quite some time to come. Try not to burn your bridges.

- Do some research on the scientific areas being studied by the department to which you are applying, and mention in your cover letter how or where you think your research can complement that being done in their department.

- Your application will stand out more if you already have a grant or some money that you have received based on your proposed work.

CVs for Academia versus Industry

- Although the basic information in your CV is the same for both venues, for an industrial type position, you emphasize more the techniques/methodologies that you can bring to their group (i.e. put it on the first page).

  ✓ Industry doesn't really hire very many people based on their research alone because most often, the research you will do in their company will be based on something that they will be able to market. That isn't to say that they don't want someone who has done outstanding research. So you have to exhibit the right balance between excellence in research, and broad technical/methodological knowledge.

CVs for Academia versus Industry cont'd

- ✓ In your academic CV, the major emphasis is on publications or teaching (depending upon the academic position type for which you are applying).
- ✓ Your cover letters should thus reflect these differences in emphasis as well.
- ✓ Include all of your awards, honors, invited presentations, oral presentations at national meetings etc., as well as your funding history (if you have one).
- ✓ Often, a statement of teaching philosophy is requested to accompany your application, so make sure you have one.

Preparing for Industrial Job Interviews

The most important things that I have found are:

- Preparing the seminar so that it emphasizes not only the data, but also the vast array of techniques and methodologies used, as well as your ability to communicate verbally to audiences with varied backgrounds.

  ✓ In a company, chemists work with molecular biologists and cell biologists to attain the goals set out by management. In order to have everyone on the same page, you have to be able to communicate with people who don't have your background.

Preparing for Industrial Job Interviews cont'd

- You need to demonstrate that you can work together well with other people in a group setting.
- You will interview with people from Human Resources who have no idea about your science, but who will ask you questions that you probably will never have thought of.
  - ✓ For example: What would you say is your biggest weakness? How do you handle change? What do you think about the people you have met so far?
- You are still expected to publish your research, there are just additional channels to go through.

Preparing for Academic Job Interviews

- You need to give a fantastic seminar about your research, and here again, talk to your specific audience

  - ✓ Give whatever background information EVERYONE will need in order to be able to follow your work

  - ✓ Spell out all of the implications and conclusions- not everyone has the expertise to make these for themselves, and it is evidence of your critical thinking abilities as well as your potential to be a good teacher

  - ✓ Make sure you include your future directions- they want to know what you will plan to do if you are on their faculty

Preparing for Academic Job Interviews cont'd

- The next biggest thing is to make sure you have your immediate and long-term research plan(s) well-worked out.

  ✓ You need to be able to tell them where you see yourself (research-wise) in 5 years (about the time when you would start preparing your tenure package) as well as where you think you want your research to be in 10 years etc.

  ✓ Have the specific aims for your first NIH grant already worked out (write them out on an overhead or slide and bring them with you). Make sure you can justify each and every one of them.

  ✓ Have a general idea of how much money and what types of specialized equipment you will need to start your lab. For example, if you have a mouse colony, you will need animal space etc., (and more money to start-up).

Preparing for Academic Job Interviews cont'd

- Be prepared for a "round-table." This is where the entire faculty will sit with you in a room (usually around a large table) and they ask you all kinds of questions.

  ✓ For example: How big do you want your lab to be? What is your management style? Would you want a post-doc in your lab right away? To what institute/study section would you submit your first grant? What would the aims of your first grant (RO1) look like? How do you see yourself fitting in with our department? What can you teach? How do you see your research changing in over the next 10 years?

Preparing for Academic Job Interviews cont'd

- Practice your seminar until it is flawless, and have your mentor and the people in the lab listen to it and give you comments on how you could make what you say, or your slides more clear.

- Have your mentor go through practice round-table questions with you, and have him critique your grant aims.

- Let your mentor help you with trying to put together your list of needs for starting-up the lab, and really use him as a resource.

Closing Thoughts

- Choose your post-doc very wisely. If you find after some time that it is not the right place for you, make sure that you at least get one publication out of it and move on to one that is better suited.

- The post-doc position(s) is likely the most important part of your training. It is the time for you to show what you can do, and develop your independence and your own project. This is probably the best time in your scientific life because you have infinite scientific boundaries and lots of freedom to be able to pursue something that is of interest to you (and worrying about money is not your job yet).

Closing Thoughts cont'd

- Don't underestimate the importance of your post-doc mentor. You MUST be able to get along with him, and you MUST make sure that you will have the freedom and support to pursue your own independent project. You will need him in the future for many many things, so choose this person with the great thought.

- Although you choose a great mentor, one who is well-known and supportive and just an altogether great person, there will always be things that you should take note of: things that you like about the lab/him/research etc., and things that you don't. Remember these things when you are setting up your own lab.

Closing Thoughts cont'd

- Try to get as much experience as you can:

  ✓ writing papers (even if it is a review article to start with)

  ✓ writing grants (either for yourself (NRSA), or ask to help write a specific aim for one of his grants)

  ✓ reviewing manuscripts

  ✓ teaching (grad or undergrad)

Closing Thoughts cont'd

- Make sure to meet and talk with people while you are at meetings and conferences, or when there are invited seminar speakers that come to your campus. The importance of networking is even greater now because you want your name and your work to be identified and to stand out in that pile of 300 applications.

- Try your very best, at all times, to act professionally and not burn your bridges. You never know who will run into in the future who may be a member of a search committee, or the reviewer of your grant application.