Becoming a Postdoc: How to Choose the Right Postdoctoral Training Environment

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Know your audience...
What is a Postdoc?
A postdoctoral scholar ("postdoc") is an individual holding a doctoral degree who is engaged in a temporary period of mentored research and/or scholarly training for the purpose of acquiring the professional skills needed to pursue a career path of his or her choosing.
To postdoc or not to postdoc: Do I need postdoctoral training?
Training Pipeline

Traditional
- BS/BA
- PhD
- Postdoc

Independent Investigator/scholar
Academia: Assistant Professor
Industry: Research Scientist

Now
- BS/BA
- PhD
- Postdoc

Independent Investigator/scholar
Academia: Assistant Professor
Industry: Research Scientist

Technology transfer, Intellectual property, Patent Law
Policy
Teaching

Entrepreneurship, Consulting
Venture Capital
Writing, Communication, Information media
Training Pipeline

New Goal
BS/BA

Technology transfer, Intellectual property, Patent Law
Science policy
Teaching

PhD

Entrepreneurship, Consulting
Venture Capital
Writing, Communication, Information media

Postdoc

Independent Investigator/Scholar
Academia: Assistant Professor
Industry: Research Scientist

Keith Yamamoto (UCSF): [Time to Rethink Graduate and Postdoc Education](https://ibiology.org)

Bruce Alberts, Marc W. Kirschner, Shirley Tilghman, and Harold Varmus, [PNAS: 111 (16) 5773-5777](https://www.pnas.org/content/111/16/5773)
The good news

PhD career paths hold promise

Most people studying for science doctorates land a job that they enjoy after graduating.
A word of caution

The impact of postdoctoral training on early careers in biomedicine

Shulamit Kahn & Donna K Ginther

While postdocs are necessary for entry into tenure-track jobs, they do not enhance salaries in other job sectors over time.

- Outside of tenured/TT academia, employers did not financially value the training or skills obtained during postdoc training.
- Ex-postdocs pay an earnings penalty for up to 15 years.
- For the nearly 80% of recent ex-postdocs who do not end up with a tenure-track academic job, the time spent in a postdoc position constitutes a sizeable financial sacrifice.
- Based on these findings, the majority of PhDs would be financially better off if they skipped the postdoc entirely.

*A word of caution*
But, do I need postdoctoral training?

- Need to ask yourself first: what do I want to do after a postdoc?
- Talk to people! Find out what you need to get you to the next step from your advisor, your mentors, but most importantly, potential future employers
- Do an IDP and implement it
- Network!
  - At the university
    - Faculty
    - Staff
    - Visitors: Seminar speakers, workshop presenters, etc
  - At conferences
- Join Professional Societies
- Cultivate Professional and Transferable Skills
Types of postdoc positions
Academic Postdocs

- Most popular and traditional
- Opportunities to publish and write grants

**Established faculty members are often, but not always, the best choice**

<table>
<thead>
<tr>
<th>Established advisor</th>
<th>Junior advisor</th>
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<tbody>
<tr>
<td>Pedigree, name recognition</td>
<td>Frequent, regular contact with advisor</td>
</tr>
<tr>
<td>Access to opportunities: talks, collaborations, reagents, resources, alumni</td>
<td>Less technical help</td>
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<tr>
<td>More stable funding</td>
<td>Few authorship complications</td>
</tr>
<tr>
<td>Can be easier to cross-train, and mentor others</td>
<td>Advisor has high motivation, but may not make tenure</td>
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<tr>
<td>More (and more varied) publications</td>
<td>Risk of competing with advisor</td>
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<td></td>
<td>Difficult to carve out your own research niche</td>
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Teaching Postdocs

Some are funded by NIH: IRACDA programs
- 75% Research 25% Mentored Teaching at MSI
- IRACDA postdocs have a higher rate of placement in academia than F32 postdocs
- Higher diversity of postdocs
- Diverse types of academic positions
- Better distribution around the country

IRACDA Career Outcomes

- Total alumni: 450
- Known career outcomes: 391
- Faculty placements: 285 (73%)
- Types of institutions:
  - 35% research-intensive
  - 28% master degree granting
  - 25% primarily undergraduate
  - 12% other academic
  - 73 (26%) minority serving institutions
Seeding Postdoctoral Innovators in Research and Education (SPIRE) is a training program (IRACDA) that balances:

