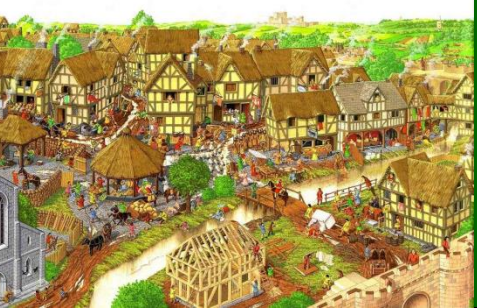# O UNIVERSITY OF OREGON

Innovative Models of Graduate Education & Implications on Sponsored Research:

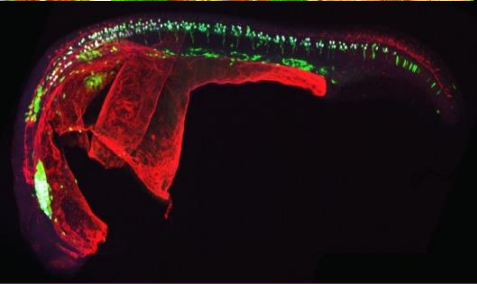# Solutions? Pitfalls? Paths forward….

Kimberly Andrews Espy

Vice President for Research and Innovation

Dean of the Graduate School
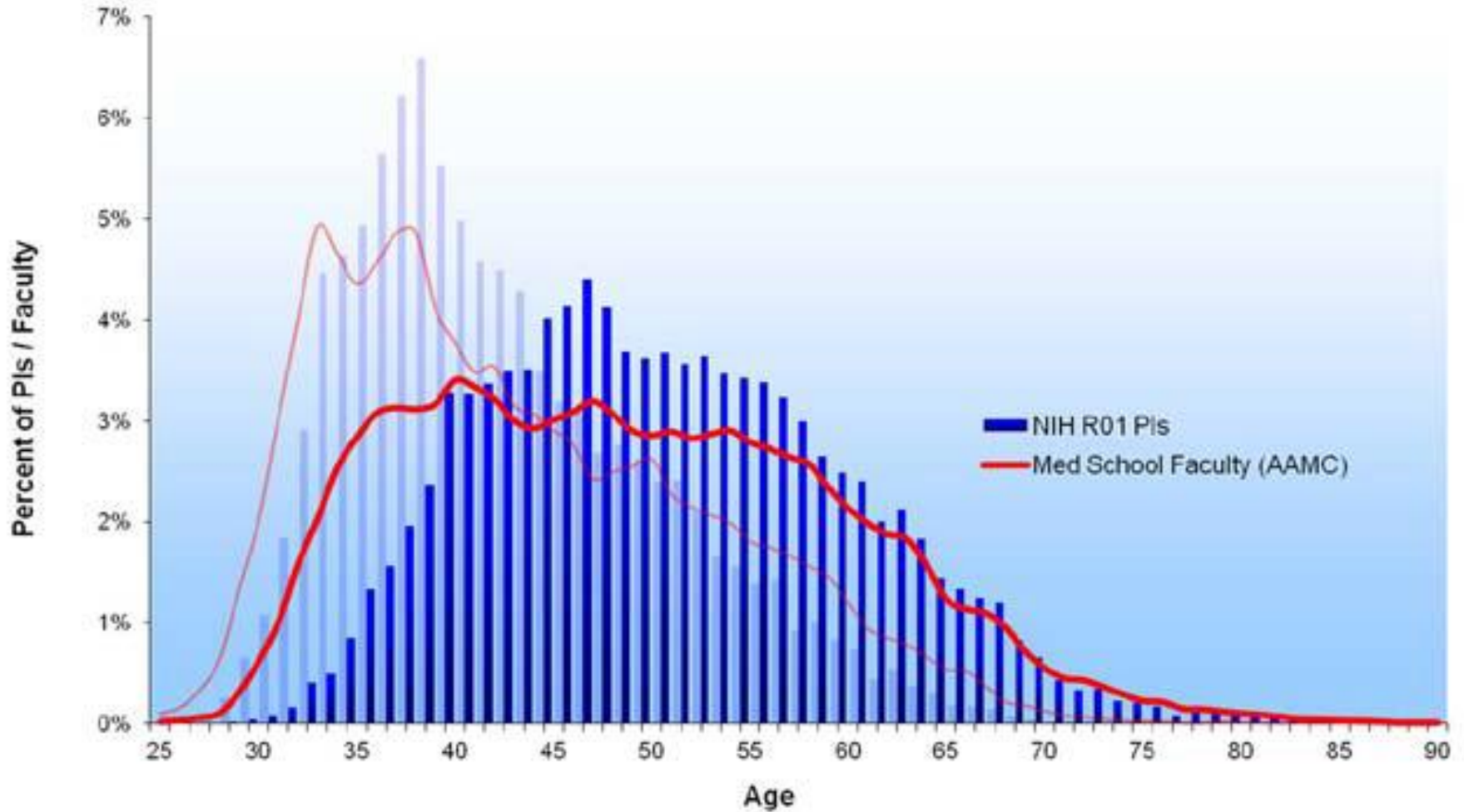
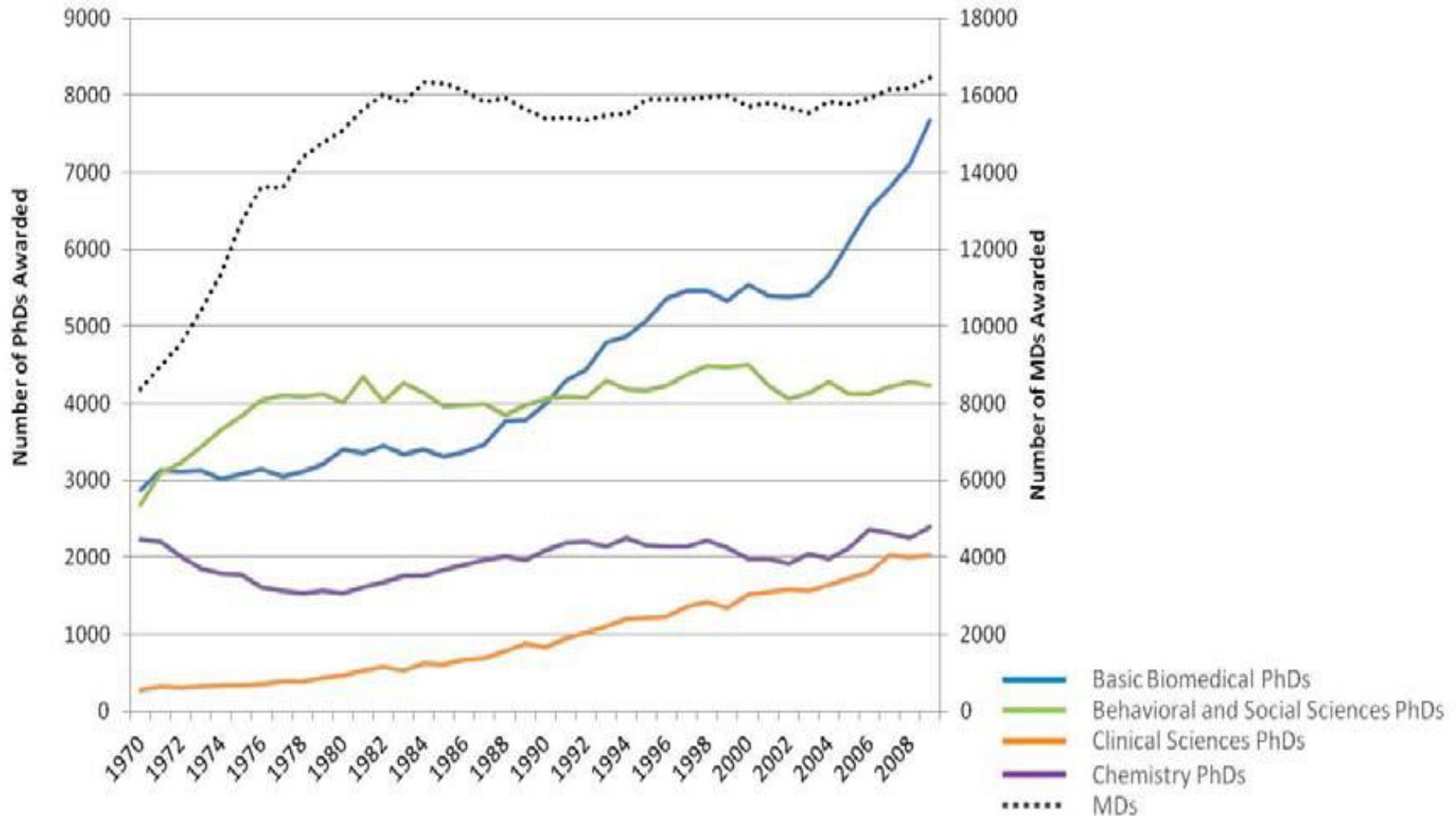research.uoregon.edu

