Gender Issues for Postdocs: Navigating the Leaky Pipeline

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National Postdoctoral Association

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Woods Hole Oceanographic Institute
• **What is the NPA?** A non-profit, member-driven professional organization providing a national voice for postdoctoral scholars.

• **Mission:** To advance the U.S. research enterprise by maximizing the effectiveness of the research community and enhancing the quality of the postdoctoral experience for all participants.

• **Activities:** National Advocacy, Resource Development, Community Building
NPA is a Member Organization

- WHOI is an NPA Sustaining Member
- Free affiliate memberships for WHOI students, postdocs & staff!
- Access to members-only resources and Web content
- Discounts on meetings & other services
  - Our 10th Annual Meeting: March 2012
- Receive e-alerts and news
- Sign up online for immediate access
  http://www.nationalpostdoc.org/affiliatemembership
NPA ADVANCE is a project to adapt and disseminate promising institutional practices that can help women postdocs successfully transition to faculty careers.

We provide:
- Summary of current data on postdocs and gender
- Clearinghouse of promising practices for institutions
- Technical assistance to institutions seeking to implement programs for postdoc women
- Forthcoming resources for institutions and postdocs

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The Leaky Pipeline of Scientist Women

Figure adapted from Mary Ann Mason, based on study from Goulden, Mason & Frasch 2009, “Staying Competitive Patching America’s Leaky Pipeline in the Sciences.”
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Who are the postdocs?

- NSF/NIH Definition: 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.
Who are the postdocs?

- Most in biomedical sciences (67%)
  - 13% Physical Sciences
  - 10% Engineering
  - 2.5% Earth, Atmospheric, Ocean Sciences
- Most aged 30-35 (58%)
- Most married or partnered (69%)
- Most are visa holders (57%)
- 34% are women
- 34% have children

DATA SOURCES: NSF Science and Engineering Indicators 2010; NSF Graduate Students and Postdoctorates in Science and Engineering: Fall 2007; Sigma Xi Postdoc Survey (2005): postdoc.sigmaxi.org
More recent Ph.D.s do at least one postdoc

Ph.D.s in <1972 vs. 2002-05:
- All Science & Engineering: 31% → 46%
- Life Science: 46% → 60%
- Physical Science*: 41% → 61%

% Ph.D.s who do postdocs

*Includes Earth, Atmospheric & Ocean Sciences
The academic job market has changed dramatically over time

- Recent Ph.D.s Employed at Academic Institutions:
  - 1979: 42% Full-Time TT Faculty vs. 25% Postdocs
  - 2006: 29% Full-Time TT Faculty vs. 45% Postdocs

Type of Position Expected vs. Actually Obtained (Former Postdocs)

- Tenure-track academic position: Expected 61%, Actual 37%
- Nontenure-track research scientist: Expected 15%, Actual 16%
- Government: Expected 6%, Actual 12%
- Nonprofit research: Expected 3%, Actual 5%
- Industry: Expected 11%, Actual 16%
- Self-employment: Expected 1%, Actual 4%
- Other: Expected 3%, Actual 10%

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at every academic career milestone the proportion of women in science and engineering declines. … In examining the transition into academic positions…, the declines are greatest in fields requiring a period of postdoctoral study” Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering (2007)
The Leaky Pipeline of Scientist Women

Getting First Tenure-Track Job:

 Married women with children 37% less likely than married men with children

 Married women with children 33% less likely than single women without children

Figure & data adapted from Mary Ann Mason, based on study from Goulden, Mason & Frasch 2009, “Staying Competitive Patching America’s Leaky Pipeline in the Sciences.”
Why do postdoc women leave academia?

*First, a note about causality:*

- Identifying factors, not reasons
- “Leaving” academia can include:
  - Opting against next job
  - Inability to get next job
Why do postdoc women leave academia?

