



Provost's Lecture featuring Dr. Mae C. Jemison - Engineer, Physician, former NASA Astronaut, and Principal, 100 Year Starship

<https://leadership.oregonstate.edu/provost/provosts-lecture-series>

Exploring the Frontiers of Science and Human Potential

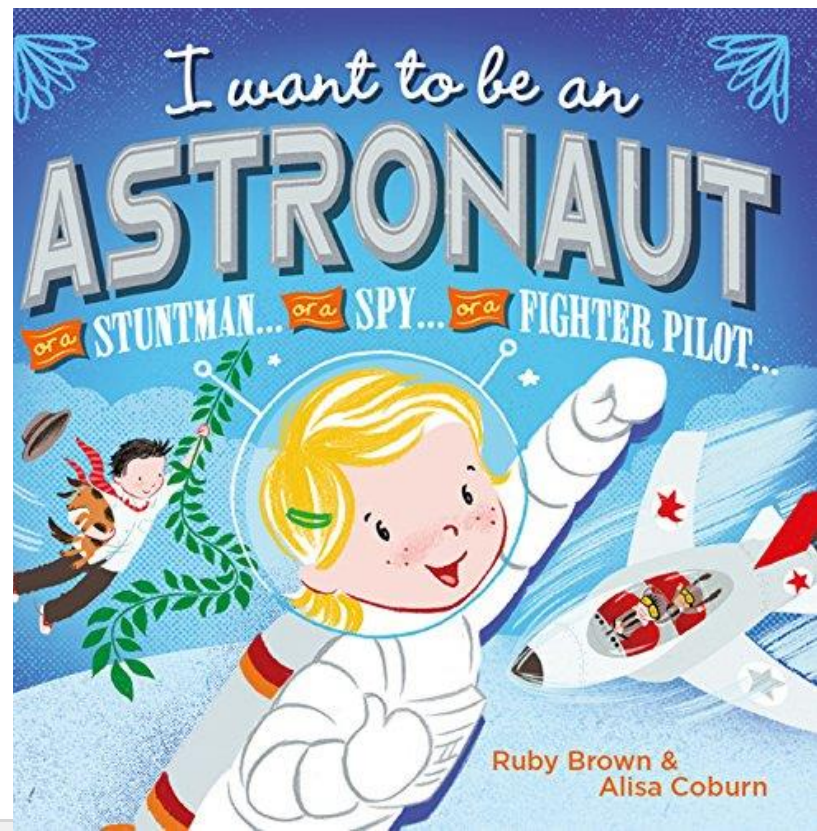
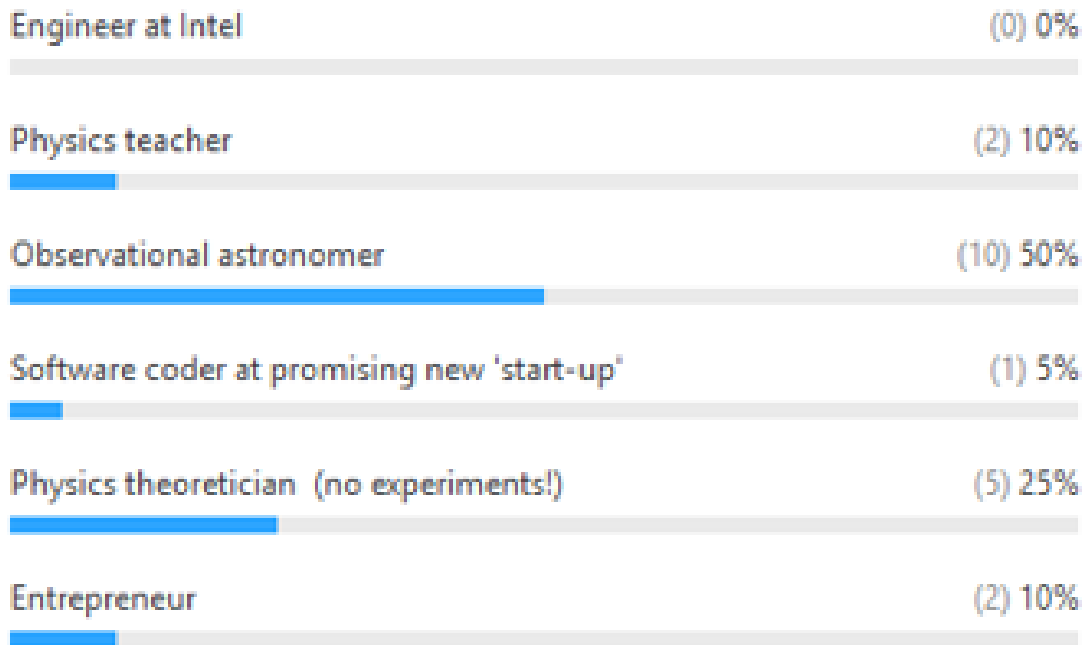
February 4, 2021 from 6:30 to 7:30 p.m. via zoom. Free and open to the public.

[Register Here](#)

Oregon State University invites you to join a virtual event featuring Dr. Mae C. Jemison - first woman of color in space, national science literacy ambassador, advocate for radical leaps in knowledge, technology, design and thinking on Earth and beyond. Jemison served six years as a NASA astronaut.

Dr. Mae C. Jemison leads 100 Year Starship (100YSS), a bold, far reaching nonprofit initiative to assure the capabilities exist for human travel beyond our solar system to another star within the next 100 years. Jemison is building a multi-faceted global community to foster the cultural, scientific, social and technical commitment, support and financial framework to accomplish the 100YSS vision-*An Inclusive, Audacious Journey (that) Transforms Life Here on Earth and Beyond*. The 100YSS Way Research Institute seeks to generate the radical leaps that accelerate knowledge, technology, design, and thinking not just for space travel, but to enhance life on Earth. Jemison led the team that won the competitive, single awardee seed funding grant in February 2012 from premiere research agency DARPA.

7. Imagine you could have any of the below jobs after graduation, which would you choose?

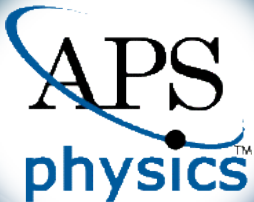


Physics: Preparing now for a prosperous future

PH198, Oregon State University

Agenda:

- 1) How to make yourself competitive.
 - Some career-focused statistics
 - External research and scholarships
- 2) LinkedIn Alumni Activity
- 3) Graham Lab research, and my pathway .



Oregon State
University

WHAT IS A REU?

- Research Experiences for Undergrads (REU)
- Funded by National Science Foundation (NSF)
- Only available to citizens/nationals of USA
- Cutting edge summer research at universities and institutes— often ~ 10 students per program
- Many, many fields of research available
- Housing and modest stipend provided
- Acceptance can be competitive

WHAT KINDS OF REU'S ARE THERE?

- Dozens of fields, 100's of individual programs and universities, every state
- See NSF site:
http://www.nsf.gov/crssprgm/reu/reu_search.cfm
- Lots and lots of areas in pure physics, but don't constrain yourself!
- Physics qualifies you to do more than you might imagine
- Go for what you find interesting in a place you would like to be for the summer

THE “TYPICAL” PHYSICS MAJOR

Among those who earn physics bachelor's degrees:

- $\sim 3/4$ have research experience!!!
- $\sim 1/3$ graduate with a double major, many in math.
- $1/10$ started at a two-year colleges.