- Research
- Teaching
- Professional development

Data indicate that SPIRE scholars ($n = 77$) transition into faculty positions at three times the national average with a greater proportion of underrepresented racial minorities (URMs)

Significant predictors are

- the intended career track at the start of the postdoctoral training
- the number of publications

Factors necessary for successful transition:

- teaching experience as independent instructors
- experience of balancing teaching with research
- professional development opportunities

http://doi.org/10.1187/cbe.16-01-0032
Industry Postdocs

- Research
- Some companies habitually hire former postdocs as permanent employees following a postdoc in industry

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Drawbacks</th>
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<tbody>
<tr>
<td>Gain experience in a multidisciplinary, team-oriented, deadline-driven environment</td>
<td>Proprietary information, less control over publications</td>
</tr>
<tr>
<td>Gain access to cutting edge equipment and facilities</td>
<td>Less latitude to pursue interesting side projects or research directions</td>
</tr>
<tr>
<td>Tap into industry networks and opportunities</td>
<td>Risk of downsizing, mergers, etc.</td>
</tr>
<tr>
<td>Gain exposure to the business side of a company</td>
<td>No opportunity for writing grants or teaching</td>
</tr>
<tr>
<td>Better salary and benefits</td>
<td></td>
</tr>
</tbody>
</table>

Source: The Scripps Research Institute careers page
Other Types

Government Postdocs
- Working for a government agency
- Publication is typically encouraged
- Salaries are usually higher than those of academic postdocs
- Materials and equipment can be readily available
- May or may not have the ability to teach

Field Specific Postdocs
- Science Policy
- Science Communication
- Technology Transfer
- Academic Administration
Activity #1
LIKES AND DISLIKES
Mentorship first
Science second

What kind of mentor/advisor/boss do you want to be?
Pick someone that can show you how
Study shows that mentorship is key for success in academia

18,856 researchers who have undergone both graduate and postdoctoral training
Across several fields of biomedical science with an emphasis on neuroscience
Postdoctoral mentors were more instrumental to trainees’ success compared to graduate mentors.

Researchers were more likely to succeed if they trained under mentors with disparate expertise and integrated that expertise into their own work. This pattern has held up over at least 40 years
◦ Their work links ideas and/or approaches from two previously disparate subfields
◦ Trainees with disparate mentors may also benefit from more professional opportunities in the larger combined network of their advisors
◦ In addition, researchers bridging disparate scientific communities are in a position to diffuse their innovations across a larger group of peers, possibly garnering more recognition for their work.

PhD graduates seeking postdoctoral positions should search for labs that lack their skill set and labs in which the lab head has mentored many trainees.
How do I recognize a good mentor?

- Read their manuscripts
  - In what journals are they publishing?
  - How is the quality of the scholarship?
  - Are they always senior author or do they publish collaborative papers?

Questions you must ask
- Non-negotiable items
- Authorship policies
- When can you start a project of your own that you will take with you
- Travel policies
- Benefits
How do I recognize a good mentor?

- Listen to the other trainees
  - Ask them direct questions
  - How often do they meet with their advisor/mentor?
  - Is the advisor/mentor available for questions, open to ideas?
  - Do they think it’s a good place for grad students, postdocs?

- Pay attention to red flags
  - Unprofessional Behavior
  - Limited interaction with the trainees
  - No group meeting or individual meetings
  - No experience training postdocs

- Trust your Instincts
The importance of the PDA and PDO

Postdoctoral association (PDA)
Run by the postdocs themselves

- Facilitate open lines of communication with the administration
- Gives postdocs an independent and accessible avenue to provide input to the administration

Postdoctoral office (PDO)
Staffed by permanent employees
2013 25 PDOs
2017 190 PDOs
NPA Six Core Competencies

- Discipline-specific conceptual knowledge
- Research skill development
- Communication skills
- Professionalism
- Leadership and management skills
- Responsible conduct of research
Things that are important and nobody tells you

Location
Work/Life Balance
Institution’s size
Salary and Benefits

TABOO
Activity #2
Instructions

Based on what you learned today write a job ad for your postdoctoral advisor and institution.

◦ 3-5 bullets for advisor
◦ 3-5 bullets for institution
Thank you

QUESTIONS?
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TABLES 72 & 73