



The Teacher-Scholar: Being a Professor at a Liberal Arts College

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Assistant Professor of Physics, The Claremont Colleges

Jan 27, 2020



The questions I will answer over the next ~50 minutes:

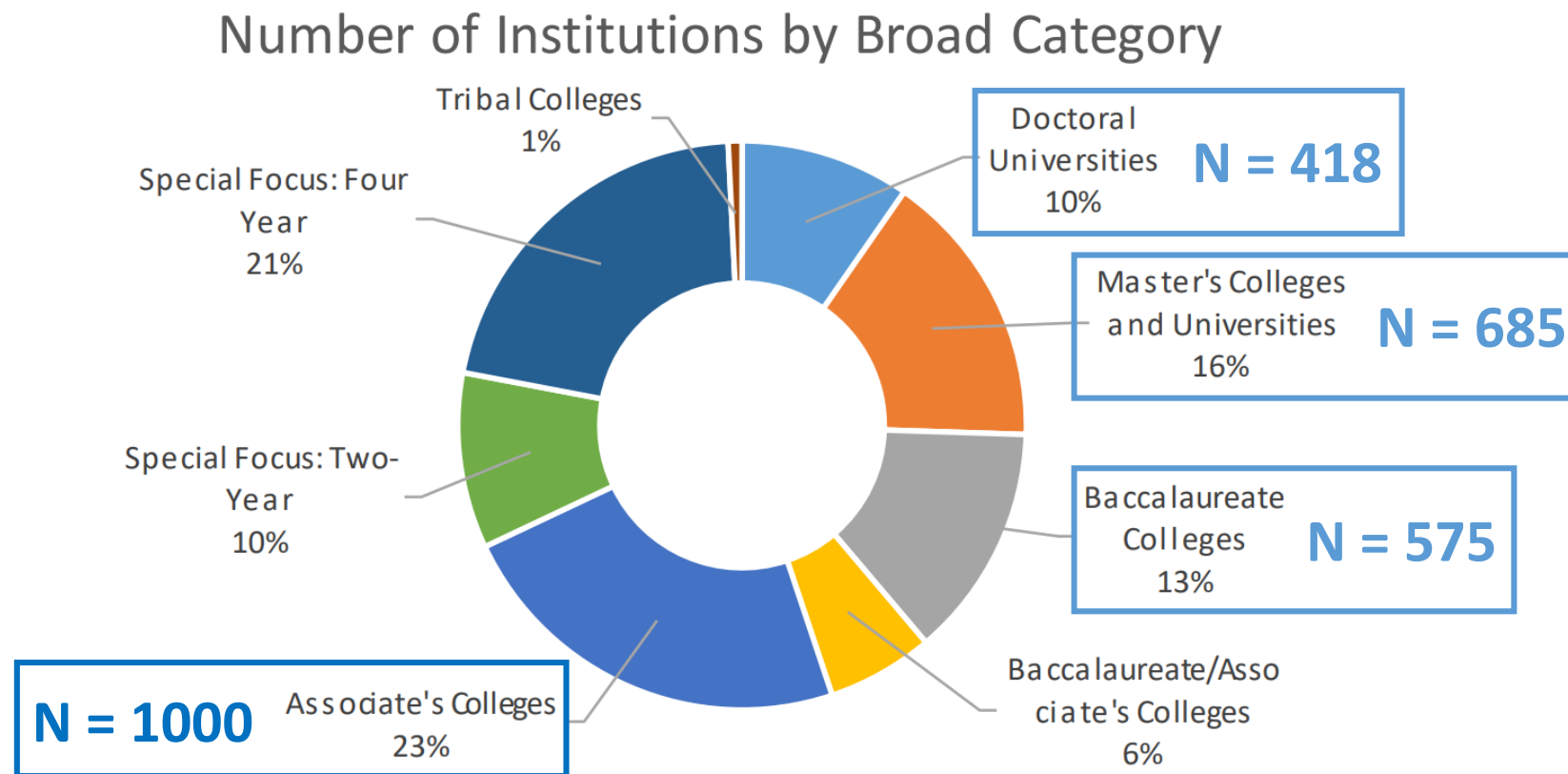
1. Where do physics professors work?
2. What is a teacher-scholar of physics?
3. Why choose this career path?
4. How do I prepare for this career path?



Where do physics professors work?




N > 2500 institutions in the US award physics or related degrees.



All employ physics professors.



Amount of support is closely tied to expectations.



My Background

Maryville College	Whittier College	Skidmore College
3 courses/4 labs	2 courses/ 2 labs	2 course/1 lab
No start-up	\$20K	\$70K
No summer support	Some summer support	Well established summer support
Research hurts teaching	Scholarship is required but not much	External funding/publication required



Find the type of institution which fits you.



What is a teacher-scholar of physics?



Verbatim from signed contract:

“ You shall, pursuant to [Department] rules and regulations, devote full time during the academic year to teaching, scholarship, publishing, and other professional activities, including advising students, keeping office hours, observing grading deadlines, administrative work, committee assignment, participation in commencement exercises and similar activities. ”

This is typical, and typically vague. Let's unpack this.



Teaching: You will function as professor AND TA.

“Candidate must have... the ability to teach a full spectrum of courses in physics.”
(from job ad.)



Class sizes are small.



Keeping office hours: (Co-instructor's evening OH)



Some professors have office hours in the courtyard.



Observing grading deadlines



The image shows a screenshot of the Scripps College website. The header features the college's name "SCRIPPS" in large white letters, with "THE WOMEN'S COLLEGE • CLAREMONT" underneath. A navigation menu on the left lists: Home, Campus Announcements, Course Search, Attention Students!, Career Planning and Resources, and Campus Resources. The main content area includes a "Login" button, an "IMPORTANT DATES" section with a list of key dates, an "ATTENTION GRADUATING SENIORS" section, and a "VOTE" section with a logo and links to the California State Board of Elections and the California League of Women Voters. A large poster of Yoda is overlaid on the right side of the page, with the text "ATTENTION FACULTY, GRADES ARE DUE DECEMBER 26TH." and "THIS IS THE WAY." at the bottom.

SCRIPPS
THE WOMEN'S COLLEGE • CLAREMONT

You are here: Home

Home
Campus Announcements
Course Search
Attention Students!
Career Planning and Resources
Campus Resources

Login

IMPORTANT DATES

- **December 11** - Last day of classes; deadline to withdraw from a class.
- **December 26** - Grades are due.
- **January 6** - Grades are visible on the Portal.
- **January 21** - First day of classes.
- **February 3** - Last day to add.

ATTENTION GRADUATING SENIORS:

- For seniors completing a one-semester thesis, remember to register on the Portal and complete your [Thesis Registration Form](#).

ARE YOU REGISTERED TO VOTE?

