A Chalk Talk on Chalk Talks, V1 05/09/2018
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A summary of the job search process: why you should enjoy this part of the game.
Ok, you've gotten an interview...Yeah! This is a big accomplishment! No matter what happens, this is your chance to visit with colleagues who want to hear about your work and who will think deeply about the scientific questions that drive your research. In many ways this is what faculty do all the time, except, in this case, they are also evaluating whether they want you to be part of their department. Don't be too intimidated--you are there to do the same thing. At the end of the process, whether you get an offer or not, you will have a much better understanding of the research that is happening at the University/Institute and will have made some professional connections that will last your career.

Chalk talks: Why do departments have them?
Job searches are essentially aimed at finding another scientist that will bring fresh new ideas and energy into a department and generally improve or maintain the quality of research of the group. An important component is that the faculty feel comfortable having you as part of the department and that you will maintain or improve the standing of the department. If they asked you to interview, this means that your publication record, research statement and letters of recommendation have convinced them that you may be a good fit for the department. The interview is your opportunity to fully convince them that this is the case and that you are intellectually nimble enough to tackle the challenge of starting a successful research lab.

People in the department want to know the following:
- That you are excited to be in the department
- That you are congenial and a person that others can work with
- That you can identify several opportunities for collaboration in the department and the broader university
- That you are interested in teaching (if at a University)

Regarding your research, they want to know the following:
- That you fully understand your research and can present your work in a way that is clear, convincing and captivating.
- That you have thought extensively about your future research plans, are prepared to hit the ground running when you start your lab and have several options for acquiring research funding.
- That you will be a good mentor and able to support the students that start in your lab.

Chalk talk basics: what is expected?
Your research talk will cover the main findings of your work and the broader implications. You will also want to spare 5-7 minutes for slides at the end that describe your future work; a kind of teaser for the chalk talk.

The chalk talk is the time you will describe your short and long-term research goals and the approaches you will use. Don't assume that people went to your research seminar. You will want to communicate the following on the board:

1) Summary sentence or title of chalktalk to describe your overarching research topic
2) 2-3 main takeaway points from your post-doc work. This helps those who might not have come to your research talk.
3) Research Aims (~2)

- Each aim describes the main objective of the different grant applications you will apply for.
- The aims should be somewhat independent (i.e. if one fails, the other aims should not fail as well).
- The first aim should be the first grant application you write. The second aim might be more daring and forward thinking.
- The subaims will represent the different approaches you will describe in the grant application.

Example from my work:

Understanding the spatiotemporal control of root development under environmental stress

Summary of post-doc work:

- First tissue specific transcriptional map of a stress response
- Established an critical role for tissue identity in controlling these responses

AIM 1: How are tissue specific transcriptional responses to salt stress controlled (NSF/MCB)?

- Identify and test the function of novel cis-regulatory elements associated with salt-regulated genes using synthetic promoters.
- Use Yeast-1-Hybrid to identify the transcription factors regulating tissue-specific gene expression programs.
- Characterize the function of transcription factors induced by salt stress in regulating tissue-specific transcriptional programs and root development.

AIM 2: Establish new methods for characterizing the salt stress response in roots under physiologically relevant conditions (NSF/IOS).

- Develop a new method to visualize roots using luminescence reporters.
- Establish a software pipeline to quantitatively evaluate root system architecture
- Establish resources for the quantitative genetic characterization of root architecture using this system.

Chalk talk mastery: How to use the board

The chalk part of the chalk talk is where you will use the board as a visual guide to facilitate the conversation. Think carefully regarding how you can use the board to facilitate the conversation. Here are some pointers:

1) Try to spare some time before you start addressing your audience to write your overarching question and your aims on the board. This will spare you from writing too much while people are watching. (Note, ASCB advises to start with a blank board)
2) Be as neat and tidy on the board as possible. Take your time with the board.
3) Work off of prepared printed notes. You should have a replica of what you plan to write on the board on a sheet of paper that you use to remind yourself of what you want to discuss.
4) Speak directly to the audience, not to the board.
5) Think of the board and what you write/illustrate like a poster in a poster presentation. The text helps to keep a constant record of the discussion and should encapsulate the major takeaways from the presentation.

Chalk talk mastery: How to handle questions

Try to convince yourself that questions are good. The audience asks questions if they are interested in what you are doing. Questions come in 3 general flavors:

1) General curiosity--you have sparked their interest and they want to hear about the next step.
2) Lack of clarity--they are interested in something you said, but do not fully understand your work because of their limited knowledge or your lack of clarity.
3) Doubt--they disagree with your findings or interpretation.