GETTING RESEARCH EXPERIENCE

- 1) **Volunteer!** Typically near beginning of 3rd year.
- 2) SURE SCIENCE (about ~5-6 students per year), \$5K/summer
- 3) NSF REUs
- 4) URSA-ENGAGE (about ~6-7 students per year), \$750
- 5) Honors College, STEM Leaders and other smaller programs
- 6) Everything else!

OTHER SMALLER PROGRAMS

- HHMI Janelia Farms is a very elite summer program (they like physicists <https://www.janelia.org/you-janelia/students-postdocs/undergraduate-scholars-program>)
- DAAD: Research exchange in Germany <https://www.daad.org/en/find-funding/undergraduate-opportunities/undergraduate-scholarship/>
- Don't forget about DOE's Undergraduate program at National Labs <http://science.energy.gov/wdts/suli/>
- Research in Israel, Weizmann Institute Summer School <https://www.weizmann.ac.il/feinberg/admissions/kupcinet-getz-international-summer-school/about-program-0>
- Astrophysics: spend the summer at the Vatican Observatory with the Pope <http://www.vaticanobservatory.va/content/specolavaticana/en/summer-schools--voss-/voss2018.html>

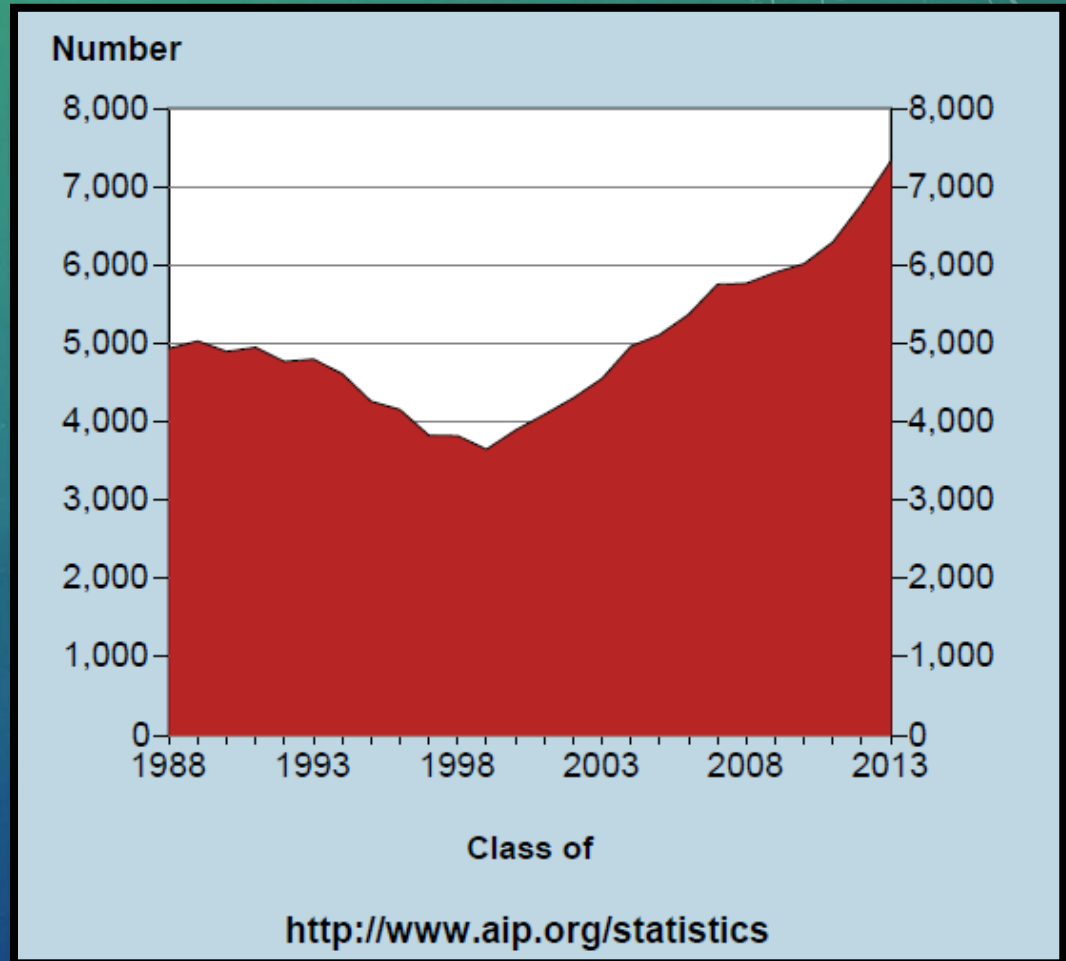


PHYSIC UNDERGRAD HAZEL BETZ'S RESEARCH ADVICE



MAKING YOURSELF COMPETITIVE. DATA. HOW MANY?

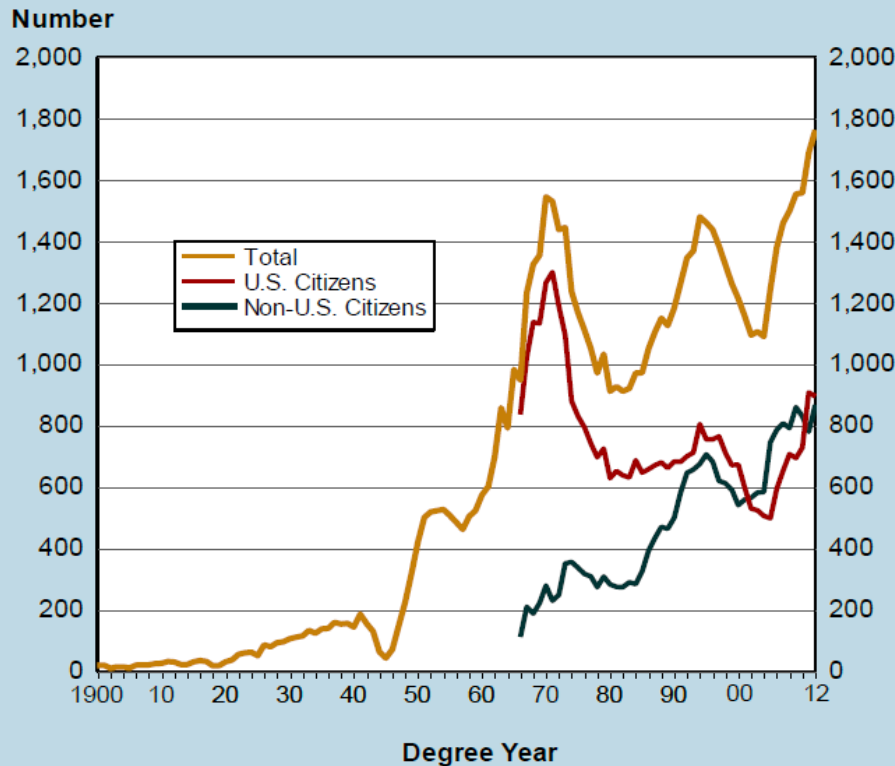
Physics bachelor's degree production is on the rise.