Presidential Primaries - March 3, 2020



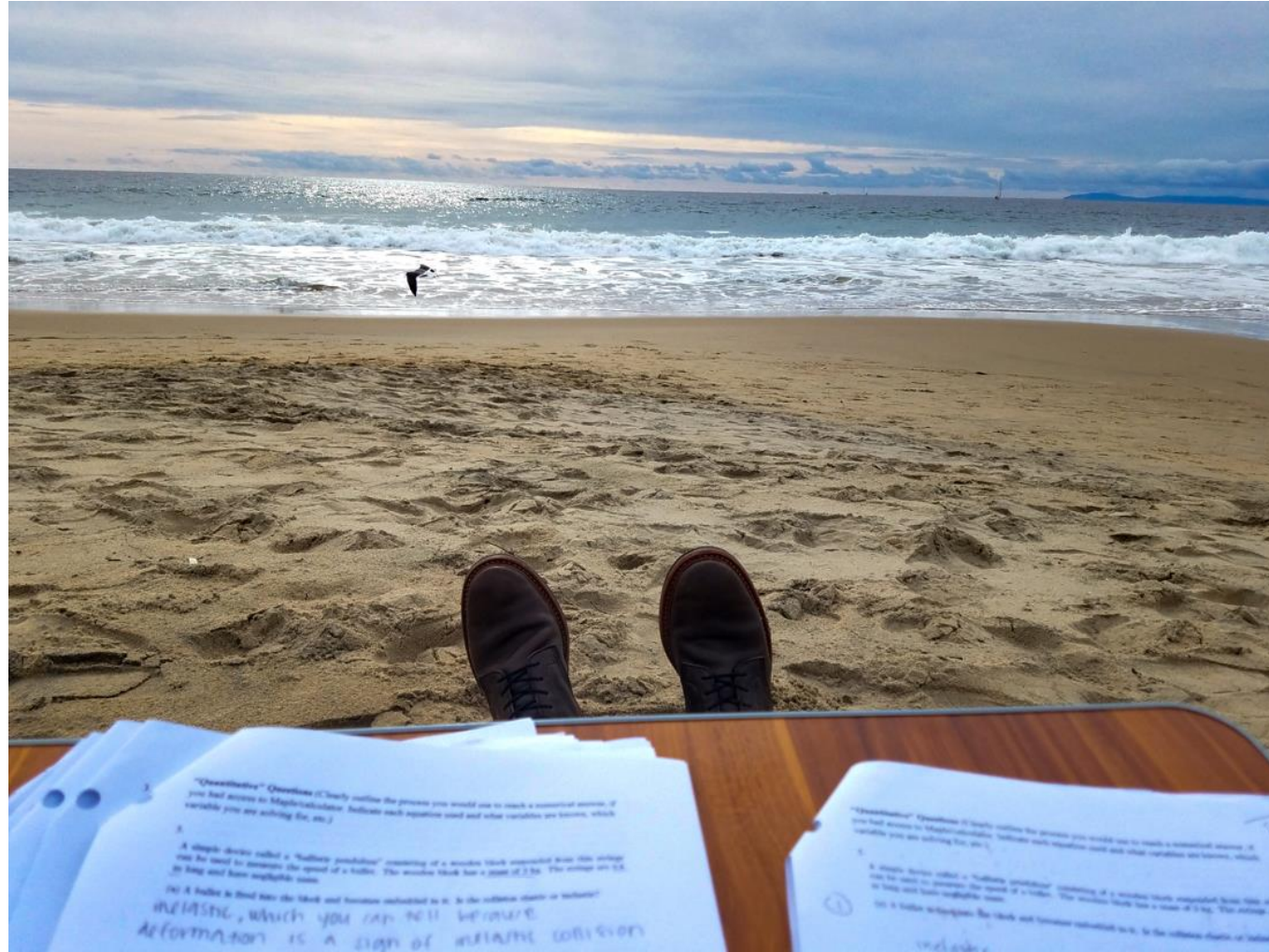
California State Board of Elections: <http://www.sos.ca.gov/elections/>
California League of Women Voters: <http://lwvc.org/>
Vote.org: I am a college student – should I register at home or where I go to school
Vote.org

**ATTENTION FACULTY,
GRADES ARE DUE
DECEMBER 26TH.**

THIS IS THE WAY.



Grading doesn't have to be boring:

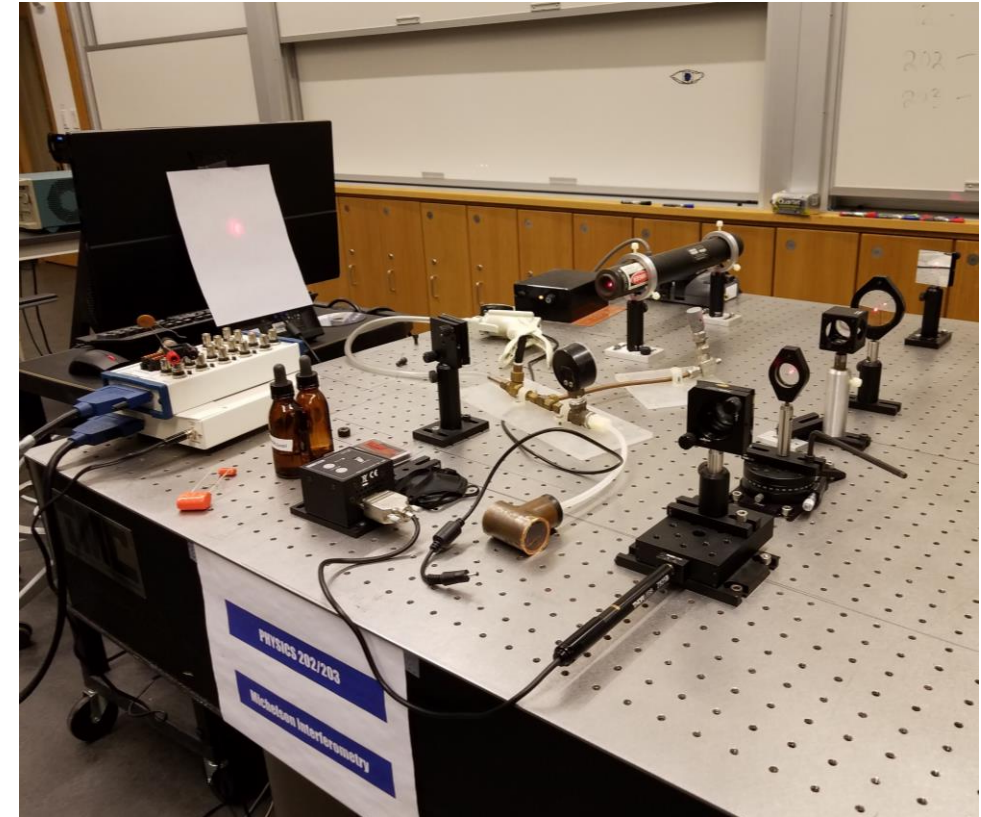
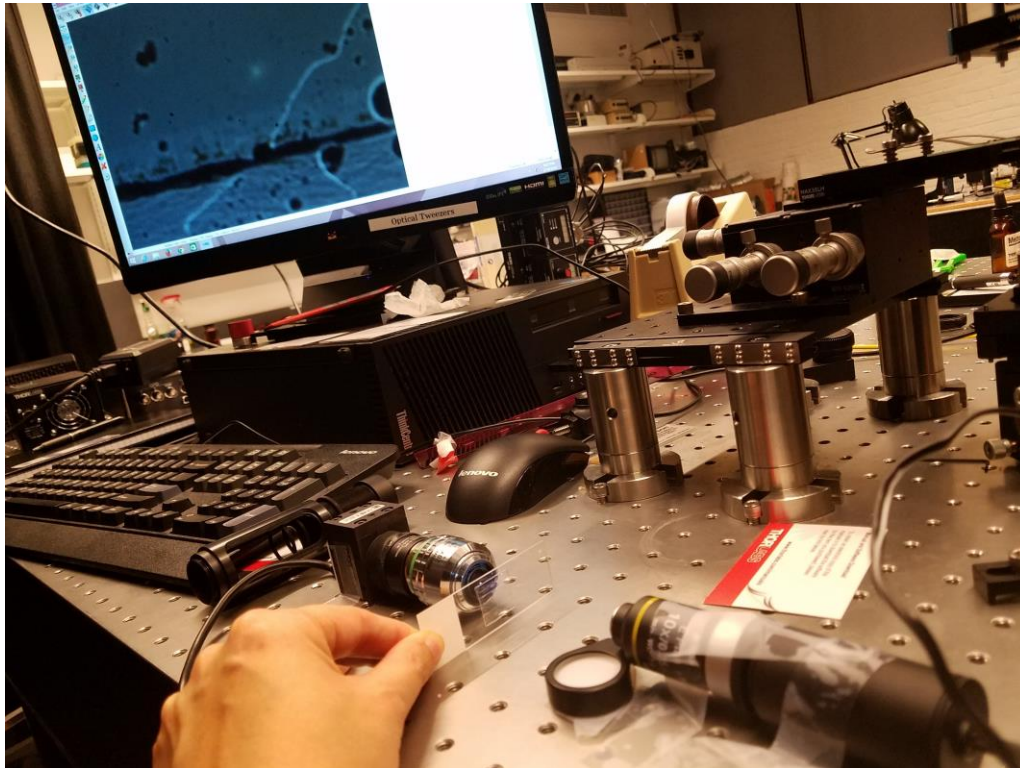


We are free to manage our own time.



The holy grail: course-based research pipeline

Tenure-track faculty are expected to develop and offer an advanced course within their specialty.



Teaching can help with research.



