Applying for postdoctoral funding

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STEM LEADERSHIP
PROGRAM

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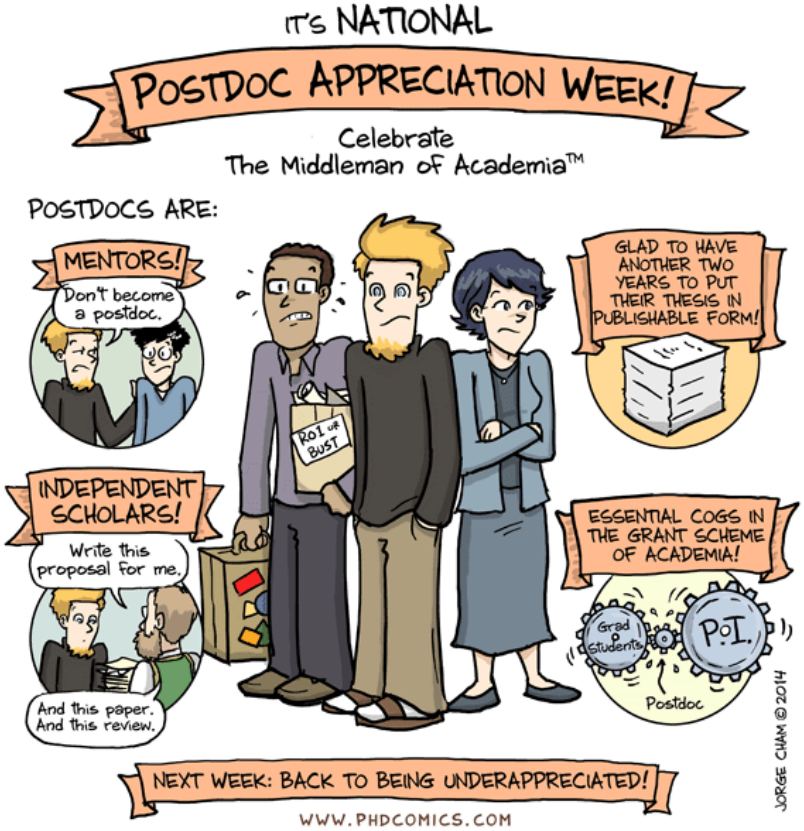
Generally, there are three types of postdocs:

1. Positions funded by a PI's grant
2. Positions funded by a postdoc specific grant
3. Departmental positions with teaching duties

Objective: Discuss how to approach applying for the second type of grant

START EARLY

It <u>will</u> take longer than you think



Advantages of having your own grant:

1. The ability to pursue your own research program with the guidance of a postdoc advisor
2. Demonstrating the potential to acquire funding
3. Lack of teaching duties

START EARLY

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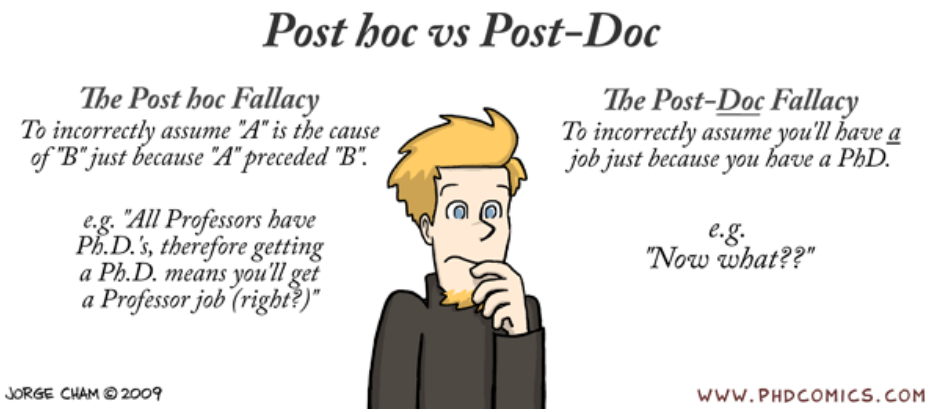

