FINDING YOUR DREAM JOB WITH A PH.D
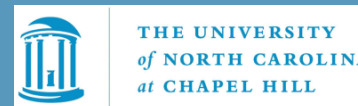

A.J. Brush

Microsoft® Research

Ming C. Lin

THE UNIVERSITY *of* NORTH CAROLINA *at* CHAPEL HILL

Modified Slides from Dilma Da Silva, Susan Rodger, Julia Hirshberg, Padma Raghavan, Margaret Martonosi, Mary Lou Soffa, Tiffani Williams, & Erin Solovey

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CRA-W.org, @CRAWomen

Ming C. Lin

- B.S., M.S. Ph.D. In Electrical Engineering and Computer Science, Univ. of California, Berkeley

- J. R. & L. S. Parker Distinguished Professor

- Research:
  - ✓ *Virtual Reality*
  - ✓ *Robotics*
  - ✓ *Human-Computer Interaction*
  - ✓ *Physically-based Modelling, Simulation & Animation*

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A.J. Brush

Ph.D. in computer science from UW

Microsoft® Research

Human-Computer Interaction (HCI)

I study and build technologies for homes and families.

Working on Cortana for past 2 years

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What does CRA-W do?
Individual & Group Research Mentoring

Undergrads: Undergraduate Research Experiences

Undergrads: Distinguished Lecture series/role models

Grad Cohort: Group mentoring of graduate students

Grad Students: Discipline Specific Research workshops

Academics/PhD Researchers: Group mentoring for early and mid career @ CMW, Grace Hopper, and Tapia

Undergraduates → **Graduate Students** → **Academic careers**

Industry/government labs

2400+ students & PhDs a year

Stay in touch: CRA-W.org, @CRAWomen, Facebook: CRA-W, Linked-in: CRA-Women

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CRA-W Events at Grace Hopper

Visit the CRA-W Booth in the EXPO to learn more (#2050)

Attend another CRA-W Session
Wednesday (3): Thursday (3) or Friday (1)

Visit a CRA-W Table at the
Student Opportunity Lab on Friday
(Undergrads)

Stay in touch: CRA-W.org, @CRAWomen,
Facebook: CRA-W, Linked-in: CRA-Women

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Show of hands

Career stage:

- Graduate Students?
- Undergraduates?
- Industry/Other?

Considering

- Industry
- Academia
  - Research Institution/Post-doc
  - Teaching

Session is aimed Graduate Students, others are welcome

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Teaching?

Research?

Building Products?

Outstanding and rewarding careers for Ph.D.'s in both industry and academia.

Intellectual Freedom?

What do **you** value?

Salary?

Risk?

Community Outreach?

Life style?

Work-life balance?

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OUTLINE

- **Industry Positions – A.J.**
- Post Docs – A.J.
- Research/Teaching Universities – Ming
- Wrap-up/Questions from audience

What is a Dream Job?

Figure out:

- Where to live?
- What kind of work?
- What direction and how much to grow?

Get an internship for 2-3 summers

- Sometimes 'hired' before graduation

Industry jobs come in many flavors

- Research
- Engineering
- Development
- Design
- Start-up

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Applying for Jobs

Your network will matter.

Be known and learning

- Volunteer at local events and conferences
- Go to talks by people from industry (and academia) visiting your school. Meet with them.
- Give polished presentations at conferences
- Target networking opportunities at conferences
- Stay in touch with school alumni

Attend bigger events: GHC, career fairs, CRA-W

Apply to positions on employers website

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Phone Interview

It's a pre-screen

Do your homework

- Look-up the person who contacted you for screen

- Lookup the group/team

- Read the open position (open req) closely for details that you might have missed

Mock/practice phone interviews

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On-Site Interview

Logistics

- Give yourself plenty of time to get there, fly the night/day before

- Show up on time (or early)

- Dress professionally

- Be confident but not arrogant

Make sure you understand format

- Talk? Whiteboard interviews? Meetings?

- Ask for the list of people ahead of time, research them.

- Ask for breaks if you need them, take a breath in restroom

- Lunch/dinner are interviews, stay professional

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Interview (2)

If there is a talk (same as academic)

- Rehearse, rehearse, rehearse
- Have polished slides: call out important points, use visual material, dig deep technically
- Be polite when answering questions but don't let them de-rail you

- Don't be offended if they didn't have time to read cv/papers closely or attend talk.