Scholarship:



Startup



- Lab space
- + facilities staff
- + administrative staff
- + utilities



Summer student support

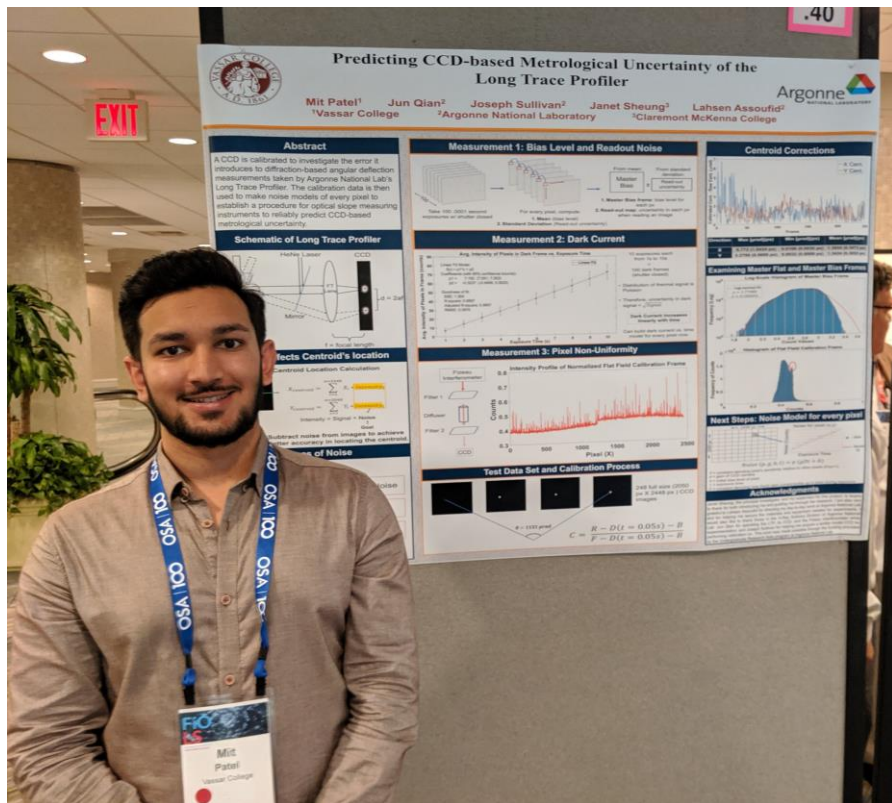
Small yearly budget often used for conference travel



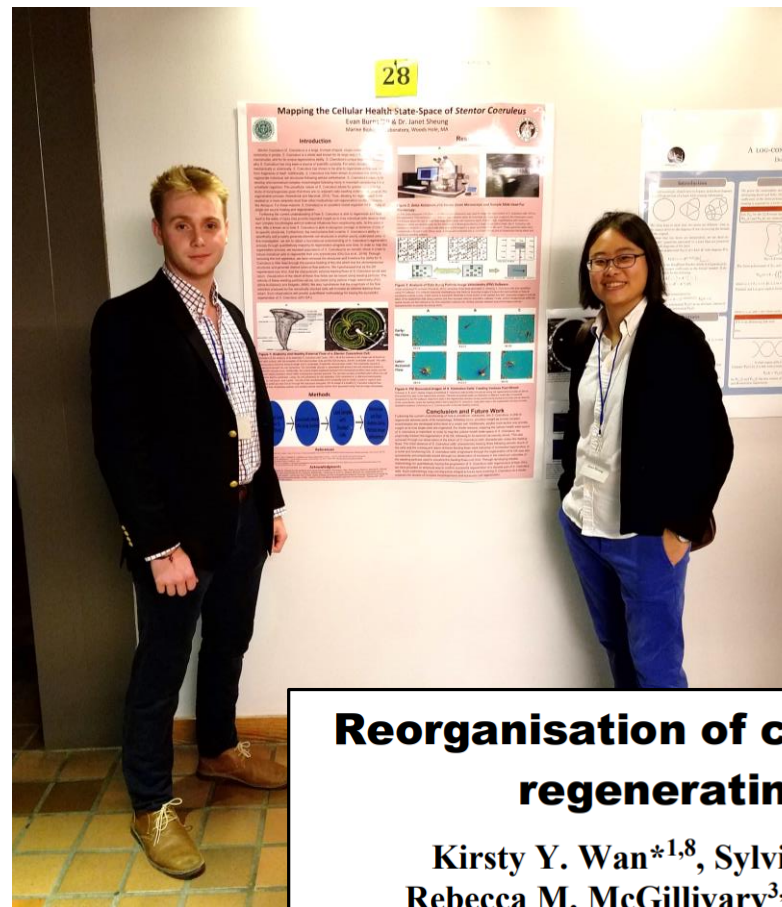
“ The desire and capacity to actively engage undergraduates in research and to supervise senior-thesis research projects is essential. ” (from job ad.)



Publishing.



Mit at the Optics and Photonics Winter School at the Arizona State University



Reorganisation of complex ciliary flows around regenerating *Stentor coeruleus*

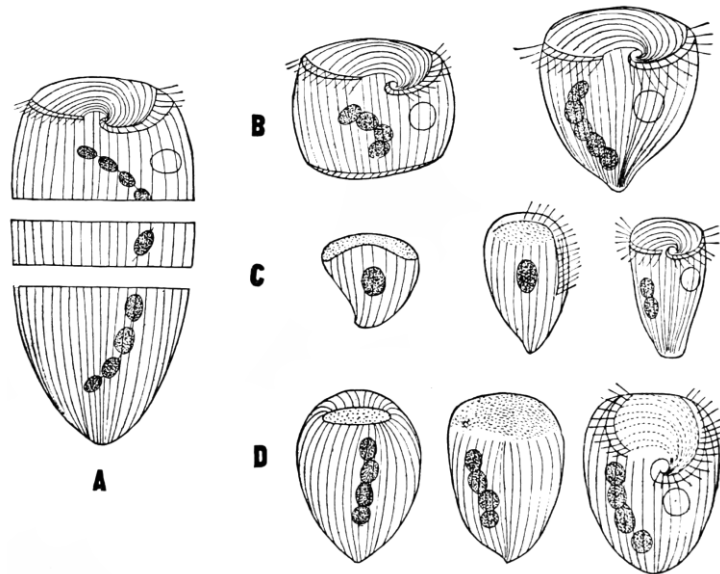
Kirsty Y. Wan^{*1,8}, Sylvia K. Hürlimann^{2,8}, Aidan M. Fenix^{4,5,8},
Rebecca M. McGillivray^{3,8}, Tatyana Makushok^{3,8}, **Evan Burns^{6,9}**,
Janet Y. Sheung^{7,9}, Wallace F. Marshall^{*3,8}

Evan performed an experimental control in a collaborator's manuscript. It was accepted for publication last month.

Evan at Vassar College's annual Undergraduate Research Symposium

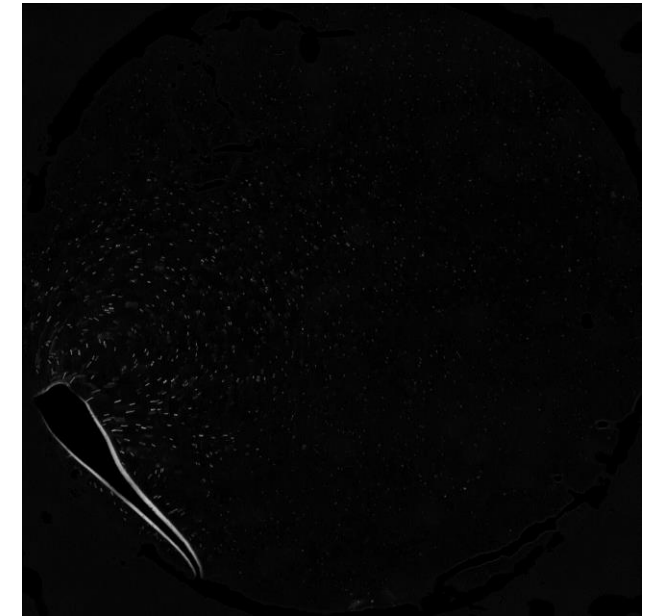
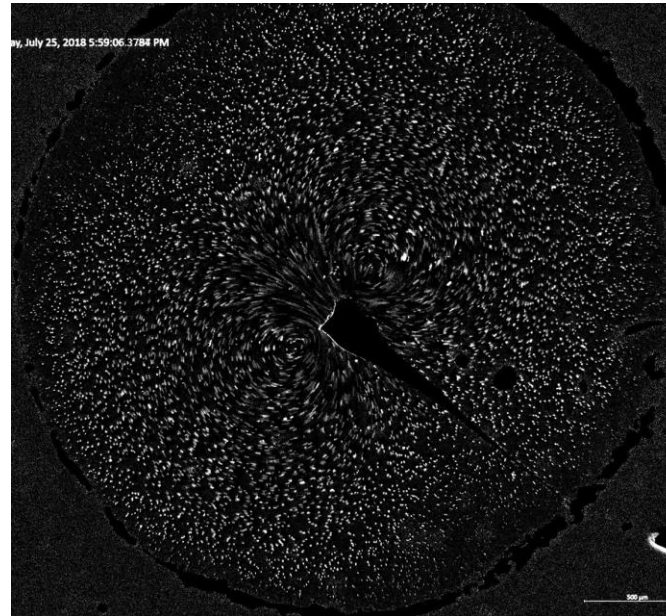


My experimental biophysics research program:



Stentor coeruleus regeneration

Image courtesy of Gruber



Tracer particles allow flows to be mapped and quantified.