In all cases you should be courteous in how you address the questions. If you don't understand their question, it is perfectly acceptable to ask them to repeat their question or to rephrase their question. If after you answer their question to the best of your ability the person still has questions or has doubt, state that you can talk with them in more detail after the discussion.

Chalk talk details: Funding your research.

You may also cover your strategy for acquiring funding to achieve these goals. Wherever you are applying to, be aware of the type of research that the funding agencies of the country support. In the US, these agencies support plant research:

NSF: funds basic research in plants through the IOS and MCB programs. You can apply for a grant using Arabidopsis through these programs, but they will likely only fund projects for 3-4 years and usually only 1-2 positions. The PGRP program funds larger projects, but this is usually limited to studies using crops.

NIH: funds basic research in plants that is very fundamental and potentially impactful outside of plants. If you are studying a basic cellular process, this might be an option. Grants typically fund 2-3 positions for 4-5 years.

DOE: funds research in bioenergy crops, algae and microbes. Grants can be large, but usually collaborative in nature (involve a team of collaborating PIs). They also have a young investigator program.

ARPA-e: a part of DOE, this organization funds research in areas related to carbon sequestration using plants, phenotyping technologies have been a past emphasis. Projects are usually collaborations.

DARPA: a part of the US Defense Department. They fund high risk, high reward projects. Recent grant calls have emphasize the development of engineered plants that can sense Defense Department-relevant chemicals. Think TNT sniffing plants.

What to do after your interview

Hopefully you enjoyed the interview and would consider joining the department, if asked. Now is your chance to further convince them that you are highly interested in the department and that you have manners. Write an e-mail message to the chair and to the faculty you met personally. State how you enjoyed the interview, that you particularly enjoyed some aspect of the conversation you had with them, and ask a question, but only if you have one. Also state that you look forward to hearing from the department.

Second visits

The next step can take a few weeks to months depending on where you are in the interview schedule and how nimble the department is. Have patience, but if you receive word from another department that they would like to give you an offer, feel free to convey this information to the other departments you are interested in. You will be asked to visit the department for a second time. This visit may include your family, and will often begin the discussion of what you need to start your lab. The value of the offer you receive will be improved if you have competing offers.

Some examples of my recent experiences:

Here is an example of the visit schedule that NYU provided me:

- A meeting with the Department Chair, Dr. Justin Blau.
- A formal seminar, open to all faculty, students, and research staff lasting ~45-50 minutes with 10 minutes for questions.
- A chalk talk, open to faculty only, where you will talk (whiteboard only) ~60 minutes about your future research plans, grant applications, and potential course offerings. An outline about future plans and grant proposals can be distributed if you wish, though this is not required. *Attached is a more detailed description for your reference.
- Lunch and dinner with faculty.
- One-on-one meetings with individual faculty members. Please advise if you have specific Biology faculty you would like to meet with on this visit.
- Wrap-up with the CGSB Director, Dr. Jane Carlton.

Here is an example of the visit schedule that UC Berkeley provided me:
You will have approximately 45 minutes to present your talk on Tuesday morning at 11:00am and there will be time for a short question and answer period afterwards. After your seminar, there will be a chalk talk and lunch with the faculty at 12:45pm (1.25 hrs, including time for lunch) where we would like for you to present and discuss:

1) The major objectives/questions of the research program you will carry out in your lab

2) Outline of your first grant proposal(s); i.e. what you will focus on during the first 3-5 years

3) Areas that you hope to explore in the medium term (~ 5-10 years out) and where you see your research program going long term

4) Teaching interests and priorities, and any ideas you may have for promoting diversity; you may provide an outline for a course that you would like to teach.

You may be asked questions about how you will run your lab and ideas you may have for graduate student rotation projects, as well as how your program could synergize with or complement ongoing research in the department. A chalkboard will be available; alternatively, you may use powerpoint and/or handouts. We will videotape both the chalk talk and the seminar so that any of our faculty who are unable to attend can view it.

Other resources:

Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty, Second Edition
http://www.hhmi.org/developing-scientists/making-right-moves

From ASCB, Preparing Your Academic Chalk Talk
https://www.ascb.org/compass/compass-points/preparing-academic-chalk-talk/

- This reference has great advice, which I partly used to craft my presentation. I only wish I had read this article before giving my past chalk talks.