CRPGE Summer Forum, June 2013

Today's session

I. Summary of findings & recommendations from the NIH (2012) Biomedical Research Workforce Working Group Report

II. Darren Johnson, Associate Professor, Chemistry, University of Oregon

III. Charles Caramello, Associate Provost for Academic Affairs & Dean of the Graduate School, University of Maryland

IV. Panel Discussion (floor open)
- What's right and what's wrong with American Doctoral Education?
- How can one achieve change in a decentralized faculty driven system to benefit research, students, and the university more broadly?
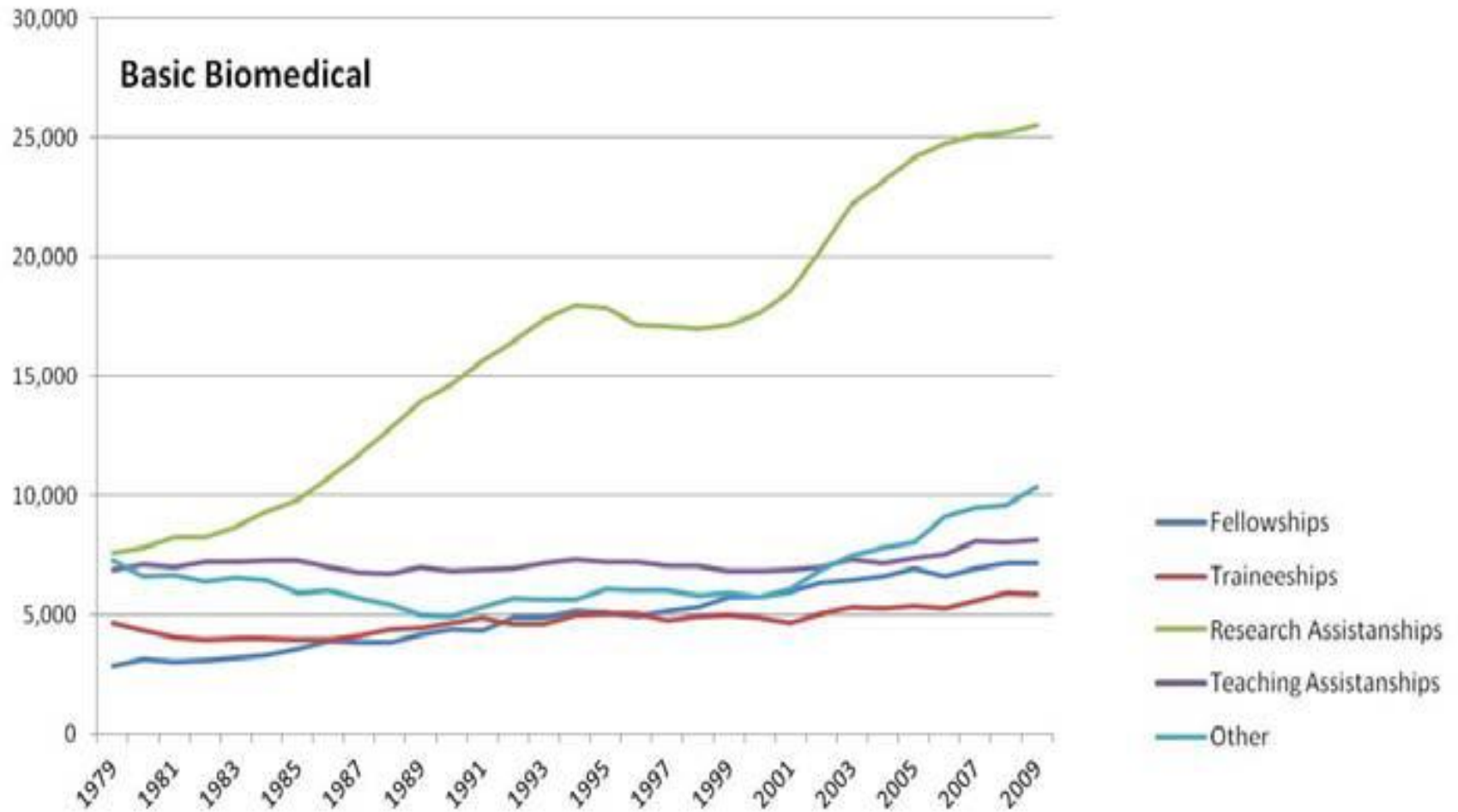
Age of current R01 holders