Starting a research lab:



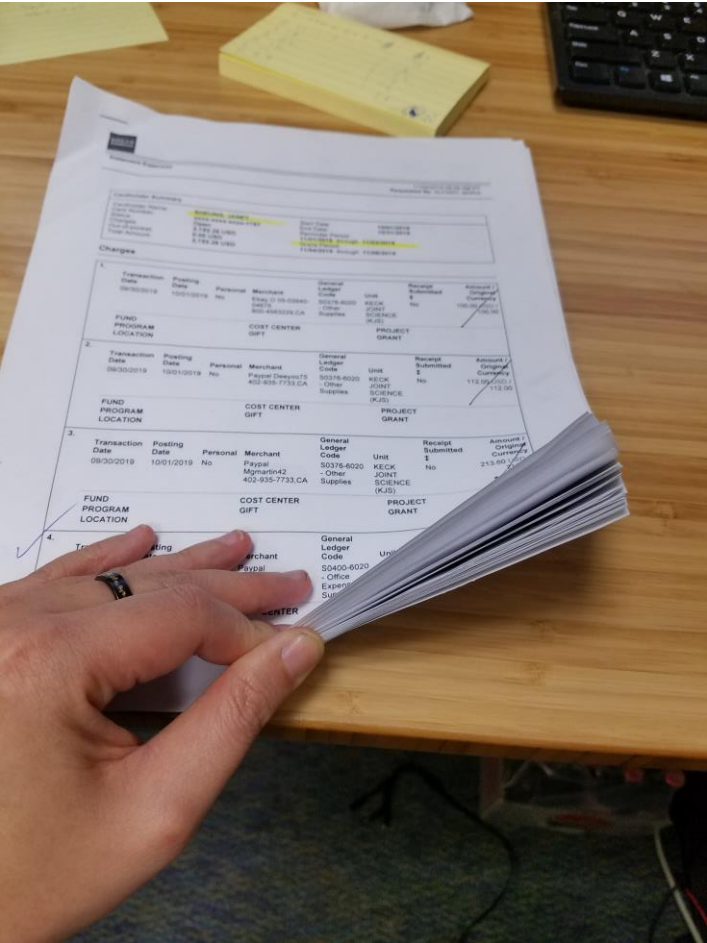
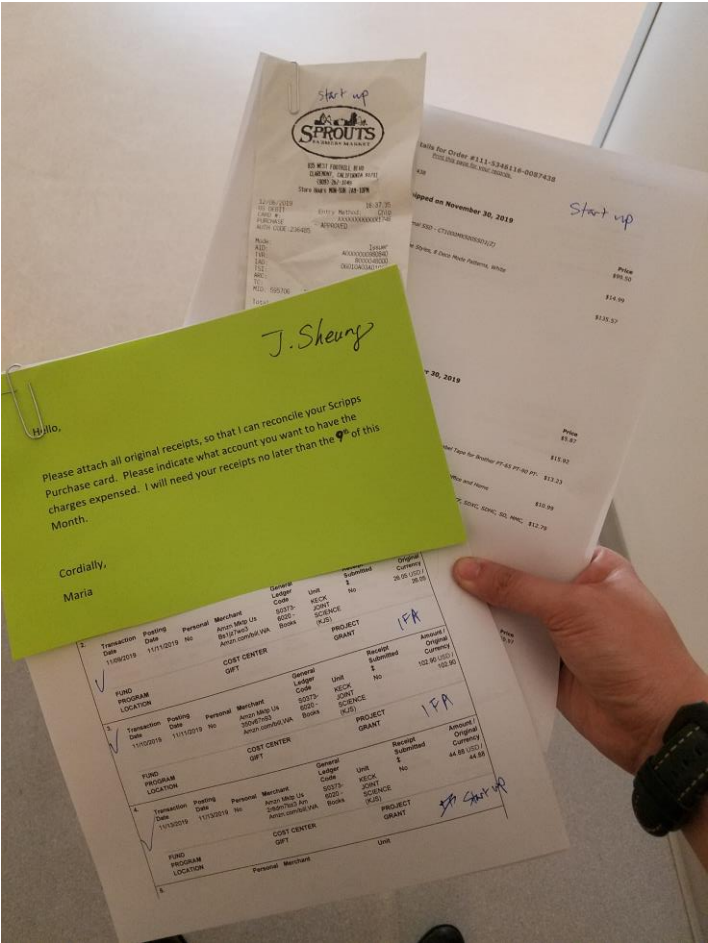
March 2019: 40'x14' lab space pre-furnished by architects.





January 2020.

Administrative Work



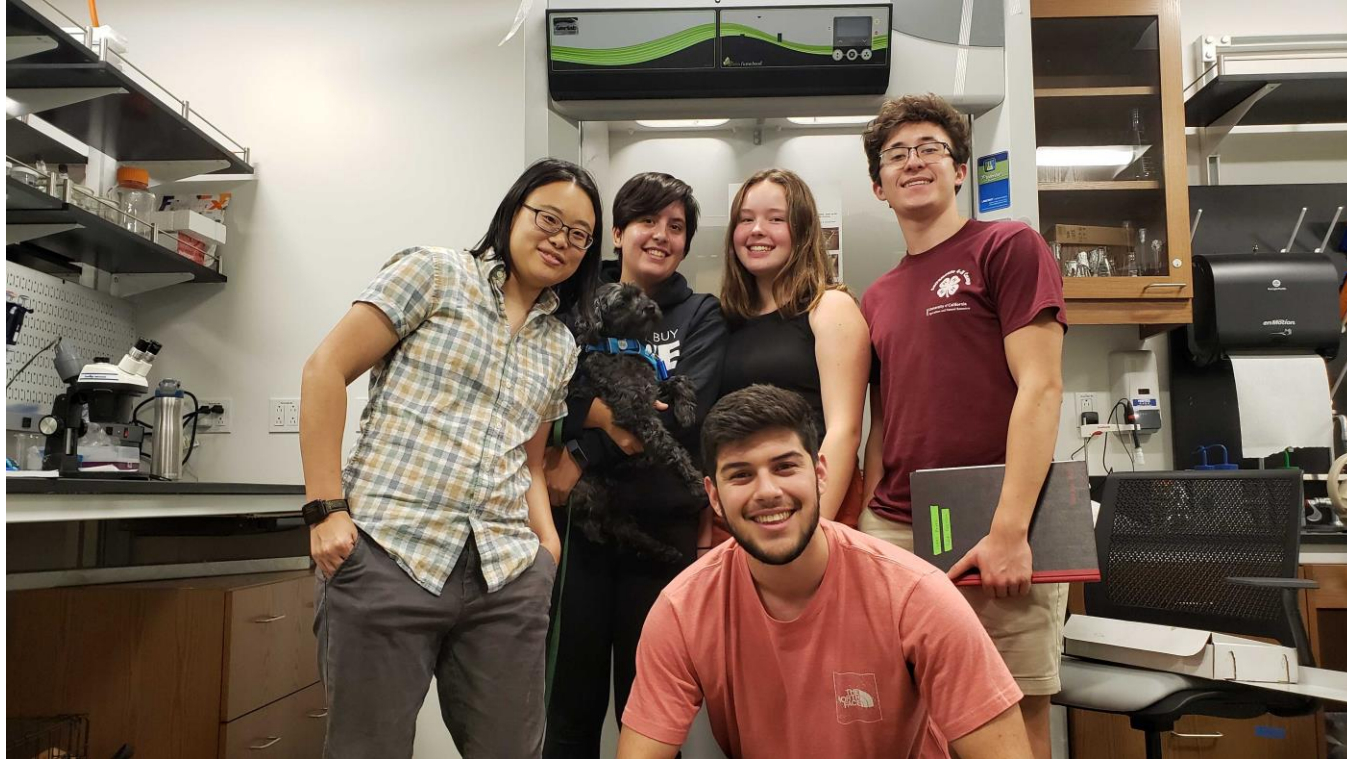
Receipts,
Receipts,
Receipts!!!