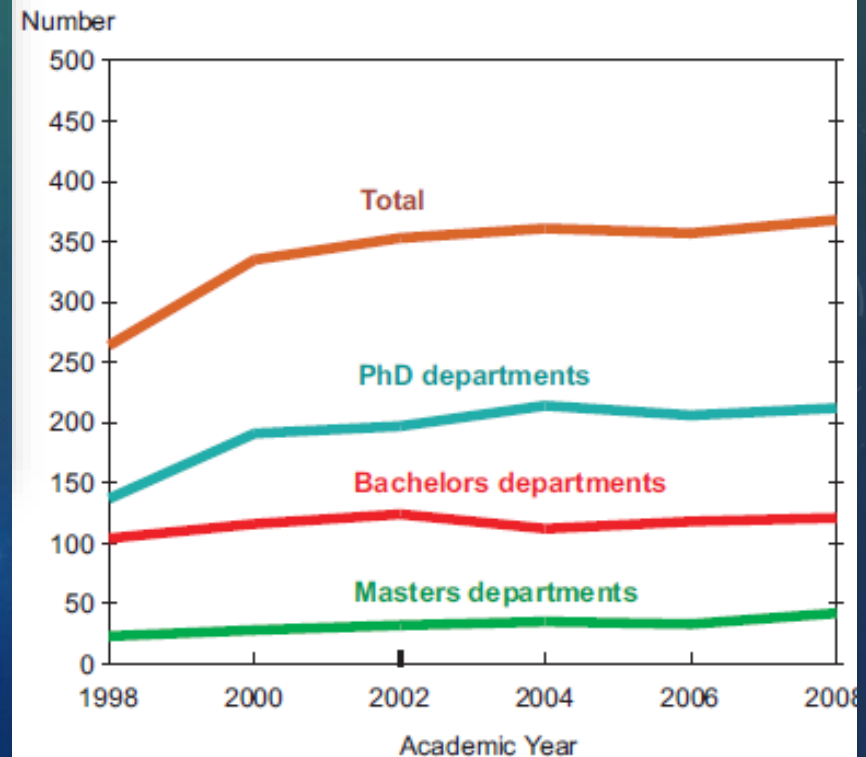
WHAT ABOUT A PHD?

So up to 1 in 10 PhD graduates will become a physics professor at research university.

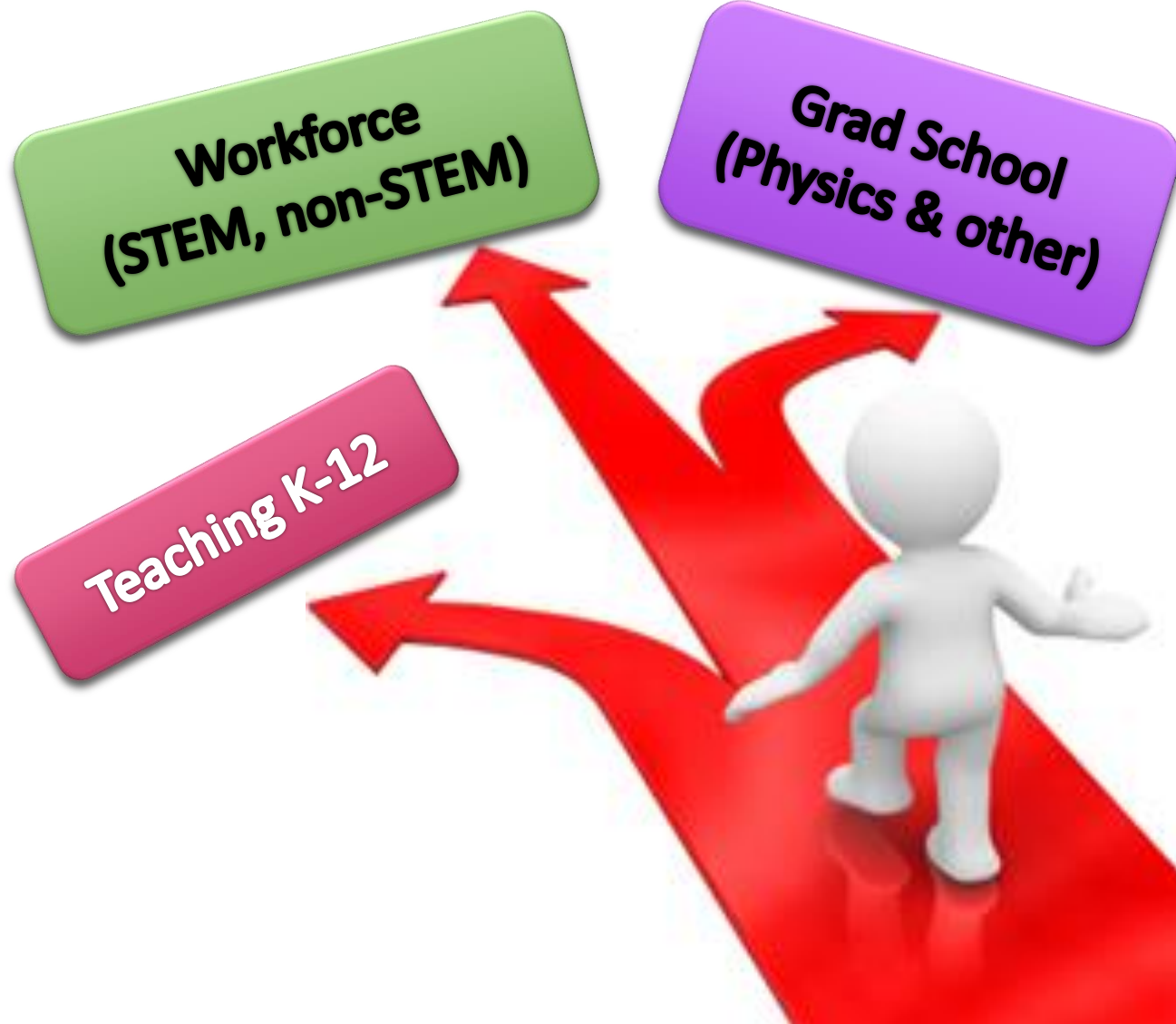
Physics PhDs Conferred in the U.S., 1900 through 2012.



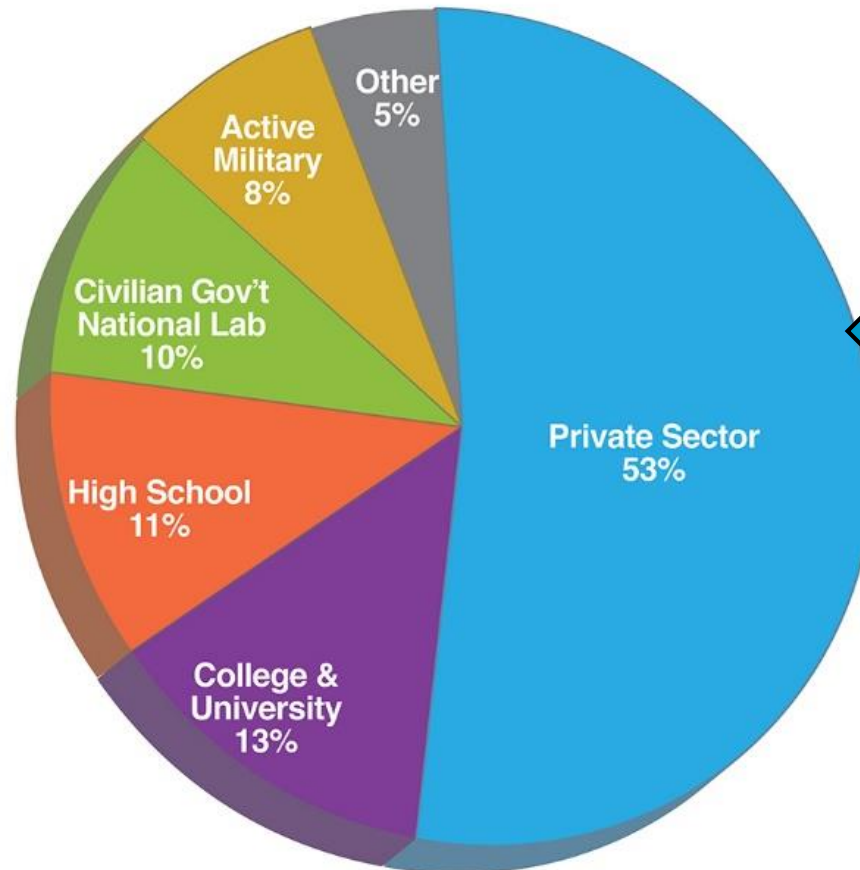
Number of Physics Faculty Hired
Tenured and Tenure-Track Positions Only