- Ask questions: your chance to figure out if you want to work there.

- Is this a place you can see yourself?

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Offers

Congratulations

Negotiate whatever you care about.

- Start date
- Salary (even if outside your comfort zone)
- Signing bonus
- Moving package
- Campus and flexibility
- Presenting work at conferences

If anyone asks you about how much you are looking to be paid
"Happy to consider your best offer"

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Things to consider

There is a ton of variability in industry jobs

Sometimes people don't understand the value of the Ph.D.

If you are trying to get an engineering job make sure your coding skills are visible in CV and up-to-date

You have learned to deal with ambiguity and find solutions. This is valuable.

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Post-Docs

Transitional period into another career path
- Teaching post-docs & research post-docs

Funding
- Fellowship you apply for, OR university/department, OR professor's research grants.

Best-case Scenario
- 2 years, good mentor, high-ranked school that will help you transition to long-term job of your dreams.

How to get a post-doc

Can be posted in same venues as other academic jobs

Not always advertised

- Use Your Network!
- Give talks as you get closer to graduating

Remain in PhD lab

- Usually for timing reasons only

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Research, Teaching and Service

Research

– engage in scientific discovery, involve graduate and undergraduate students, fund research

Teaching

– active teaching, mentoring, advising

Administration/Service

– Chair, serve-on committees, etc.
  - Departmental
  - School /College
  - University
  - Professional

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Types of Colleges/Universities

Type	Degree Program	Emphasize	Important
Research Universities	Ph.D.	Research	Teaching & Service
Colleges /universities	M.S.	Teaching	Research & Service
Selective Liberal Arts Colleges	B.S., B.A.	Teaching & Scholarship	Service & Research
Undergrad oriented	B.S., B.A.	Teaching & Service	Research

Different Academic Positions within an Institution and Expectations

Professorial Ranks

- Assistant
- Associate
- Full
- Distinguished/Chaired/Endowed Professor

Instructor – teaching & service

Lecturer - teaching

Postdoctoral positions - research

Research Expectations at Research University

➢ **Publications** – journal, conferences, workshops (focus on top peer-reviewed venues)

➢ **Funding to support research** group and summer salary (peer-reviewed, basic vs applied, grant vs industry)

➢ **Graduate student training and advising** (and their professional success)

➢ **Reputation and Impact**

    ➢ Higher in rank: more visibility and international reputation – invited talks, conference org., journal editor/ed. boards, professional org roles

➢ Increasingly Important:

    ➢ MS/Undergraduate research mentoring

    ➢ Patents, software artifacts,…

Teaching at Research University

➢ Teaching load: typically 1:1 to 1:2

➢ Mix of undergrad and grad courses

➢ Course material: intro undergrad up through core grad course, seminar in research area

➢ Teaching assistants for grading, office hours, and overall help

❖ **Promotion and tenure: Good research essential, good teaching useful**

❖ **But: you'll be teaching for years – worth it to yourself to do a good job**

Service Expectations at Research University

➢ Department committees
➢ University committees
➢ External Professional Service
  ➢ Program committees
  ➢ Funding panels
  ➢ Professional society involvement
  ➢ Journal editorship; program chair, conference organization

❖ Higher in rank, more external service
❖ Pre-tenure: Favor research-oriented service
❖ Be selective: choose roles that are important where you can engage

Life as a professor at a research university

- Pros:
  - Freedom for research (but funding needed)
  - Work on the frontier of CS and engineering
  - Get to develop your ideas and vision
  - Get to teach/inspire/lead/mentor students
- Cons:
  - Must find funding for students/projects
  - Must be smart about balance:
  - Balance research/teaching/service & work/life

Advice: What you can do right now to start preparing

Research

- <u>Read broadly</u>: How does your research fit into a bigger vision? Trends?
- <u>Always be on the lookout</u>: Keep a list of potential future research ideas.
- <u>Publish!</u>
- <u>Cultivate your professional network</u>: Seminars, conferences, mentors, … meet people!
- <u>Communication skills matter</u>: Writing, speaking!

Teaching

- View TA as prep. Ask for chance to lecture.

General

- Make your own best opportunities: Ideas? Opportunities? Awards? Fellowships? ASK!!