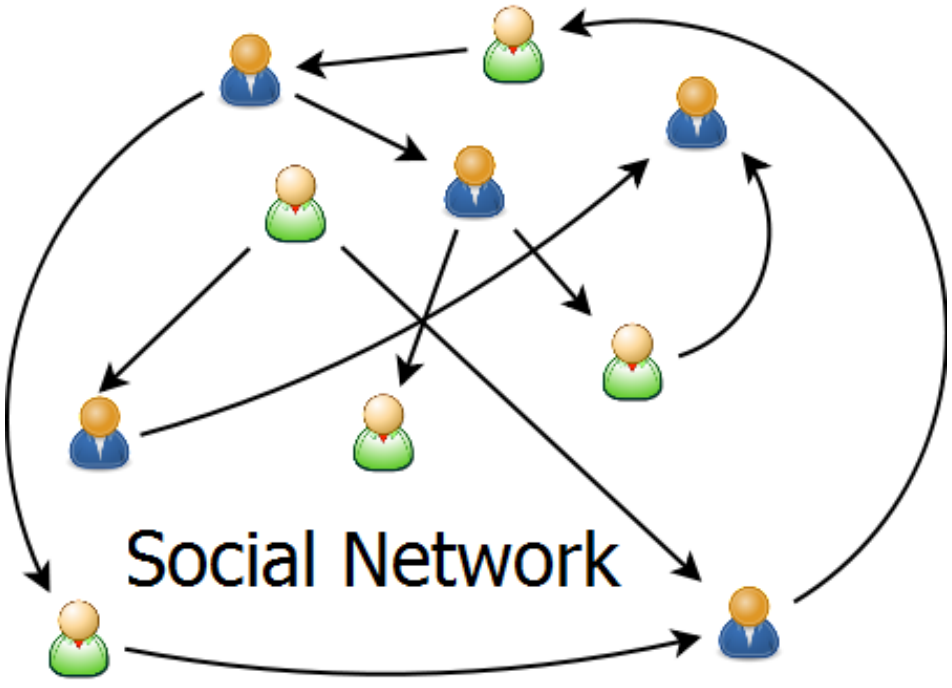

START EARLY

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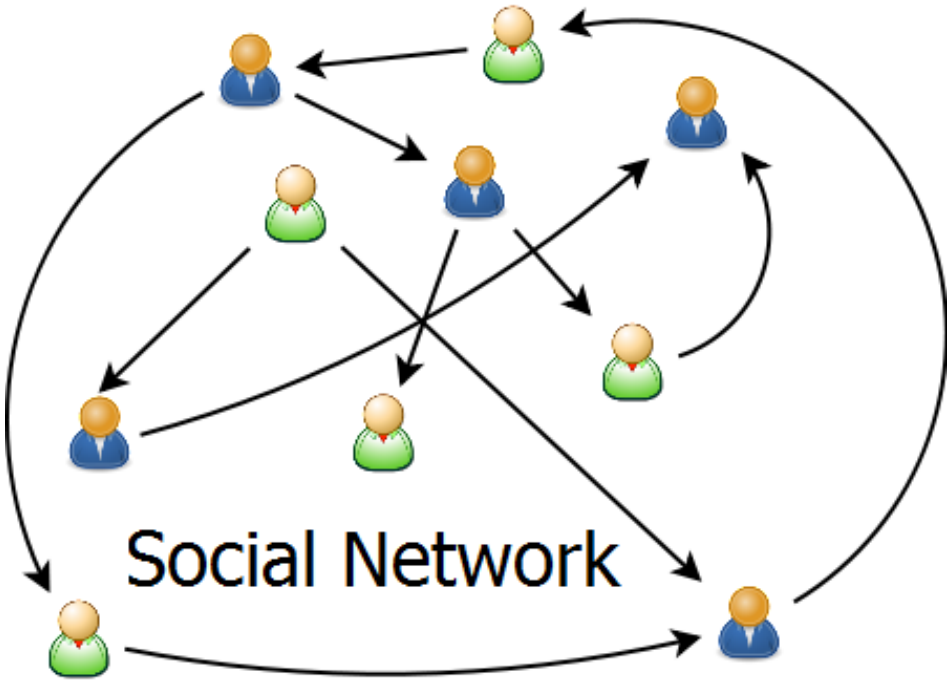
Generally postdoc grants require that the proposed work be significantly different from your dissertation work

- Read broadly - including biology papers
- Attend as many talks/workshops/conferences as possible, network, network, network
- Consider how the proposed project can expand your skill-set
- Think about outreach and career impacts early on



START EARLY

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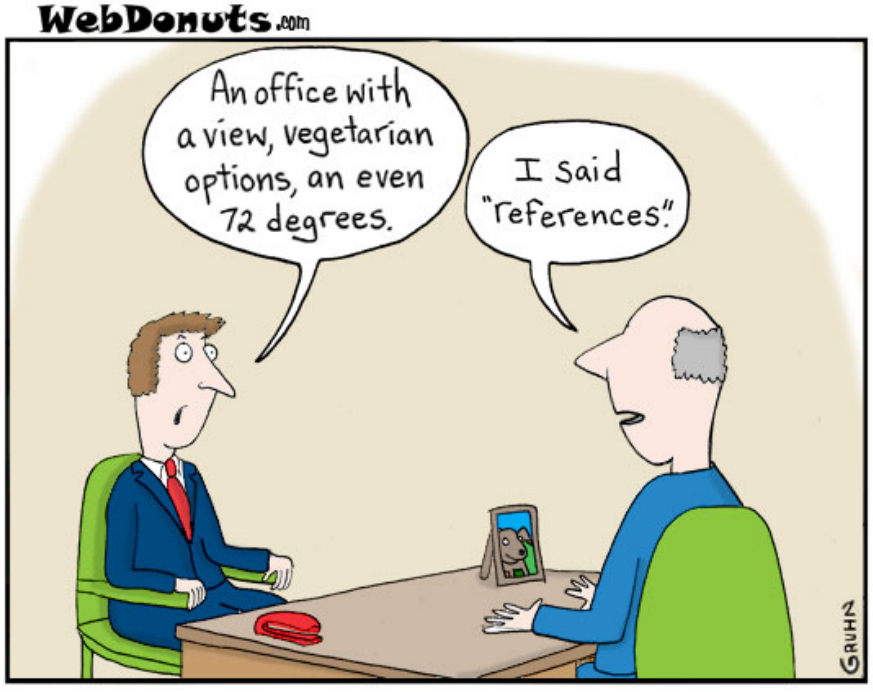
- Most of postdoc grants are developed with the guidance of a postdoc advisor who will write a support letter as part of the application to a funding body
- Consider advisors outside of mathematics departments: computational biologists, experimentalists interested in integrating theory, people at national labs or other research institutes, etc
- Identify multiple possible advisors