Students should be equipped for the path they choose when they complete their bachelor's degree. ***Any path!***



Initial Employment Sectors of Physics Bachelor's Classes of 2009 & 2010 Combined

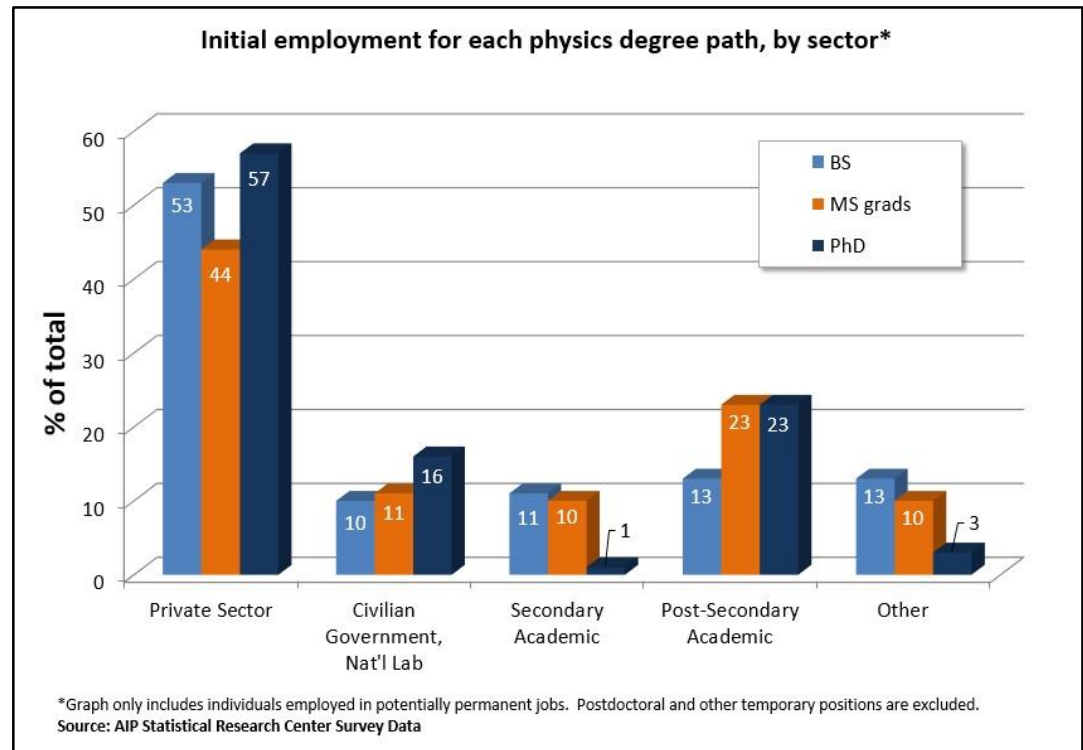


Some Statistics: Where Physicists Work

- Private Sector

- *BS: comp. science and engineering, teamwork*
- *MS: management, some research*
- *PhDs: scientific research, product development*

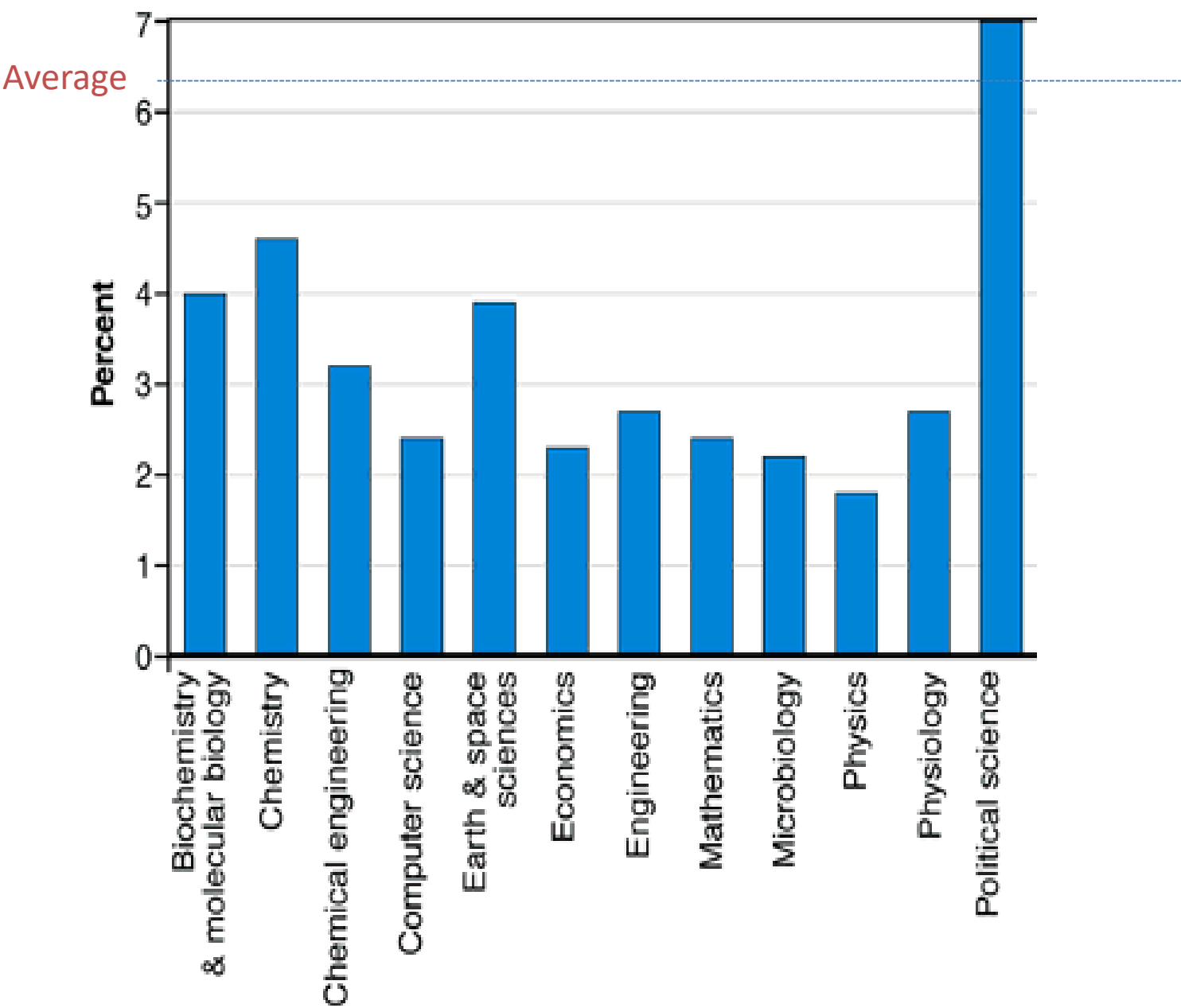
- Academic Sector



- National Lab/Government

- *BS: technician, assisting users*
- *MS: management of instrument teams, patent work, engineering*
- *PhDs: senior research staff, oversee large operations*