• Leading factors appear to be:
  • Challenges related to family formation
    • Children
    • Dual-career partners
    • “Postdoc clock” vs. “Biological clock”
  • Disenfranchisement
    • Feelings of isolation and alienation
    • Lack of encouragement and confidence
    • Perceived lack of status
#1 Factor: Family Formation

- Leading factor cited for career goal change: Issues related to children\(^1\)
  - For men: career advancement & compensation
  - Postdoc women with **new children** during postdoc **twice** as likely to change goal as:
    - postdoc men with new children, and
    - postdoc women with no kids/no plans for kids

DATA SOURCES:\[1\] Goulden, Mason & Frasch 2009
#1 Factor: Family Formation

- Dual-career concerns
  - Academic women more likely than men to be partnered with another academic\(^1\)
    - More common for scientists, and early-career academics
  - Postdoc women more likely than men to make career concessions for partner\(^2\)

DATA SOURCES:
#1 Factor: Family Formation

• “Postdoc clock” vs. “Biological clock”
  • “Long enough, but short enough”
    • Family needs can cause delays

• Delays can impact:
  • Funding durations
  • Fellowship & grant eligibility
  • CV evaluation
  • Both postdoc and PI/boss
#1 Factor: Family Formation

• “You know having a baby during grad school, maybe not the best idea. Having your baby while your tenured, maybe not the best idea. So does that mean that I have to get pregnant right now because my postdoc is 24 months long and that's it?”

-- NPA ADVANCE Focus Group with current postdoc women
#2: Lack of Confidence & Isolation

- **Lack of Confidence**
  - Less confident they will obtain PI position and tenure, despite feeling their preparation is adequate\(^1\)
  - Lack of encouragement, mentoring and role models\(^2,3\)
    - Especially important for postdoc women of color

- **Feelings of isolation/alienation\(^2\)**

#2: Lack of Confidence & Isolation

- Perceived lack of status
  - Neither student nor faculty
  - More dependent on PI/boss than institution
  - Commonly described as being in a “gray area” or “limbo”

“*I'm actually in that uncomfortable position for me, because even in meetings, I don't know how to introduce myself.*”

“I was nobody's responsibility any longer really. I was sufficiently grown up and all the practical attention is given mainly to the students and to the faculty members.”

-- NPA ADVANCE Focus Groups with former postdoc women
Other Considerations

- Limited family-friendly benefits for trainees
  - Lack of maternity guidelines
    - Leave often negotiated case-by-case
    - Few institutions offer paid leave to trainees
    - Lack of awareness of unpaid leave protections
      - e.g. Title IX covers pregnancy discrimination
  - No “dual-career” assistance
    - Few incentives to “keep” contingent researchers
“Harvard is planning to build kids’ "nightcare" facilities for postdoc couples.”
Other Considerations

- “Work, work, work” ethic often precludes professional development
  - Including mentoring
- Low salaries
  - Secondary issue for postdocs
  - Finances linked to: Childcare, mortgages, immigration, dual-career decision-making
Other Considerations

• Greater job market challenges?
  • On average, postdoc women may have fewer publications\textsuperscript{1} and have attended fewer conferences than postdoc men.\textsuperscript{2}
  • Letters of recommendation may not be as strong as those for men due to unconscious bias.\textsuperscript{3}

International Postdocs

• Geographic (i.e., distance from family)
• Visa concerns
• Cultural differences
• Language barriers

• Additional Needs for Career Guidance
  • May have limited networks in the U.S.
  • Less familiarity with U.S.-based funding procedures; fewer opportunities

www.nationalpostdoc.org/advance
Navigating The Leaky Pipeline

What can we do?

- Funding Agencies
- Institutions
- Professional Societies
- Postdoc Supervisors/PIs
- Postdocs
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What Can Institutions Do?

- **MENTORING**
  - Reward mentoring as “core” activity
  - Offer structured programs to encourage multiple mentors
    - Include mentoring training

- **PROFESSIONAL & CAREER DEVELOPMENT**
  - Negotiating, Networking, Grant Writing, Research & Career Planning, etc.
What Can Institutions Do?

• FAMILY-FRIENDLY POLICIES & BENEFITS
  • Clear guidance on:
    • Maternity/parental leave guidelines
      • Including paid and unpaid options
    • Flexible work arrangements
  • Provide assistance where possible:
    • Childcare services & subsidies
    • Provide postdocs access to dual-career assistance
What Can Institutions Do?

