Changing the Postdoc Across the US

A forum with Dr. Lorsch & UCSF postdocs

#ChangeThePostdoc on Twitter and Facebook

P(ostdoc)-Value* speakers cordially invited by Dean Elizabeth Watkins
Discussion moderated by Matt Cook
So what exactly is a postdoc? Here’s the NIH/NSF definition (2007)

“An individual who has received a doctoral degree (or equivalent) and is engaged in a temporary and defined period of mentored advanced training to enhance the professional skills and research independence needed to pursue his or her chosen career path.”
1. Increase autonomous funding opportunities for postdocs
2. Training PIs to mentor postdocs
3. Tracking & transparency in UCSF postdocs’ career outcomes
4. Supporting postdocs with families
5. Increase structured career preparation & exploration for postdocs
Changing the Postdoc Experience @ UCSF
March 2, 2015

1. Increase autonomous funding opportunities for postdocs
   Career decision and impact survey of UCSF PBBR / Berkeley Miller Fellow alumni

2. Training PIs to mentor postdocs
   2 day course & lunch series offered @ UCSF but low faculty turnout

3. Tracking & transparency in UCSF postdocs’ career outcomes
   Working with Dean Watkins & the Graduate Division on career outcome platform

4. Supporting postdocs with families
   Pre-tax dependent care payment plan in negotiation with UCOP/UAW postdoc union

5. Increase structured career preparation & exploration for postdocs
   Postdoc Industry Site Visit Program in discussion
   Postdoc Internship Pilot Program in discussion

- Conversations with Bruce Alberts, Marc Kirschner, UCSF administration, Future of Research, and others
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Increase Compensation for Postdocs and Adjust for Cost of Living

Michael Gaviño, Ph.D.
Challenge: Financially surviving as a postdoc is more difficult than ever, especially in San Francisco.

<table>
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<th>Average Length of Postdoc</th>
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<td>Past (2004)</td>
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<tr>
<td>Current (2014)</td>
<td>4+ years</td>
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<td>Trend</td>
<td>Lengthening</td>
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<th>Avg. Life Sciences postdoc works 2650hrs/year, equalling a $15.85 hourly wage</th>
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<td>Current (2014)</td>
<td>$42,000, $38,400</td>
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Trend:
- Inflation adjusted dollars
- Avg. Life Sciences postdoc works 2650hrs/year, equalling a $15.85 hourly wage

rentjungle.com and “Berkeley Program on Housing and Urban Policy”, Oct 17, 2004, urbanpolicy.berkeley.edu
http://www.nytimes.com/2014/04/15/business/more-renters-find-30-affordable.html?_r=0
Challenge: Economic Costs of raising a child

The economic challenge:

- Postdoc salary has to cover rent + child care + expenses
- No childcare financial support for postdocs

Monthly budget for a TWO postdoc family with ONE child

- Rent (median SF 2bd): $4929
- Childcare (5d/wk): $2201
- All other expenses: $10

26% of UCSF postdocs have dependent children

(UCSF Campus Climate Survey, March 2014)
What is the cost of postdoctoral training?

- **Less than 20%** of PhDs go on to tenure track research (2008).

- Life Science Ph.D. holders forgoing a postdoc - **$70K avg. starting salary** (2012).

- “The total earnings of postdoctoral researchers trail those of their Ph.D.-only contemporaries for the rest of their careers” (NAS report 2014, Kahn 2011).
What can NIH do?

- **Increase the F32 recommended minimum stipend** - schools follow this
  
  2014 NAS report: $50,000 should be the minimum level

- **Adjust stipends for cost of living**
  
  *Already done for some postdocs by other U.S. funding agencies:*
  
  NASA, NSF (ISE Fellowship), U.S. Geological Survey

- **Mandate financial assistance with cost of childcare**

  (Brown, CalTech, Columbia, Cornell, Fox Chase CC, Fred Hutchinson CC, Gladstone, Harvard, Johns Hopkins, MIT, NIH, Penn State, Princeton, Rockefeller, UC Merced, U Mass, U Michigan, UNC, USC, Whitehead, Woods Hole - all provide this to their postdocs already)
“The NIH supports higher stipends for NRSA recipients and therefore announces tentative targets of $25,000 for graduate and $45,000 for entry-level postdoctoral stipends. Future budget requests will incorporate 10 to 12 percent stipend increases until these targets are reached. After attainment of these targets, the real value of stipends will be maintained with annual cost-of-living adjustments.”