Unemployment Rates



Activity: Using LinkedIn®

Most (80%) of people get their jobs through 2nd degree connections. <https://www.linkedin.com/in/physics-oregon-state-b195b869/>

Homework:

- Complete your LinkedIn profile after class
 - *Picture!!!*
 - *Educational Information (e.g. high school, college)*
 - *Transferrable Skills (volunteering experience, research, hobbies, etc.)*
- Connect with me and 10 individuals in PH 198
 - *Other Students*
 - *Organizers*
 - *Speakers*

OREGON STATE PHYSICS SCANVENER HUNT

Search the 500+ connections at:

<https://www.linkedin.com/in/physics-oregon-state-b195b869/>



Emily M. Smith • 2nd

Teaching Assistant Professor at Colorado School of Mines
Golden, CO

James Haggerty, Willis Rogers, and 22 other shared connections



Scott Clark • 2nd

Co-founder and CEO at SigOpt
San Francisco, CA

Jessica McCartney, Heidi Schellman, and 4 other shared connections



Joshua Kincaid • 2nd

I know mathematics, physics, and how to effectively share my knowledge with others.
Corvallis, OR

David Roundy, Joshua Kevek, and 11 other shared connections



Rodney Snyder • 2nd

Graduate Research Assistant at University of Maryland
Silver Spring, MD

bethany matthews, James Haggerty, and 6 other shared connections



Isabel J. Rodriguez • 2nd

Master of Science - MS at Oregon State University
Seattle, WA

Dublin Nichols, Physics Oregon State, and 4 other shared connections



Tanner Simpson • 2nd

Frank J. Horton Research Fellow - Laboratory for Laser Energetics
Rochester, New York Metropolitan Area

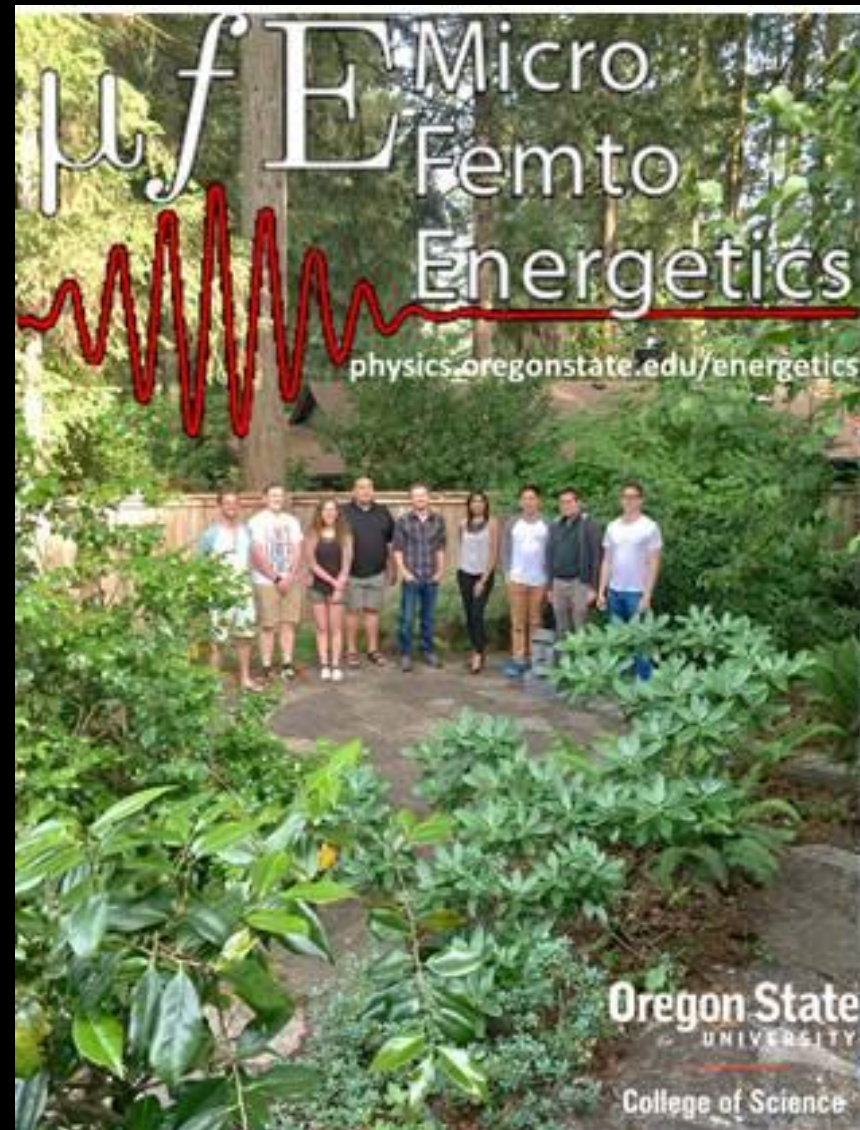
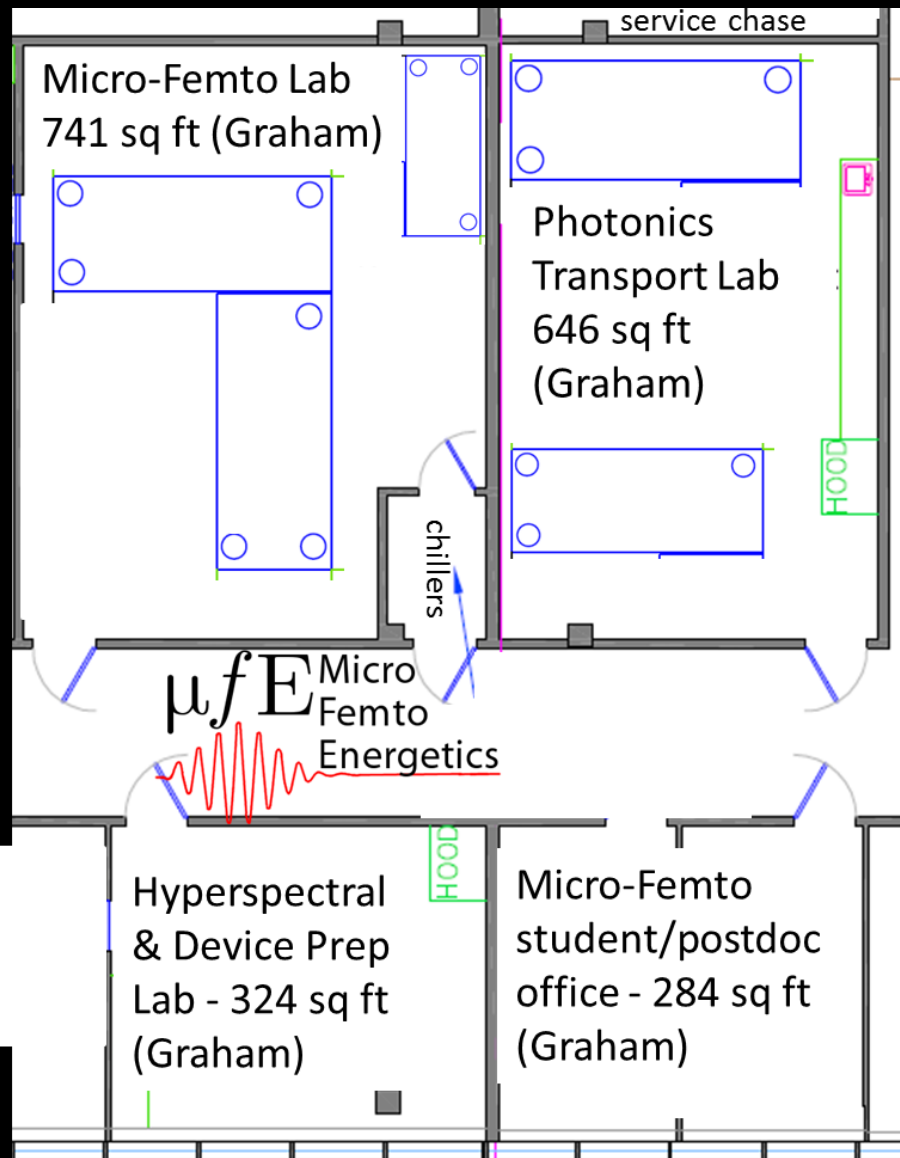
Cade Trotter, Nikita Grigorian, and 12 other shared connections