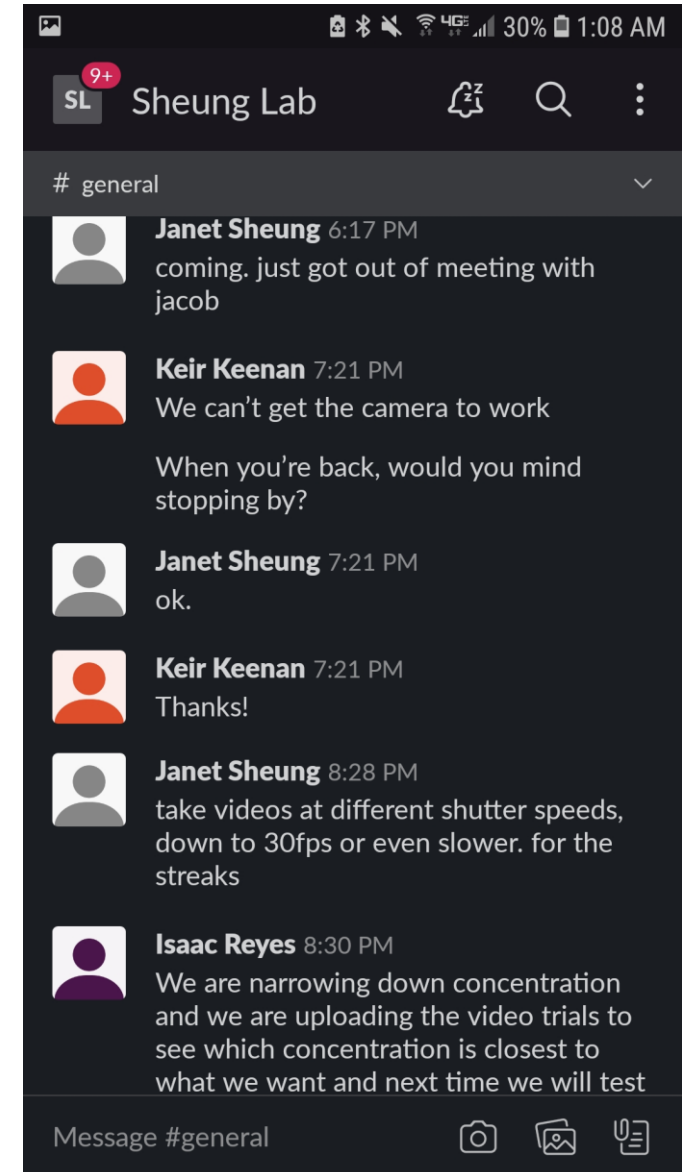
Running a research program is a bit like running a small business. Amount of secretarial support you get depends on the department.



You function as professor, post-doc, and grad RA.



Lab chat
#general



Setting up processes, establishing a healthy culture, and modeling the behavior you wish to see are all important.



Advising (and advocating for) students



Joe



Annie

Undergrads, particularly those from disadvantaged backgrounds, often do not know how to advocate for themselves. Some faculty find helping these students to be a very rewarding part of being a faculty member.



Participation in commencement exercises:

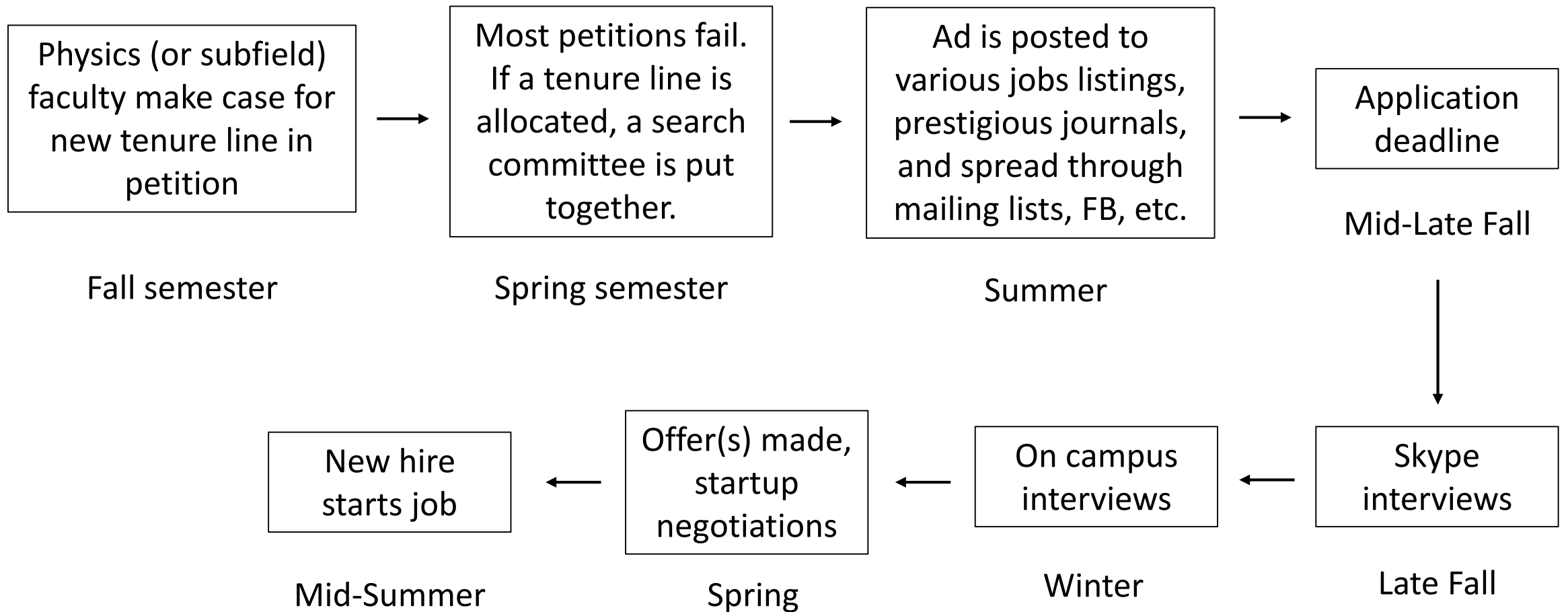


Rose Hulse-Vincent
Vassar College '19 Biophysics*
Now Research Technician at
HHMI Janelia Research Campus

A well-mentored undergraduate can go from never having heard of a research field to a young researcher at the level of a 2nd -3rd year graduate student.



Example committee work: How a professor is hired



This entire process spans two years.

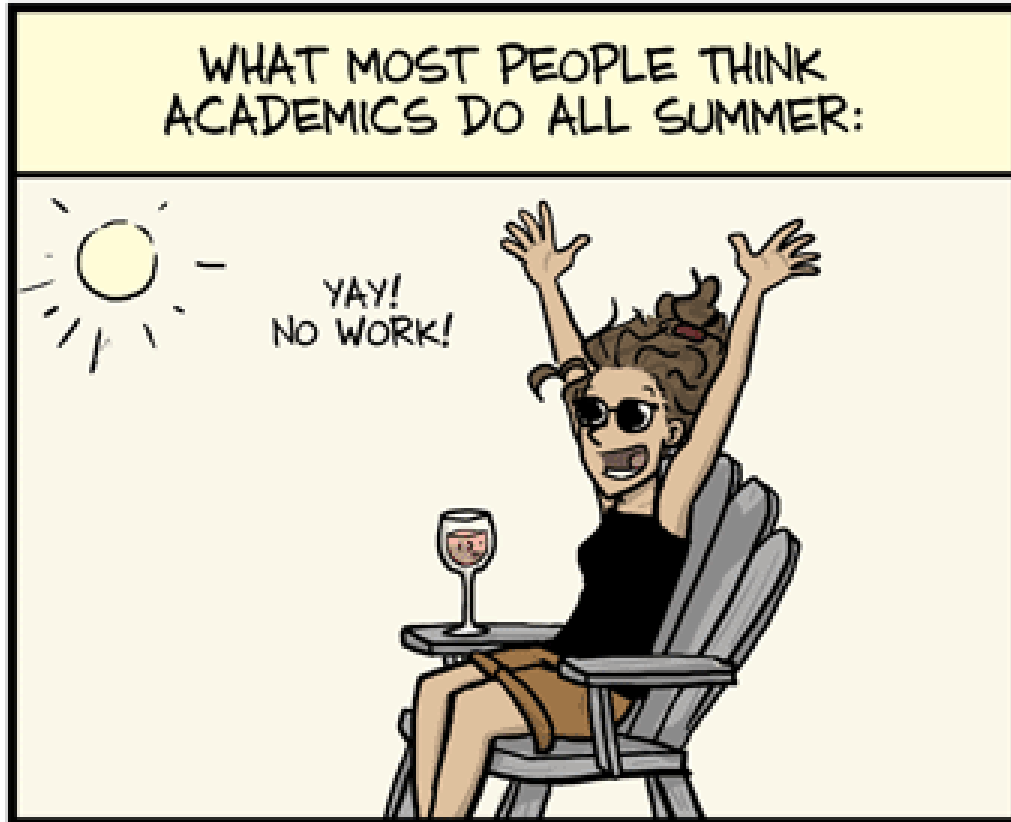


This is basically everything from that line in the signed contract:

“ You shall, pursuant to [Department] rules and regulations, devote full time during the academic year to teaching ✓ , scholarship ✓ , publishing ✓ , and other professional activities, including advising students ✓ , keeping office hours ✓ , observing grading deadlines ✓ , administrative work ✓ , committee assignment ✓ , participation in commencement exercises and similar activities ✓ . ”



SUMMER



JORGE CHAM © 2018

WWW.PHDCOMICS.COM

Compared to similarly competitive career paths, we work summer months unpaid.