We’re all on the same side!
Increase Autonomous Funding Opportunities for Postdocs

Jessica Lao, Ph.D.
Challenge: Postdoc intended to increase independence, but not the case for most
Hypothesis: Postdocs with greater independence (through institutional support) have different career outcomes than the average postdoc

Case study: Postdoc Fellows at Bay Area UCs vs. UCSF and National Postdocs

@ UCSF: Program For Breakthrough Biomedical Research (PBBR)
$15K research grant for 1 year (8-14 fellows/year from 1,100 postdocs)

@ UC Berkeley: Miller Fellows Program
$65K salary + benefits, $10K research grant + community support for 3 years (10 new fellows/year from 1,400 postdocs)
Result: Increasing postdoc support leads to higher % getting tenure-track faculty jobs

Program Perks
1 year @ $15K research funds
3 years @ $65K salary + benefits + $10K research funds + community support
Result: Increasing postdoc support leads to higher % getting tenure-track faculty jobs

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Impact: Autonomous Funding Improves Postdoc Morale and Career Outcome

Did PBBR or Miller Improved Your Chance of Top Choice Career?

- quotes from PBBR and Miller Fellows alumni -

“Gave me **freedom** to pursue an independent part of my project.”

“**Essential for my success.**”

“It has established a long-running **collaboration** that is still used today in my independent lab.”

PBBR or Miller Fellows alum who stated that the fellowship was **very important** for their:

- Independence = 91%
- Morale = 96%
- Productivity = 75%

Yes
No
Maybe
Don’t Know
Solution: Increase Autonomous Funding for Postdocs

Expand the Kirschstein National Research Service Awards (F32)

- **Increase the # of NRSA awards**
  - Funding rate in 1998: 39.3%
  - Funding rate in 2014: 28.9%
- **Increase the training-related budget**
  - $10,000 annually
  - For research purpose only
    (not health care, not overhead)
- **Provide community support programs**

Graph adapted from the NRSA report by Mantovani, Look, & Wuerker. 2006.
Provide Structured Career Preparation & Exploration for Postdocs

Matthew Cook, Ph.D.
Challenge: Academic postdoc training not in line with career outcome reality

Illustration by Tom Dunne.
Solution 1: Postdocs need to mentally prepare for >1 career outcome

SO MY JOB AS A POSTDOC... IS TO LOOK FOR ANOTHER JOB?

YES.

I don’t have a “PI or bust” mindset. I’m exploring different paths that fit my skills and interests.
Solution 1: Postdocs need to mentally prepare for >1 career outcome

1. Make an official requirement for postdoc contract signing & renewal
   a. What’s your career Plan A? Plan B? Plan C?
   b. What transitional experience do you need?

2. Motivating INformed Decisions (MIND)
   Provides networking resources for postdocs and graduate students to explore life science careers.

3. Network, network, network!
   UCSF OCPD, Science Policy, WiLS, SACNAS, etc. host great events that you should take advantage of!
Solution 2: Institutions create avenues for postdocs to explore career options

1. Postdoc Industry Exploration Program
   (modeled after UC Berkeley PIEP/Gladstone EXCITE)
   industry site visits

2. Expand to PS-ICE
   (Postdoc & Student Internships for Career Exploration)
   3 month internships for postdocs
What can the NIH do to support postdocs in a diversifying biomedical workforce?

- Expand funding for Broadening Experiences in Scientific Training (BEST) awards
  - 14 institutions funded of 200+ US institutions
- Provide NIH-funded postdocs with protected time to explore career options
  - industry site visits (1 day)
  - company immersion programs (3 day - 3 weeks)
  - company internship program (3 months)
Institutionalizing the Postdoctoral Fellow

Saori Haigo, Ph.D.
An individual who has received a doctoral degree (or equivalent) and is engaged in a temporary and defined period of mentored advanced training to enhance the professional skills and research independence needed to pursue his or her chosen career path.

Is the postdoc meant to train future research faculty and/or other careers?
Postdocs are drivers of biomedical research innovation

**Young scientists go for fresh ideas**

Analysis of millions of papers finds that junior biomedical researchers tend to work on more innovative topics than their senior colleagues do.