Assign every group member an **ONE** name to research:

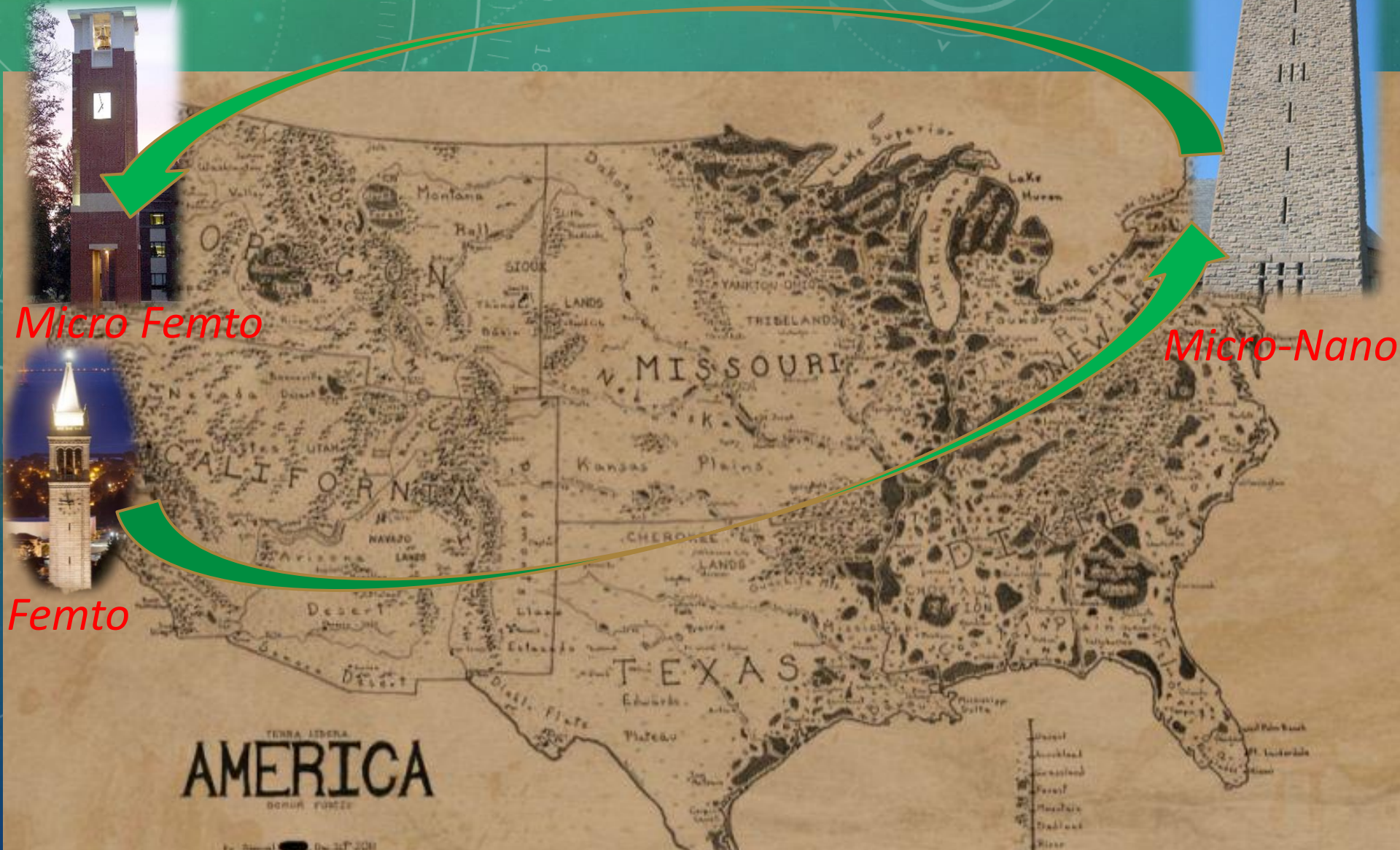
Google search and report back to your team on:

- 1) How this person is related to OSU?
- 2) What are they doing now?
- 3) List 2-3 unique experiences that made them competitive for their current job.

...well that was interesting ...why are you here again?



