The Postdoc: Why and How?

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Points to consider

• What is a Postdoc
• Why do one?
• How?
  – Job search process
  – Negotiation
  – Preparation
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.

www.nationalpostdoc.org
Definition of a postdoc as agreed upon by the National Institutes of Health (NIH) and the National Science Foundation (NSF)
Why?

• Retool
• Expand expertise
• Develop independent line of research (academia)
• Cross-disciplinary focus
• Apprenticeship / “Try out”
• Explore non-traditional careers
Why?: Evaluation Process

Evaluate Skills/interests
- Self
- Independent

“Ideal” job

POSTDOC

Now

Define characteristics
- Life goals
- Passion
Edith Clarke
(10 February 1883 – 29 October 1959)

Electrical Engineer

- M.S. in electrical engineering from MIT

- First female electrical engineer
- First female professor of electrical engineering at the University of Texas at Austin.

- First female engineer to achieve professional standing in Tau Beta Pi.
- In 1948, Clarke was the first female Fellow of the American Institute of Electrical Engineers.
- In 1954, she received the Society of Women Engineers Achievement Award.
How do you find a position?

• Suggestions from grad school mentor or other faculty
• Publications of interest
• Job ads
• Networking at meetings
• Informational interviews
• Social media (LinkedIn, blogs, etc)
• Collaborators
• Colleagues, friends, current/past mentees
“Homework”

- Interview current/past mentees
- Publication search:
  - how many authors?
  - # of pubs
  - How many first-author vs. co-author?
  - Diversity of projects, techniques
- Where are mentees now?
- How many mentees? (track record of mentor)
- Interview/talk to others in field re status of mentor
General Considerations

• Setting of the lab
  – (large vs. small; team vs. working individually; startup vs established; industry vs. academia; association with a university)

• Prestige of laboratory, mentor

• Personal finances

• Long-term prospects in that lab/university/company

• Geographical/family/personal
What can mentor provide?

• Technical expertise
• Resources: time, space, funding
• Role model for career success
  – Children, family, professional partner (work:life balance)
• Sounding board to refine goals/research focus
• Long-term interaction (colleague/collaborator/competitor)
• Contacts/networking
Margaret Hutchinson Rousseau  
(1911 - 11 January 2000)  
Chemical Engineer

- Bachelor of Science degree from Rice Institute, 1932
- Doctor of Science degree in chemical engineering from MIT, 1937
- First woman to earn a doctorate in chemical engineering in the USA.
  *MIT Women's Association The 1920s and 1930s*
- Designed the first commercial penicillin production plant.
  *Chemical Heritage Manufacturing a Cure: Mass Producing Penicillin*
- First female member of the American Institute of Chemical Engineers.
  *AIChE Centennial Celebrations Milestones*
Job interview

• Job talk

• Expectations
  – Research, teaching, techniques learned
  – Potential projects, research to take w/you
  – Non-bench skills (grantsmanship, writing, opportunity to attend career seminars)
  – Attendance at meetings
  – Interactions with collaborators

• Mentor interactions: formal vs. informal, primary or through another

• Salary, hours, etc.
Negotiation
Elizabeth Muriel Gregory “Elsie” MacGill
(27 March 1905 – 4 November 1980)

- Master of Science in Engineering (aeronautics), University of Michigan, 1929
- Doctoral studies at MIT in Cambridge, 1932-1934.
- First woman elected to corporate membership in the Engineering Institute of Canada, 1938
- Chief Aeronautical Engineer at Canadian Car and Foundry (CC&F); the first woman in the world to hold such a position
- Designed and tested a new training aircraft, the Maple Leaf Trainer II

Wakewich 2006, p. 397

Aeronautical engineer
Aircraft designer
Human rights activist
Author
Preparation

• Clear goals, honest communication
• Realistic and clear expectations
• Independent drive / Receptive to advice
• Specific expertise to bring to lab = reciprocity of sorts
• PLAN: short-term, long-term
Preparation: Self Evaluation

• Skills, abilities
• Weaknesses, needs
• Career goals / “Ideal” job
• Career constraints
  ➢ Time, interests
  ➢ Environment
  ➢ Impact on finances, geography
• Personal goals (time for family, partner, leisure)
Preparation: Independent Eval

- Skills, abilities
- Weaknesses, needs

- From whom?
  - Grad mentor, committee member
  - Faculty member
  - Collaborators
Beatrice Hicks
(January 2, 1919 – October 21, 1979)
Chemical Engineer

- First woman engineer to be hired by Western Electric
- Co-founder and first president of the Society of Women Engineers, 1950.
  "Beatrice Alice Hicks". IEEE Global History Network. Institute of Electrical and Electronics Engineers.

- Society of Women Engineers Achievement Award, 1963
- Bachelor's degree in chemical engineering from Newark College of Engineering (now New Jersey Institute of Technology), 1939.
- Invited to join the National Academy of Engineering, 1978; the sixth woman to join the organization

Plan

• IDP (FASEB)
  ➢ Modify to fit
• Global perspective (career, research, personal)
• Develop independently and with mentor
• Revise, review and redirect: semi-annually, more often?, less often?
Plan

• Postdoc vs. mentor responsibilities
• Goals, expectations
• Projects, potential papers
• Specific techniques acquired
• Timeline
• Grants, career development
• Date for review
Margaret Ingels
(October 25, 1892 – December 13, 1971)

Mechanical Engineer

- Bachelors of Science degree in Mechanical Engineering from the University of Kentucky, 1916
- First female engineering graduate from UK
- Second woman engineering graduate in the United States
- First woman to receive a professional degree of Mechanical Engineer

"Margaret Ingels - College of Engineering | Alumni & Friends". Engr.uky.edu. 1952-09-04.
Final thoughts

• Not “one-size-fits-all”
• “All I need is one mentor” – FALSE!
• “I can accept anything because this mentor is famous” – FALSE
• “This guy can open doors for me”
  ≈ Maybe ... FALSE
• Natural transitions:
  
  Mentee ... Colleague ... Collaborator ... Competitor?
The Big Picture

Mentor

Expertise, skills, techniques

Resources

Environment/Setting

YOU!

A Plan
Resources

- National Postdoctoral Association (www.nationalpostdoc.org)
- Science Careers (http://sciencecareers.sciencemag.org/)
- Federation of American Societies for Experimental Biology (FASEB)
  - Individual Development Plan (http://www.faseb.org/portals/0/pdfs/opa/idp.pdf)
  - myIDP (http://myidp.sciencecareers.org/)
- American Society of Civil Engineers (www.asce.org/)
- PhDs.org
  - Postdocs (http://www.phds.org/postdoc)
  - Jobs (http://jobs.phds.org/engineering/postdoc)
- The Chronicle of Higher Education (http://chronicle.com/section/Home/5/)
Electrical Engineering from University of Wisconsin-Madison
- BSc in 1948
- MSc in 1949
- PhD in 1951

"Thelma Estrin, Professor-in-Residence". UCLA Computer Science Department People.

One of the first to apply computer technology to healthcare and medical research
- Pioneering work in the fields of expert systems and biomedical engineering
- Achievement Award from the Society of Women Engineers (1981)
- IEEE Haraden Pratt Award (1991)
- Superior Accomplishment Award from the National Science Foundation.

Thelma Estrin
(February 21, 1924 – )
Electrical Engineer