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Postdocs are the largest group of 1st authors in *Science* magazine

adapted from Paula Stephan, 2013
Moreover, we find that experienced scientists (i.e., post-docs), particularly those with external funding (i.e., postdocs with fellowships), make greater contributions to the laboratory's publication outcomes, suggesting that both experience and funding are critical determinants of laboratory productivity.
Challenge 1: Postdocs are a growing class of the biomedical workforce


[Graph and data showing the increase in postdoctoral appointments from 1979 to 2012, with a pie chart indicating the disciplines as follows: Life sciences 65%, Physical sciences 13%, Engineering 11%, Maths and computer sciences 3%, Geosciences 3%, Psychology, social sciences and other 5%.]
Challenge 2: Postdoc training focuses on research faculty job, yet at 8-25% success

- NIH mission -

to develop, maintain, and renew scientific human and physical resources that will ensure the Nation’s capability to prevent disease.

is having a large excess of postdocs (supply) relative to research jobs (demand) ideal for the NIH mission?
Challenge 3: Postdocs are an unprotected class in academia
Solution 1: Institutionalize the postdoctoral fellow

Intended Population
- PhDs interested in independent research career (PIs)

Process
- Faculty nominate excellent candidates applying to their lab
- Institutional evaluation allows objective assessment of candidate’s odds towards research career path
- Postdoc fellows supported on NIH T32 training grants until personal funding is secured
- Fellows subject to annual committee reviews

Benefits
- Unique status for postdoc fellows
- Institutional accountability on training outcome

What about PhDs not PI bound?

“I THINK THE GOAL IS TO MAKE THE POSTDOC SOMETHING SPECIAL. IT SHOULD BE HARD TO GET A POSTDOC — HARDER THAN GETTING INTO GRADUATE SCHOOL.”

Solution 2: Expand academic staff scientist positions in the US

Fixing the Postdoc Problem
Too many postdocs are chasing too few academic jobs. Most of Nature’s readers say that creating more staff scientist positions would help.

Poll question: some say that there are too many postdocs and too few permanent academic positions. What do you think is the best solution?

Benefits for faculty:
- Staff scientists provide expertise and stability in research program
- Handles lab managerial responsibilities
- Trains postdoc fellows, students & technicians

Benefits for PhD scientists:
- Career in academic research without additional responsibilities
- Access to retirement & other benefits provided to other university staff
- Status

National Cancer Institute plans to support research specialists (K05)!

Powell, K. April 2015. Nature
http://www.nature.com/news/wanted-staff-scientist-positions-for-postdocs-1.17303
Moving forward: a comprehensive solution to reforming the postdoc in the US

Immediate Solutions
1. NIH can help postdoc trainees explore diverse career options
   a. expand BEST grants
   b. Career Exploration Tools
   c. Industry Site Visits
   d. Internships
2. NIH provides transparency on career outcomes with a life science PhD

Long-term Solutions
1. NIH can institutionalize the postdoctoral fellow
   a. Increase salary ($50K)
   b. Offer research grant supplements ($10K) to F32/private fellowships
   c. Initial support from T32 training grants
2. NIH can expand the academic staff scientist position
   a. Staff scientists paid through R01s or research specialist grants

Goals
1. Move trainees into the professional workforce sooner (training efficiency)
2. Reduce US postdoc population
3. Increase the value of a postdoc
4. Recruit top talent to independent research career
5. Limit the # of PhDs entering a postdoc
Thank You!
Dr. Lorsch & postdocs: what do you think?

- What is the ideal # of postdocs to have in the US?
- What is the ideal ratio of postdocs to tenure-track faculty jobs? To research jobs?
- Should we reduce # of postdocs? (Move postdocs into professional workforce)
- Should we reallocate resources for trainees? (Expand training grants to support trainees; shrink R01s used to support trainees)
- Should we reduce # of entering grad students? (Invest in the well-trained population now until #s re-adjusted to better match supply vs. demand)
- Should we reinstate (and value) the Masters degree in the life sciences?
- Should we reduce the average lab size?
- Is postdoctoral training necessary for most jobs with a life science PhD?

#ChangeThePostdoc on Twitter and Facebook | E-mail us at pvalueUCSF@gmail.com