On Job Stress

- Common Quote: "I chose career path X because I heard career path Y would be too stressful."

- To consider: *Any* job is stressful if the job's expectations do not align with the resources available, OR if its priorities do not match your strengths/loves.

Teaching Position
What types are out there?

- Teaching at small college
  - Professor (assistant, associate, full) with tenure
  - Lecturer
- Teaching track at Research University
  - Many different types/titles
  - Teaching Professor
    - Professor of the Practice, Clinical Professor, Lecturers with SOE (CA)
    - Few with tenure, most on contracts
  - Lecturer, Senior Lecturer

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Teaching Position Expectations

➢ Teach 2-4 classes per semester

➢ Have busy office hours

➢ Teach out of your specific area (e.g. intro programming sequence, non-majors)

➢ Involve undergrads in research projects

➢ Attend meetings (dept., campus)

➢ Serve on campus committees (technology, etc.)

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Teaching Position Research

➢ Fewer institutional resources

➢ No graduate RAs

➢ Get undergraduates involved

  ➢ CRA-W *Distributed Research Experience for Undergraduates* (DREU)

  ➢ CRA-W *Collaborative Research Experience for Undergraduates* (CREU)

  ➢ REU through NSF

  ➢ Local programs at undergraduate institution

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Teaching Position
Getting Hired/Cover Letter Essentials

➢ Your focus is on teaching.
➢ You can document relevant experience related to teaching.
   ➢ Teaching Assistant
   ➢ Center for Teaching programs
   ➢ Instructor of Record for a course
➢ You can teach intro CS courses and courses for non-majors.
➢ Your teaching focus (e.g., systems) matches what is advertised.

Teaching Position: Issues

➢ Perception that less prestigious than research focused/university

➢ Intense focus on students

➢ Staying engaged in research

➢ Infrastructure (e.g., computer services, grant administration)

➢ Small dept. (~5 profs) or small group in a large research department

➢ Salary: possibly lower?

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Teaching Position: **Rewards**

Close relationship with undergrads

Be a member of the university culture

Chance for leadership and influence

Matches beliefs/lifestyle

- Teaching is your gift, then share it with others

- Possibly less travel

- Flexible schedule for families

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Getting Ready – What's Valued?

- **Research Universities**
  - Papers at top conferences
  - Great letters
  - Ability to articulate
- **Teaching Colleges**
  - Papers at conferences
  - Teaching experience
  - Awareness in education innovaton
- **Assess post-doc track**?

Job Search in ~2 years?
What to do now?

- Work on interesting projects, publish great work !!!

- Go to Conferences, meet researchers in your area

- Figure out if you want *research* or *teaching* focused
  - If you want a teaching focused position – attend a SIGCSE conference, think about teaching

- Attend CRA or CRA-W Career Mentoring Workshops
  - At SIGCSE or elsewhere
  - CRA-W Grad Cohort Workshop

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Job Search NOW –
Closer to getting out

- Prepare CV and research/teaching statements

- Get these materials reviewed

- Talk to advisor/other faculty about where to apply

- Apply to several places

- Prepare/Practice interview talk

- Be assertive

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Application Process

Early Fall

- Material: CV, teaching/research statements
- Polish website
- Recruit letter writers
- Get guidance and reviewers of your package