• FAMILY-FRIENDLY POLICIES & BENEFITS
  • Consider “permanently” hiring your own postdocs, which can help “dual-career” geographical constraints.
  • Include postdocs in any institution-wide assessment of climate for women
Navigating The Leaky Pipeline

What can postdocs do to optimize their career choices?
First - the Normal Stuff

• What should you do to get that next job?
  • Do great research
  • Publish great papers
  • Attend great conferences

• What else can you do?
What Else Can You Do?

- Do your homework
  - Choose the best-fitting institution
  - Policies & benefits?
  - Strategies?
- Conduct self-assessment
  - Use NPA Core Competencies: www.nationalpostdoc.org/core-competencies
Competencies Needed for Career Success in the 21st Century

- Scientific Knowledge
- Professionalism
- Responsible Conduct of Research
- Management and Leadership Skills
- Research Skill Development
- Communication Skills
National Postdoctoral Association (NPA) Core Competencies Self-Assessment Checklist

Rate your current level of development in each of the following, with 1 being "Needs attention" and 9 being "extremely competent."
For more information on these competencies, please visit www.nationalpostdoc.org/competencies.

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<th>1</th>
<th>Discipline-Specific Conceptual Knowledge</th>
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<td>Analytical Approach to Defining Scientific Questions</td>
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<td>Design of Scientifically Testable Hypotheses</td>
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<td>Broad-Based Knowledge Acquisition</td>
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<td>Interpretation and Analysis of Data</td>
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<td>Professional/Research Skill Development</td>
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<td>Literature Search Strategies and Effective Interpretation</td>
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<td>Experimental Design</td>
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<td>Data Analysis and Interpretation</td>
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<td>Laboratory Techniques and Safety</td>
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<td>Principles of the Peer Review Process</td>
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<td>3</td>
<td>Communication Skills</td>
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<td>Professionalism</td>
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<td>5</td>
<td>Leadership &amp; Management Skills</td>
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<td>Leadership-Strategic Vision</td>
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<td>Leadership-Motivating and Inspiring Others</td>
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<td>Management-Project Management</td>
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<td>Management-Data and Resource Management</td>
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<td>Management-Research Staff Management</td>
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<td>Responsible Conduct of Research</td>
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<td>Conflicts of Interest</td>
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<td>Data Ownership and Sharing</td>
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<td>Publication Practices and Responsible Authorship</td>
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<td>Identifying and Mitigating Research Misconduct</td>
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<td>Research with Human Subjects (when applicable)</td>
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<td>Research Involving Animals (when applicable)</td>
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What Else Can You Do?

• Make a career plan
  • *Include back-up plans*
  • Think long-term, *esp. if visa involved*
  • IDP can help with this!
    • Individual Development Plan
      • Helps: set milestones, self-assessment, foster mentoring
    • Google *FASEB IDP* for a great template!
What Else Can You Do?

- Find multiple mentors
  - *Doesn’t need to be your PI/boss*
    - Potential conflict of interest?
  - Multiple mentors provide well-rounded advice
- Consider mentoring tools & models:
  - Peer mentoring
  - Group mentoring
  - E-mentoring
- Enhance your network
For More Information

• NPA ADVANCE:  
  www.nationalpostdoc.org/advance
  • Clearinghouse of institutional practices
  • Forthcoming resources:
    • Resource book for institutions on postdoc women
    • *A Postdoc’s Guide to Pregnancy and Maternity Leave*
    • *Family-Friendly Resources for Postdocs*
    • *A Postdoc’s Guide to Paternity Leave*
    • *Job Search Tips for Postdocs in Dual-Career Couples*
Take Aways

• While there are a number of challenges for women in academia, more women than ever before have successful and fulfilling careers there

• Institutions play a key role in the success of postdoc women

• Be deliberate about your career

• Find a mentor or mentoring model that works for you
Thank you!

- Any questions? Feel free to contact me at kflint AT nationalpostdoc.org