*there and back again, a wayward
postdoc's tale – Fall 2010 to Spring 2013*

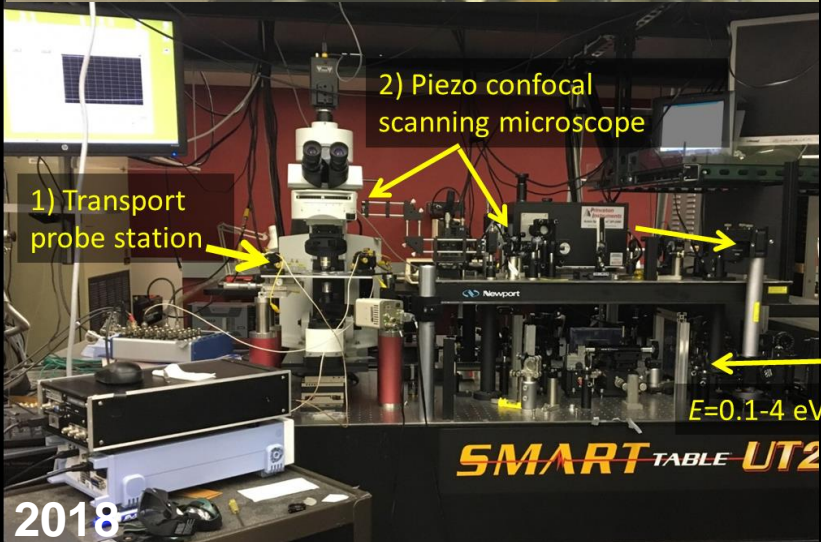


Micro Femto

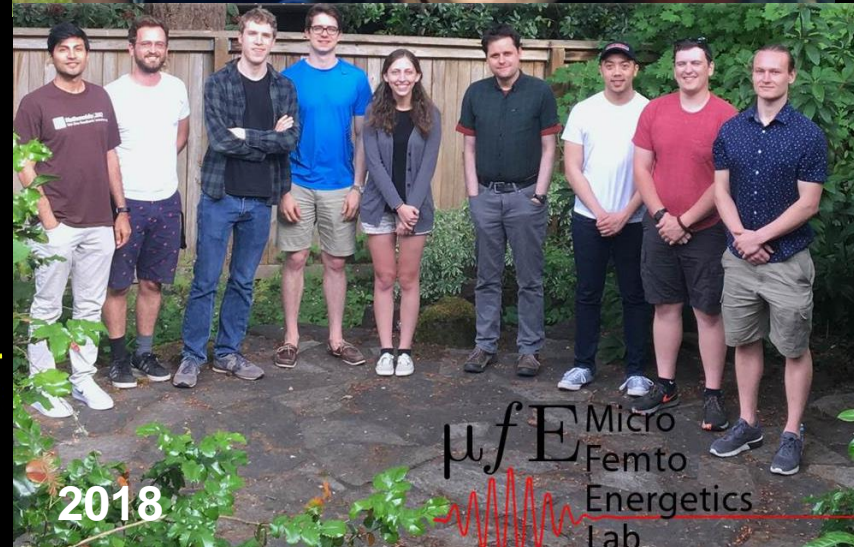
Micro-Nano

Femto

our lab...



our scientists...



My Career Path

My path:

→ 5 yrs PhD

→ 2.5 years as postdoc

Faculty search results: 10 interviews, 2 offers,
~45 applications over 1 year.

My PhD students path:

→ ~5-6 yrs PhD

→ corporate internships

Results: 2 PhD graduates, both R&D Scientist at
Apple and Intel

GRAD STUDENT STEREOTYPES



“ I am a grad student, I’m 30 and made \$600 last year.” (*Bart*)

Myth: \$22K to \$35K standard stipend

Your advisors perspective:

1 yr. GRA is \$65K at Oregon State, \$95K at MIT

Constructive Analysis

“Graduate school is a poor life choice” (*Marge Simpson*)

You decide!



Best case scenarios:

- *You become a famous scientist*
- You get a (good) job lecturing; job security, money and free time
- You work for government/National Labs/major corporation

LOOKING FOR WORK AFTER GRAD SCHOOL



college
OWLZ

Partly fact: *every P.I. should have only 1 student become a prof.*

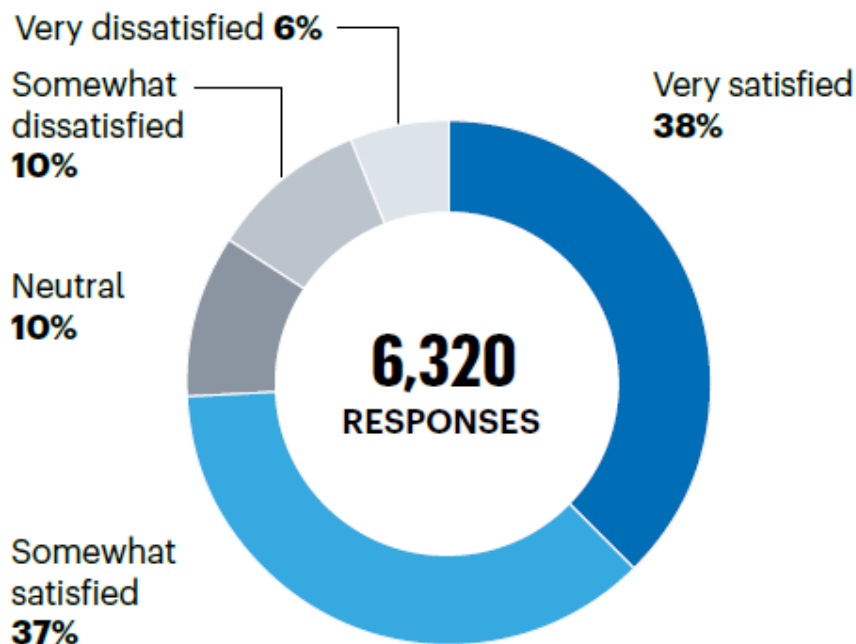
→ There are **a lot** of teaching oriented jobs for PhD's and MS
It's not too hard to be reasonable teacher;
[it's far easier than being a good student]

SUSTAINED SATISFACTION

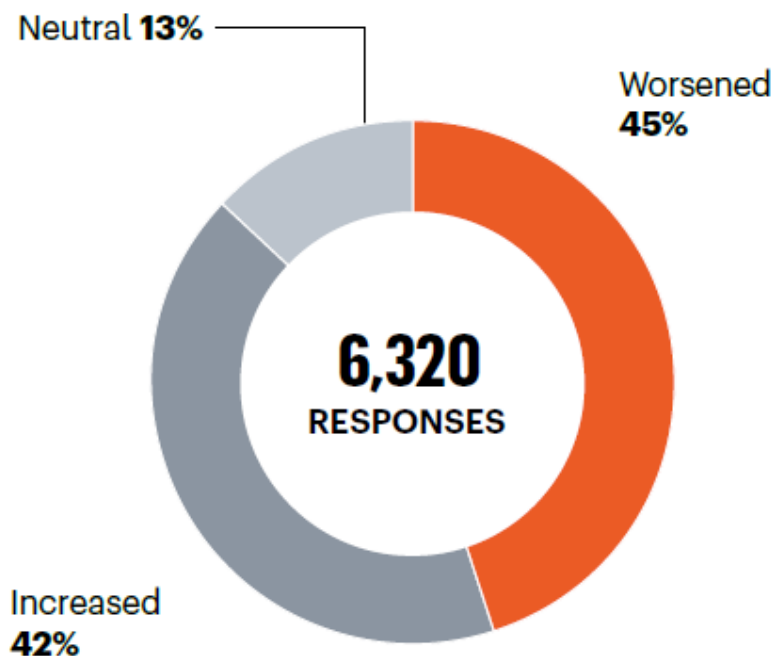
Nature | Vol 575 | 14 November 2019 | **403**

A majority of respondents are still glad they decided to pursue a PhD, although the attitudes of some have worsened over time.