September-December

- Apply (CRA, IEEE, ACM)
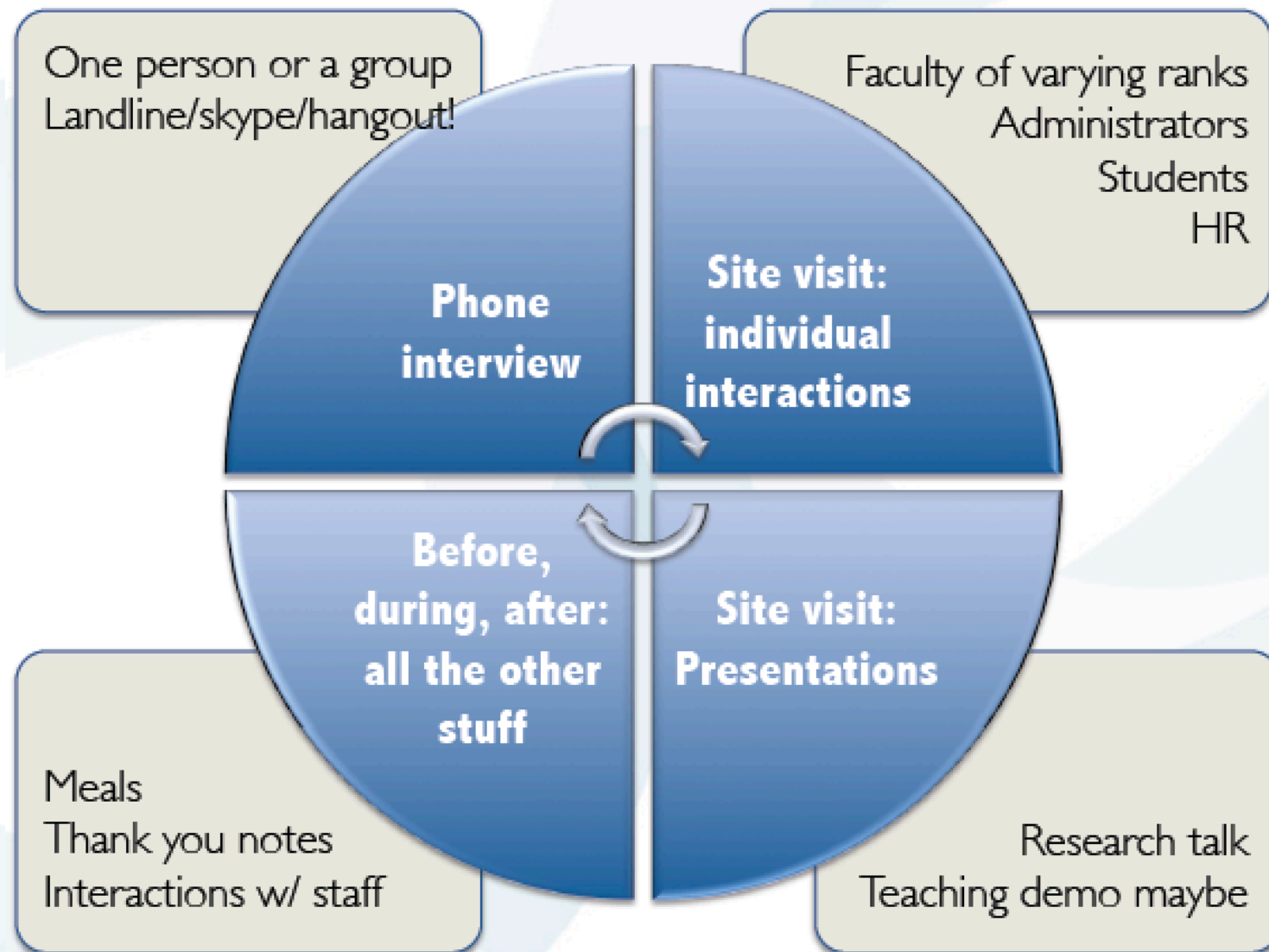- Track app status

January-May

- Interviews
- Negotiate offers

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The Interview Process

One person or a group
Landline/skype/hangout!

Faculty of varying ranks
Administrators
Students
HR

Phone interview

Site visit: individual interactions

Before, during, after: all the other stuff

Site visit: Presentations

Meals
Thank you notes
Interactions w/ staff

Research talk
Teaching demo maybe

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Making an Impression

The Talk – convince your audience that you're smart and a good teacher & researcher

- Assume a smart, general audience, but don't dumb down the talk
- Clearly state problem & contributions
- Show future project ideas when you start

One-on-One: see guidance as industry interview

You're interviewing them too!

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Questions about Research

Tenure
- What are the expectation for tenure?
- How many were denied/granted tenure recently

Research Culture
- What do it take to be successful there
- Who would you work with in the Dept.
- Would you work with other university faculty

Grants
- What are the expectations?
- What types of funding does faculty seek?
- What assistance is available for grant submission?
- How are the RA supported?   How much they cost?
- What's the overhead?   Return to faculty?

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Questions about Teaching

How Much?

- What's the pre/post tenure teaching load?
- What courses would I teach
- Do faculty ever buyout? What's the buyout policy?