- If your PhD advisor is your academic parent then your postdoc advisor is your academic aunt/uncle/older sibling
- As much as they are interviewing you, you are interviewing them (and their lab/research group)
- Above all else there are four primary considerations:
  1. Do you get on well enough to work closely with them for 2-3 years?
  2. What is the lab/research group culture?
  3. Do they have a good network of collaborators to which they will introduce you?
  4. Do they explicitly provide opportunities for professional development?

- Visit their lab/department for a few days if at all possible
- Seek out current and past students/postdocs
- Ask them about their plans for your professional development



Okay, great those are the the qualities I want, how do I find potential advisors?

- Utilize your PhD advisor's collaboration network
- Go to conferences, *give good talks*, and network, network network
- Take advantage of professional society mentoring programs

From my own personal experience:

- 15 talks at workshops, colloquiums, conferences during PhD
- 10 postdoc applications, 7 responses, 2 interviews, 2 offers
  - Offer 1: collaborator from PhD advisor's network
  - Offer 2: from contact made at SMB conference
- Multiple offers gives you leverage, use it!
- Generally, potential advisors will want you to give a talk to their lab/research group
  - Target your talk to be as relevant as possible
  - Don't try and present your entire dissertation
  - A clear and engaging talk is more important - avoid detail fatigue

1. Identify your possible topic and read the most relevant literature (1.5+ years prior to desired start date)
2. Identify and approach potential advisors, ideally through your PhD advisor, or at conferences (at lest 1+ years prior to desired start date)
3. Select your advisor from among your options (at least 9+ months prior to desired start date)
4. Identify potential funding sources for your project (6-9 months prior to desired start date)
5. Revise revise revise, and apply to multiple funding streams

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- Biology postdocs
- NSF mathematical sciences postdoc
- NIH fellowships
- USDA fellowhips
- Fullbright postdocs
- UKRI postdocs
- Institution and country specific funding streams
- Private foundations and institutes

Generally, deadlines are between October and January for grants starting the following fall

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The project description

- Between 3-5 pages single spaced (2000-3500 words)
  - Background/literature review ∼1-1.5 pages (650-1000 words)
  - 2-3 Aims ∼1.5-2 pages (1000-1300 words)
  - Broader impacts, career development ∼0.5-1 page (300-650 words)
    - Scientific
    - A well thought out outreach section can be a difference maker

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Recommended format for each aim:

- Brief description (∼1 paragraph)
- Approach (∼1 paragraph)
- Preliminary results (∼2-3 paragraphs)
- Potential problems and alternative approaches (∼1 paragraph)
- Expected results and significance (∼1 paragraph)

Example

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Personal statement: $\sim$1 page single spaced

- Why the proposed institution for the project is a good fit
- How the project is different from your dissertation
- Long term goals
- Dissemination of results/grant specific details (eg. if it's a grant for leadership, diversity, etc.)

Example

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Your CV:

- Emphasise research outputs and skills, not teaching experience
- Highlight the skills and research most relevant to the project and specific grant call

Recommended section order:

1. Education
2. Research positions/experience
3. Grants/awards received
4. Publications
   - Tips: include all manuscripts in progress, post preprints
5. Other research outputs (e.g. software)
6. Presentations
   - Tip: select 2-3 most relevant/impressive talks and put them at the top of this section under "highlighted presentations"
7. Teaching experience
8. Other academic activities (e.g. officer of university chapter of AMS, mentoring)

Reference letters:

- Your PhD advisor must absolutely be one of them
- 2 others, preferably those with whom you have done research (not classes), in different departments or institutions is a plus
- Provide your references with details about the specific grant so they can tailor your letter
- Where possible, give referees at least two weeks' notice and clear instructions on where to submit the reference letter
- It can be useful to send references a draft of the letter for them to edit
- Make sure your references have an up to date CV and any other materials they request

Final tips

- Use your PhD advisor and postdoc advisor's networks to find successful grant applications for a particular funding stream
- If you don't do so already, working with data, direct collaboration with empirical scientists, and multi-scale modeling are all great ways to differentiate your application
- Think beyond mathematical novelty/interest to biological implications - *Why should a non-mathematician/theoretician care?*
- The Postdoc advisor Goldilocks zone: between 5-15 years as faculty
- Set up a website, google scholar, ORCID, GitHub, etc.
- Consider options outside of the anglosphere

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