Appendix 1: Salaries, Strategic Plan Peer Group

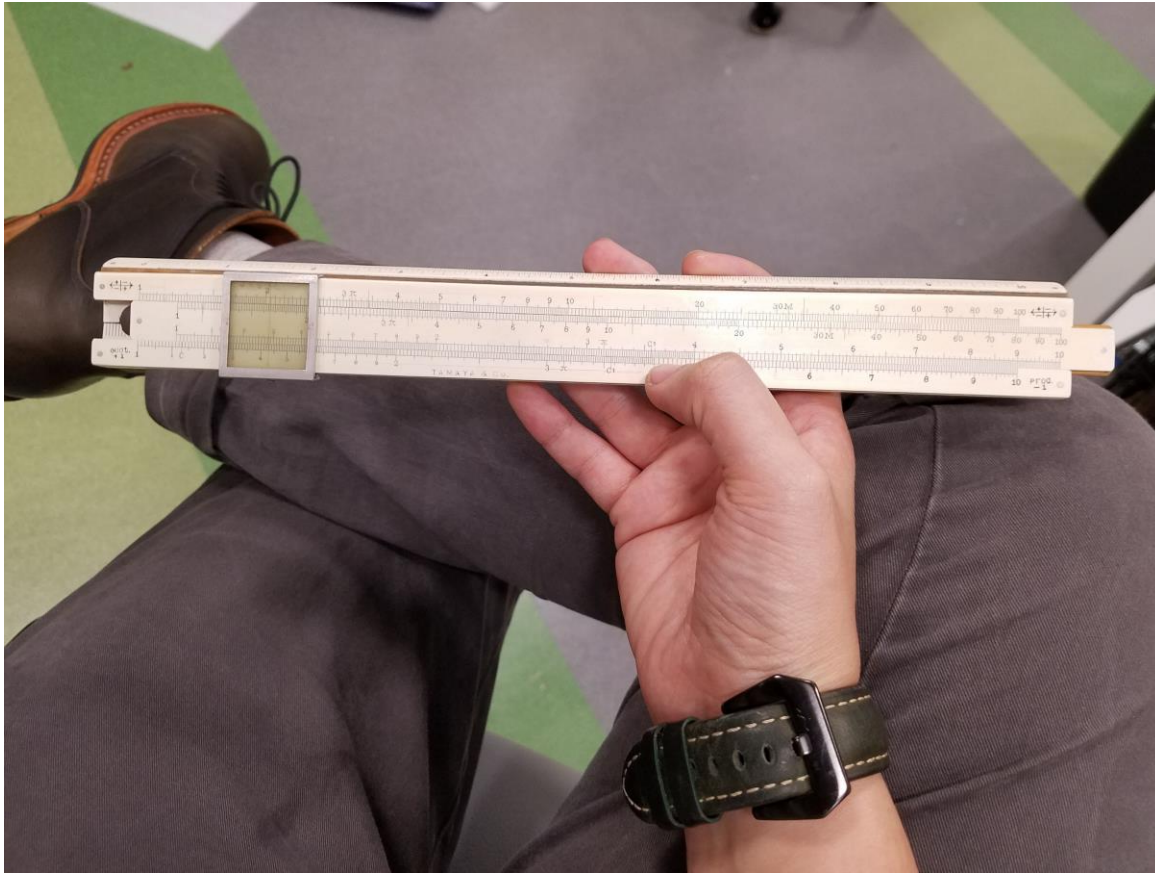
College	U.S. News Ranking	Assistant Professor Salary	Associate Professor Salary	Full Professor Salary	Cost of Living Index - Bankrate	Reference City	Adjusted Assistant Professor Salary	Adjusted Associate Professor Salary	Adjusted Full Professor Salary
Colorado College	27	\$ 82,700.00	\$ 100,500.00	\$ 135,700.00	68.01%	Colorado Springs, CO	\$ 121,603.38	\$ 147,776.78	\$ 199,535.41
Carleton College	5	\$ 83,700.00	\$ 101,200.00	\$ 135,900.00	77.12%	Minneapolis, MN	\$ 108,531.52	\$ 131,223.29	\$ 176,217.84
Bowdoin College	5	\$ 87,400.00	\$ 107,500.00	\$ 146,600.00	81.75%	Portland, ME	\$ 106,906.89	\$ 131,493.03	\$ 179,319.80
Whitman College	43	\$ 71,300.00	\$ 90,900.00	\$ 121,900.00	67.71%	Kennewick, WA	\$ 105,298.84	\$ 134,244.94	\$ 180,027.04
Hamilton College	16	\$ 83,600.00	\$ 107,300.00	\$ 142,900.00	80.33%	Albany/Schenectady/Troy NY	\$ 104,073.47	\$ 133,577.56	\$ 183,000.00
Swarthmore College	3	\$ 87,700.00	\$ 105,000.00	\$ 156,100.00	85.17%	Philadelphia, PA	\$ 102,970.53	\$ 123,282.85	\$ 183,280.50
CMC College	9	\$ 102,600.00	\$ 121,200.00	\$ 166,800.00	100.00%	Los Angeles, CA	\$ 102,600.00	\$ 121,200.00	\$ 166,800.00
Amherst College	2	\$ 88,900.00	\$ 108,200.00	\$ 151,000.00	87.88%	Providence, RI	\$ 101,157.10	\$ 123,118.09	\$ 171,819.15
Smith College	11	\$ 84,800.00	\$ 97,800.00	\$ 141,600.00	85.17%	Providence, RI	\$ 99,560.17	\$ 114,822.93	\$ 166,246.70
Middlebury College	5	\$ 85,200.00	\$ 100,300.00	\$ 137,300.00	88.24%	Burlington, VT	\$ 96,555.42	\$ 113,667.94	\$ 155,599.28
Williams College	1	\$ 85,400.00	\$ 104,000.00	\$ 146,900.00	88.67%	Pittsfield, MA	\$ 96,313.85	\$ 117,290.87	\$ 165,673.36
Pomona College	5	\$ 93,300.00	\$ 114,100.00	\$ 156,600.00	100.00%	Los Angeles, CA	\$ 93,300.00	\$ 114,100.00	\$ 156,600.00
Mount Holyoke College	30	\$ 79,000.00	\$ 97,100.00	\$ 125,300.00	85.17%	Providence, RI	\$ 92,750.63	\$ 114,001.09	\$ 147,109.55
Bryn Mawr College	27	\$ 78,200.00	\$ 97,000.00	\$ 139,600.00	85.17%	Philadelphia, PA	\$ 91,811.38	\$ 113,883.68	\$ 163,898.58
Agnes Scott College	51	\$ 68,200.00	\$ 77,800.00	\$ 96,800.00	74.96%	Atlanta, GA	\$ 90,980.00	\$ 103,786.57	\$ 129,132.90
Connecticut College	46	\$ 75,900.00	\$ 85,900.00	\$ 115,400.00	88.67%	Hartford, CT	\$ 85,601.05	\$ 96,879.18	\$ 130,149.68
Wellesley College	3	\$ 85,734.00	\$ 101,907.00	\$ 151,047.00	102.85%	Boston, MA	\$ 83,357.45	\$ 99,082.13	\$ 146,859.97
Pitzer College	41	\$ 82,200.00	\$ 98,700.00	\$ 134,000.00	100.00%	Los Angeles, CA	\$ 82,200.00	\$ 98,700.00	\$ 134,000.00
Scripps College	30	\$ 79,400.00	\$ 100,600.00	\$ 140,800.00	100.00%	Los Angeles, CA	\$ 79,400.00	\$ 100,600.00	\$ 140,800.00
Occidental College	39	\$ 78,600.00	\$ 94,000.00	\$ 133,500.00	100.00%	Los Angeles, CA	\$ 78,600.00	\$ 94,000.00	\$ 133,500.00
Barnard College	25	\$ 89,600.00	\$ 118,700.00	\$ 168,700.00	162.08%	New York City - Manhattan	\$ 55,280.92	\$ 73,234.88	\$ 104,083.60