Freedom and Flexibility

- How much control over course contents
- Can I create new courses

Support and Evaluation

- In what cases would I have TA support
- What resources are available to improve teaching
- How is teaching evaluated

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Offer Negotiation

Starting date and time till tenure

- A January starting date may buy you tine

- Pre-tenure sabbatical? Postdoc?

Teaching

- Course releases?

- Which courses? What support?

Resources

- Salary (and summer support)

- Startup: how much? Spending rules & timeline

- Space (office/labs for you & Ras), consulting rules, etc.

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Resources

CRA-W Career Mentoring Workshops:

- http://www.cra-w.org/ArticleDetails/tabid/77/ArticleID/50/Career-Mentoring-Workshop-CMW.aspx

On Academic Life:

- http://blogs.scientificamerican.com/guest-blog/2013/07/21/the-awesomest-7-year-postdoc-or-how-i-learned-to-stop-worrying-and-love-the-tenure-track-faculty-life/
- http://dynamicecology.wordpress.com/2014/02/04/you-do-not-need-to-work-80-hours-a-week-to-succeed-in-academia/

On Post-Docs:

- http://cra.org/resources/bp-view/best_practices_memo_computer_science_postdocs_best_practices/

Tips on doing an academic job search:

- http://matt.might.net/articles/advice-for-academic-job-hunt/
- http://people.mills.edu/spertus/job-search/job.html
- https://homes.cs.washington.edu/~mernst/advice/academic-job.html

Job Ads:

- http://cra.org/ads/

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THANKS

Please rate and review the session in the GHC 17 mobile app

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CUTS

Example of Different Expectations Faculty

Research (R1) Institution:
- – 60% - 80% Research
- – 10% - 35% Teaching
- – 5% - 10% Service (much greater % for admin positions)

M.S./ B.S. College or Teaching focused at R1:
- – 50 - 80% Teaching
- – 10 - 30% Professional Development
- – 10 - 20% Service (much greater % for admin positions)

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Moving between schools and positions

University to university

- Not particularly difficult
- If have tenure, usually get tenure
  - But not in all cases: schools have different rules and moving to higher ranked school

University to teaching-oriented college

- Must show evidence of being good teacher

Teaching-oriented College to university

- Must show can do research - publications

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Advice: pre-tenure years

➢ Find mentors and prof. cohorts

➢ Collaborate if you can.

➢ Learn to say no politely and suggest alternatives

➢ Prioritize!! Especially in research.

➢ Write well.

➢ Choose your teaching and service assignments well.

➢ Enjoy your work and colleagues!!

Career Path Option
What is a post-doc?

Training opportunity whereby a person can deepen his or her expertise and/or research skills for a few years, en route to a permanent position

Typically funded either by a fellowship awarded directly to the Post-Doc or by the institution at which they will spend a limited time

http://cra.org/postdocs/workingpaper.php

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Some Post-doc Motivations

Timing: Graduate "off season", Two-body issues, Difficult job year

Improve job opportunities: Strengthen research, Work in a highly regarded institution

Learn new area, field

Work with a specific expert: additional mentoring

Experience different type of university

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What is a GOOD postdoc?

Used to expand experience

– entering a new research discipline

– gaining a distinctly different perspective on the scholar's current research base

Specific & relevant intellectual growth

– working with a particular mentor or on a particular project

Two years in duration

GOOD postdoc position offers:

Mentoring & guidance that directly supports professional development

- – not simply serve as a contract researcher

Significant opportunities to explore independent research topics

- – in addition to supporting existing research efforts of the mentor's group
- – manage operational aspects of a project under the supervision of the mentor

Enhance the breadth of their research

- – exploring new fields or new perspectives
- – not simply refine material from PhD

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http://cra.org/postdocs/

Expectations

Variable, some combination of:

- Teaching, Research, Supervising, Mentoring, Organizing

The ratio will depend on your own long-term goals, and the position

Should get a clear understanding BEFORE accepting job

Challenges

Low pay (compared to faculty, industry)

Role in the university

- Not a student, but not faculty

- Depending on school, can feel isolated

May not have independence

- working on PI's grant

If you have family, can be difficult to move for a temp position

Research Scientist

No tenure
- "Soft money" – grant writing!

Less requirements (service, teaching)
- Can focus on research

Dependent on PI
- Hired to get things done for grant
- Not independent
- Need a good advocate, well-funded lab

Possibly easier work/life balance

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