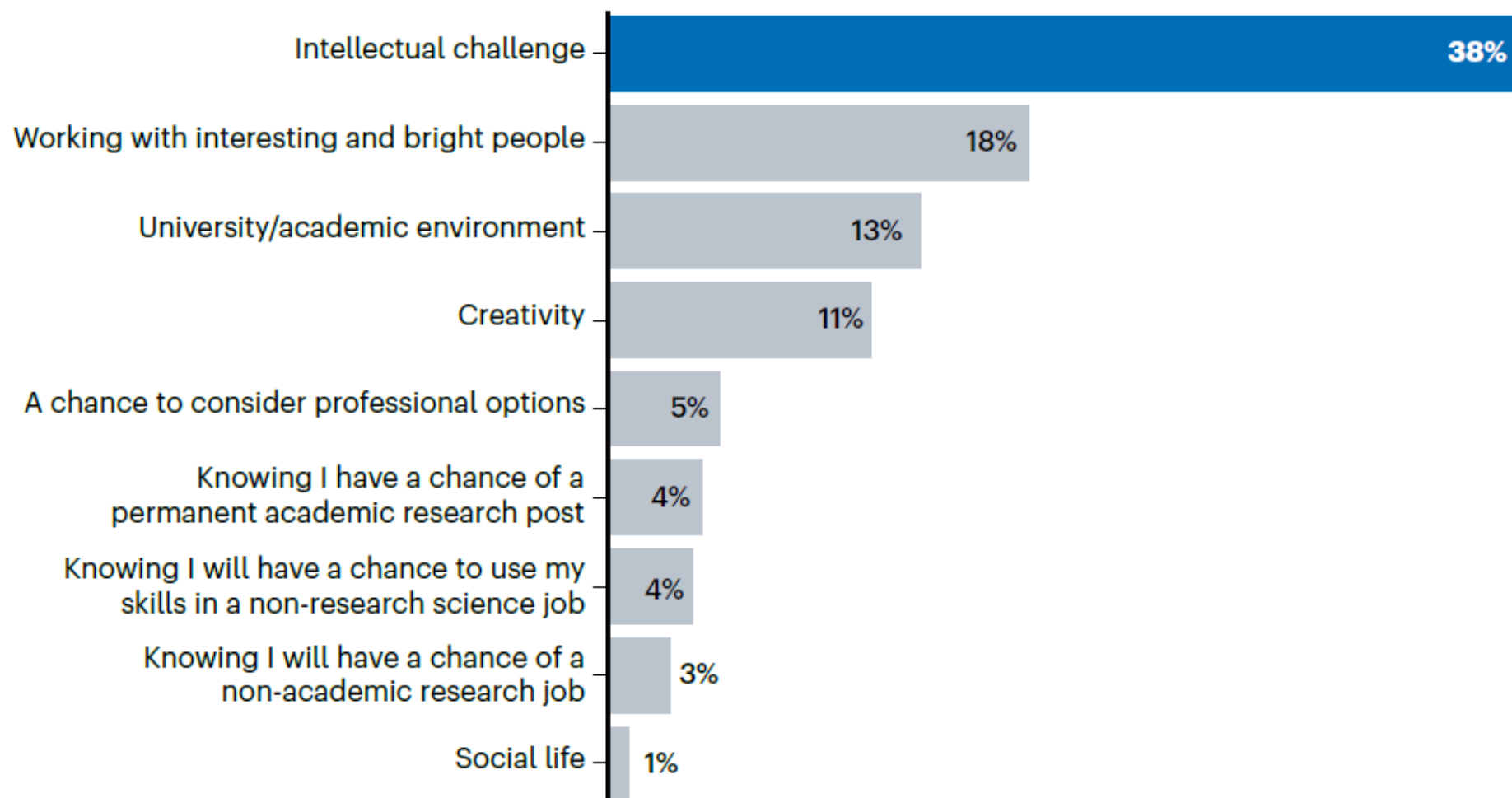
Q: How satisfied are you with your decision to pursue a PhD?



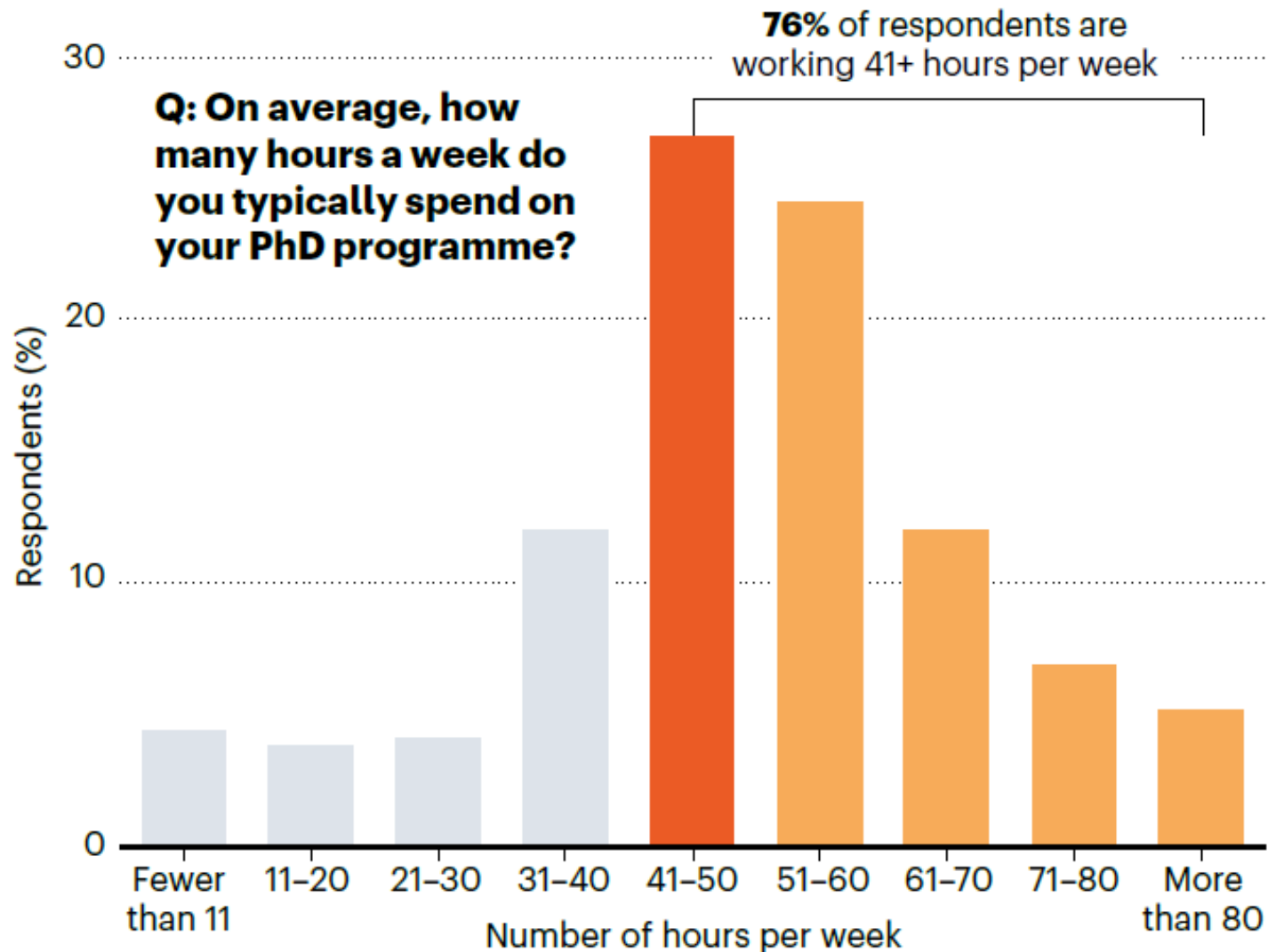
Q: Since the start of your graduate-school experience, has your level of satisfaction increased, worsened or remained the same?



Q: Overall, what do you enjoy most about life as a PhD student?



Many pathways to success...



RESOURCE LINKS: GRADUATE SCHOOL

- Advice on admissions, selections, and graduate life:
- <http://cosmicvariance.com/2005/12/20/unsolicited-advice-1-how-to-get-into-graduate-school/>
- <http://graduate-school.phds.org/>
- <http://www.cs.unc.edu/~azuma/hitch4.html>
- <http://www.physlink.com/Education/GradAdvisor.cfm>
- Graduate program rankings:
- <http://www.petersons.com>
- <http://www.gradschools.com/>
- <http://www.princetonreview.com/grad/>
- <http://www.gradschooltips.com/>
- http://grad-schools.usnews.rankingsandreviews.com/usnews/edu/grad/rankings/rankindex_brief.php
- GRE information:
- www.ets.org/gre/
- <http://www.physicsgre.com/>