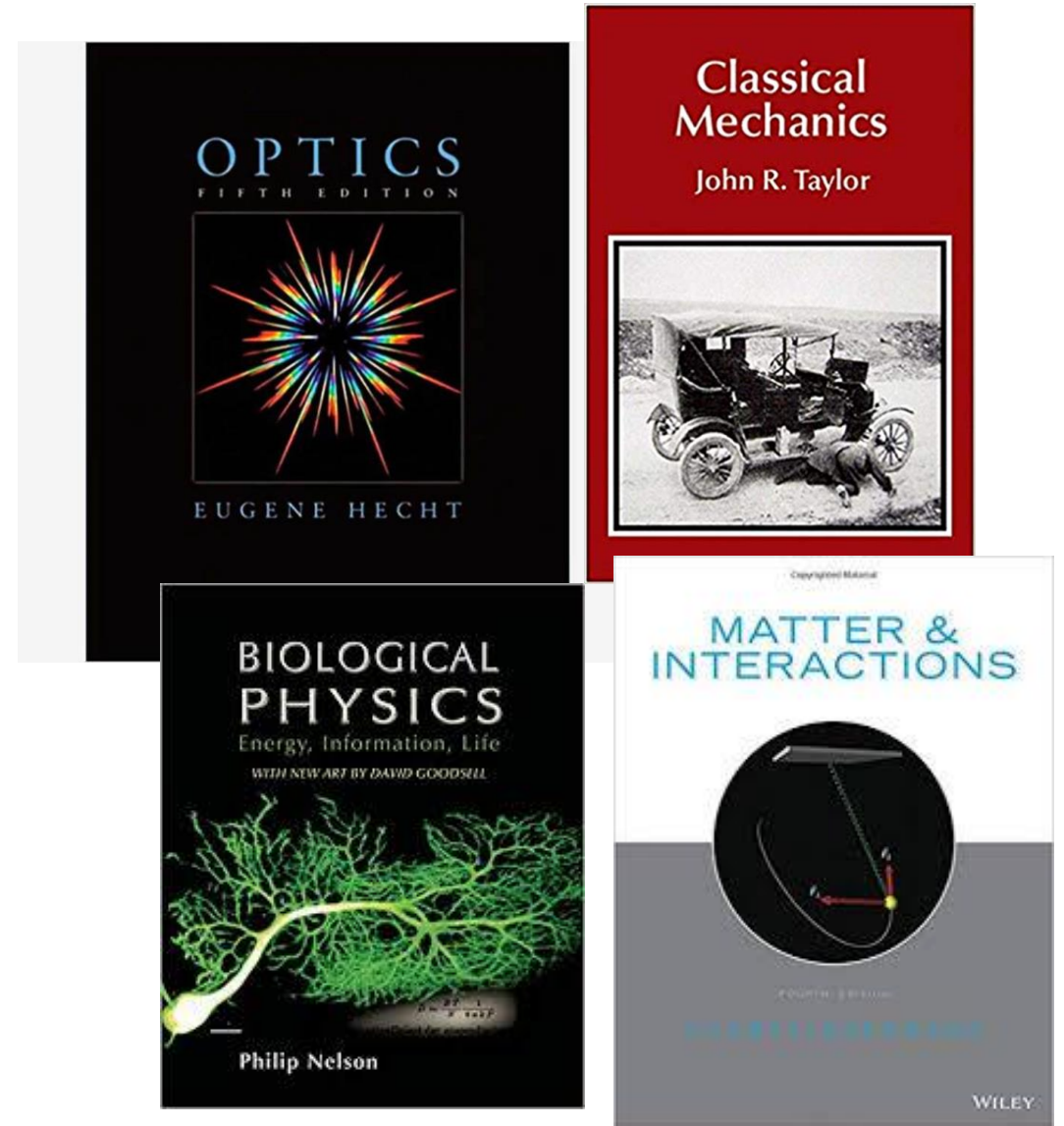
Why choose this career path?



My favorite free things



A slide rule!!

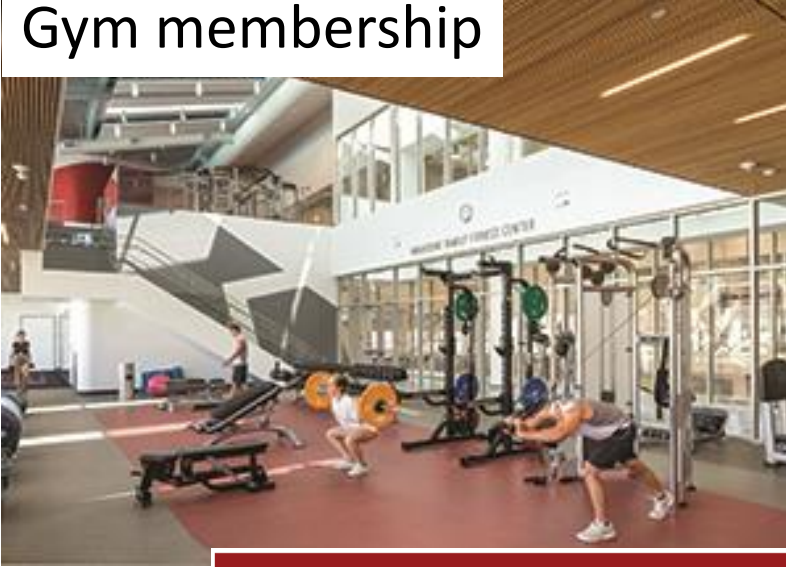


Textbooks!

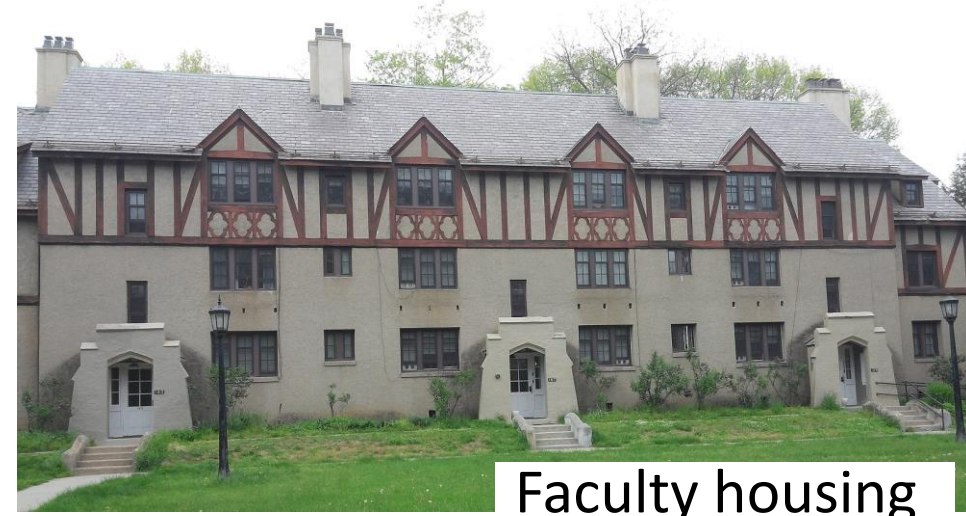


Benefits: more serious things

Gym membership



Health insurance



Faculty housing

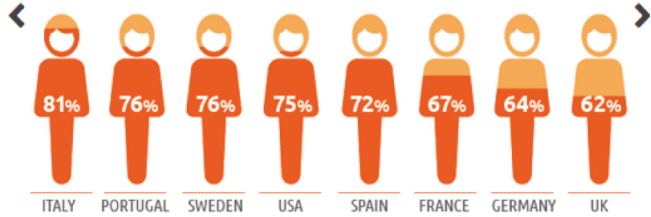
WOULD YOU CONSIDER TAKING A SABBATICAL FROM WORK IF IT WAS AN OPTION?

YES > 71%



However, 35% of those that replied yes, said they could not afford to do so if it was unpaid.

RANKING PER COUNTRY



Fun Fact

With 78%, Millennials (aged 18-34) features the age-group demonstrating the most interest in taking a sabbatical.

Intellectual community:

Concerts

Speakers

Classes

Workshops



Onsite daycare



Teaching students, not just teaching a subject:



Physics dinner and movie night



<https://pngtree.com/>

Freshman A-student sleeps through final exam.



It is never boring: Teachable moments come unexpectedly.

Inviting and hosting speakers (sometimes Nobelists)



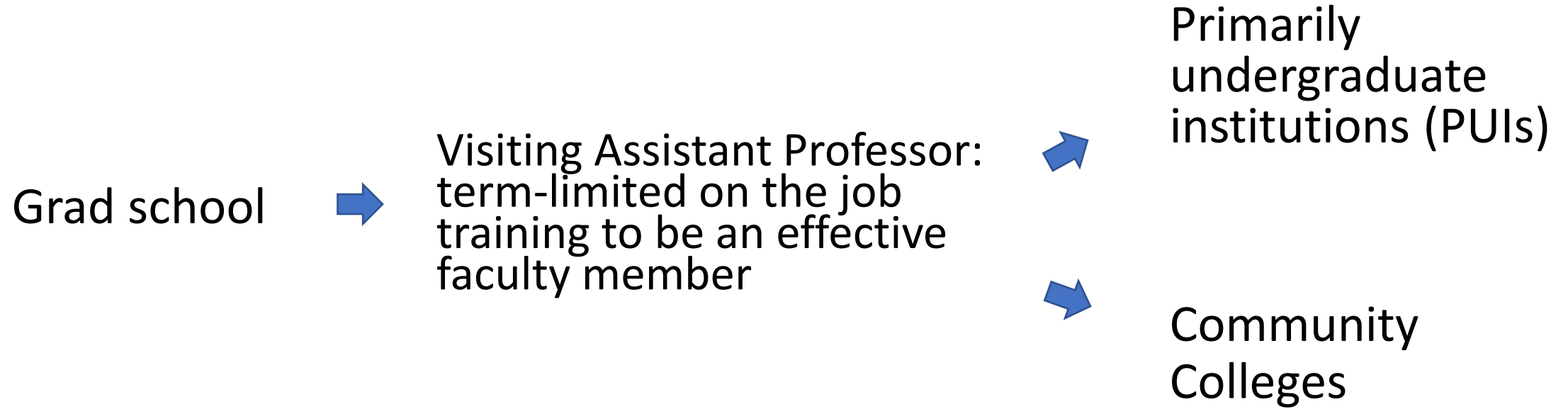
More effort is required to get top researchers to a college, but \$\$\$ helps.



How do I prepare for this career path?



A less traveled path from grad school to professor:



Doing a research post-doc is the most common path, but alternatives exist.



A strong application for a tenure-track opening at an LAC:

- Cover letter: clear case of good fit
- Statement of research interests: viable 5-year plan leading to publications
- Statement of teaching philosophy: depends on institution/department*
- Post-doctoral experience: research or teaching, some accept industry
- At least three reference letters: not unusual to send in more, at least one well-known scholar from outside Ph.D institution is important
- Curriculum vitae: illustrates track record of commitment
- Diversity statement*



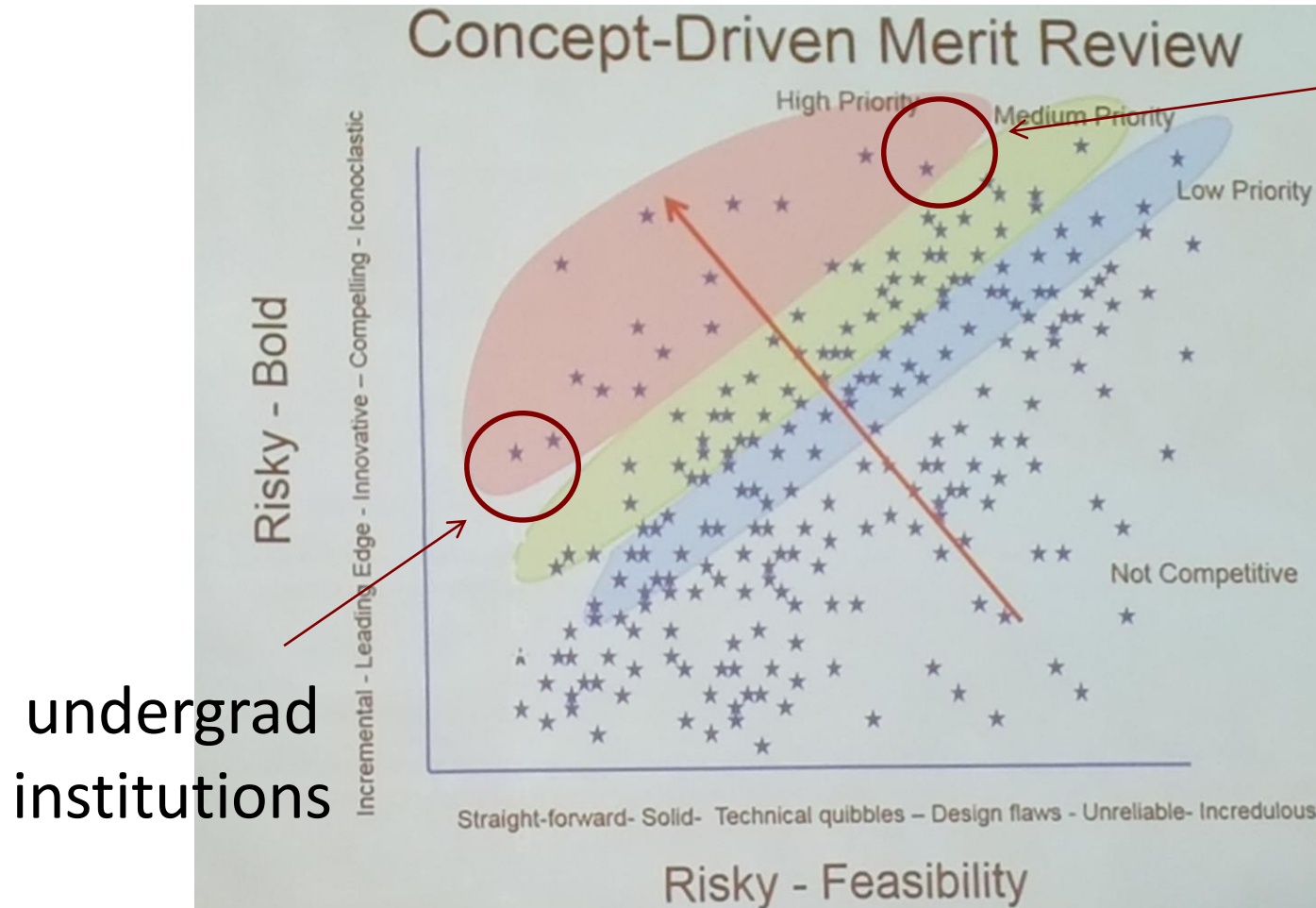
Questions?

If you desire individualized
advice please contact me at:
jsheung@kecksci.claremont.edu

Also, please join us for lunch!



If you run out of money (or want a postdoc)



undergrad institutions

Top research institutions

NSF funding opportunities which place value on teaching and broader impact:

- NSF Career Award
- RUI (Research at Undergraduate Institutions)
- ROA (Research Opportunity Award)
- MRI (Major Research Instrumentation Program)

Grant prioritization explained by NSF program officer



Teaching students, not just teaching a subject:

Academic Signs of Distress

Significant decline in quality of work and grades

Repeated absences

Bizarre or concerning content in writing, emails or presentations

Conversations with students center around personal concerns rather than academics

Disruptive in class

Physical Signs of Distress

Changes in physical appearance such as a decline in hygiene or grooming, weight loss/gain or appetite changes

Fatigue, excessively tired or sleep issues

Substance abuse

Disoriented, confused, difficulty concentrating or "in a fog"

Bizarre/slurred speech or thinking patterns

Psychological Signs of Distress

Disclosure of significant personal issues such as familial, financial, trauma, suicidal/homicidal ideas, grief

Excessive tearfulness, panic, irritability, disassociation or numbness

Verbal attacks or harassment such as taunting, intimidation, badgering or bullying

Bizarre, magical thinking or student seen excessively laughing or talking to themselves

Concern expressed by other students, faculty, staff or family

Safety Risk Factors

Unprovoked anger or hostility

Direct or vague threats to harm self or others

Unable to care for themselves

Academic assignments displaying themes of violence, hopelessness, worthlessness, despair, suicidal thoughts, isolation or provocative statements that could be seen as threatening

Communicating threats via email, text, phone calls or other means

CREATED BY:

THE CASE MANAGER WORKING GROUP OF

THE CLAREMONT COLLEGES

The faculty connect students to resources as needed.



The teaching philosophy statement:

- Bad: Talks about the idea of teaching
- Good: Talks about teaching as something done by you, the candidate. Your experience, things you have tried, things you want to try, things which are important to you.
- Outstanding: Offers a unique skillset or perspective which will significantly improve the curriculum or program.