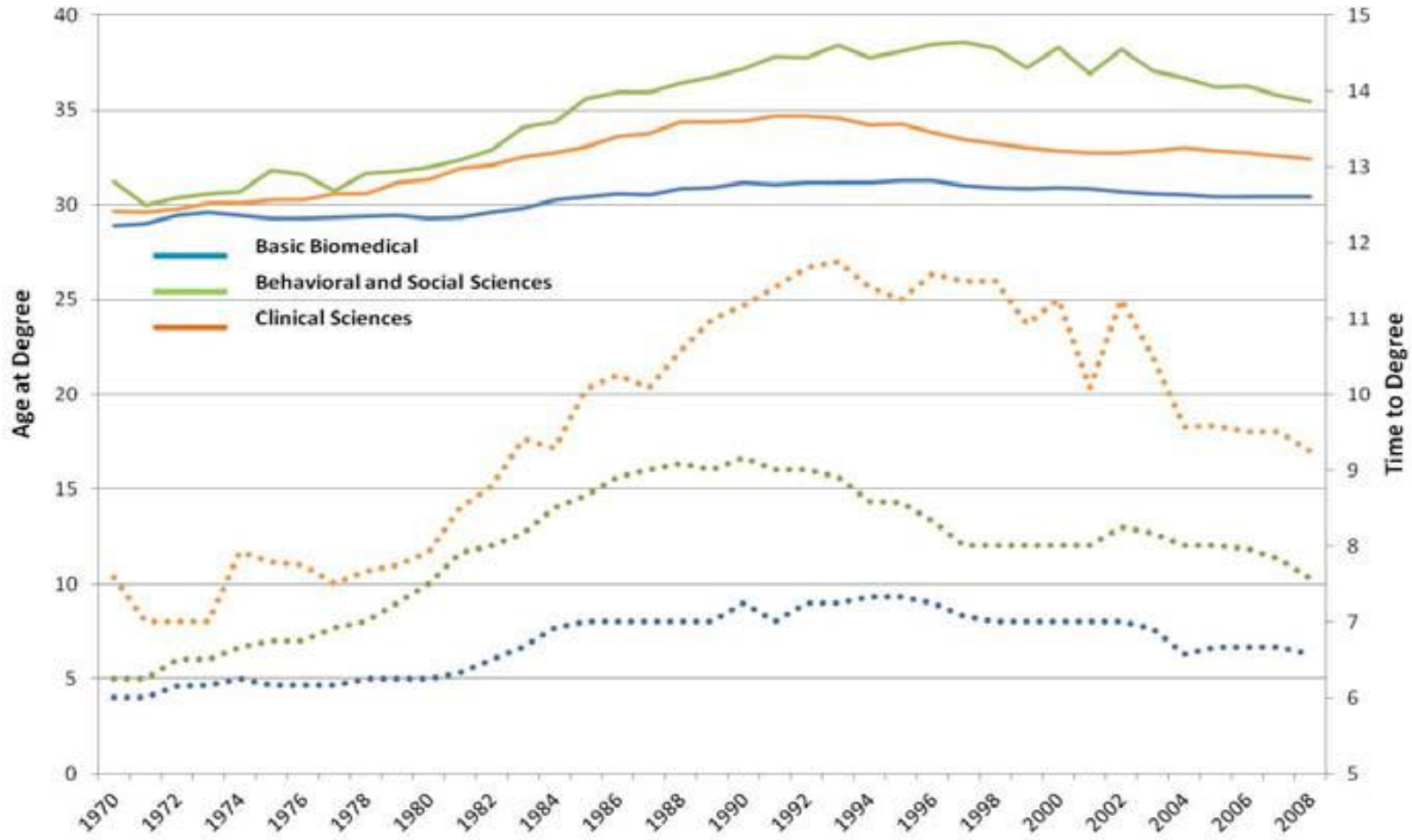# The problem…..lots of students

Trained in mentor model on RPGs

Basic Biomedical

Legend:
- Fellowships
- Traineeships
- Research Assistanships
- Teaching Assistanships
- Other

…not taking longer to get Ph.D.

Too many years of postdoctoral training
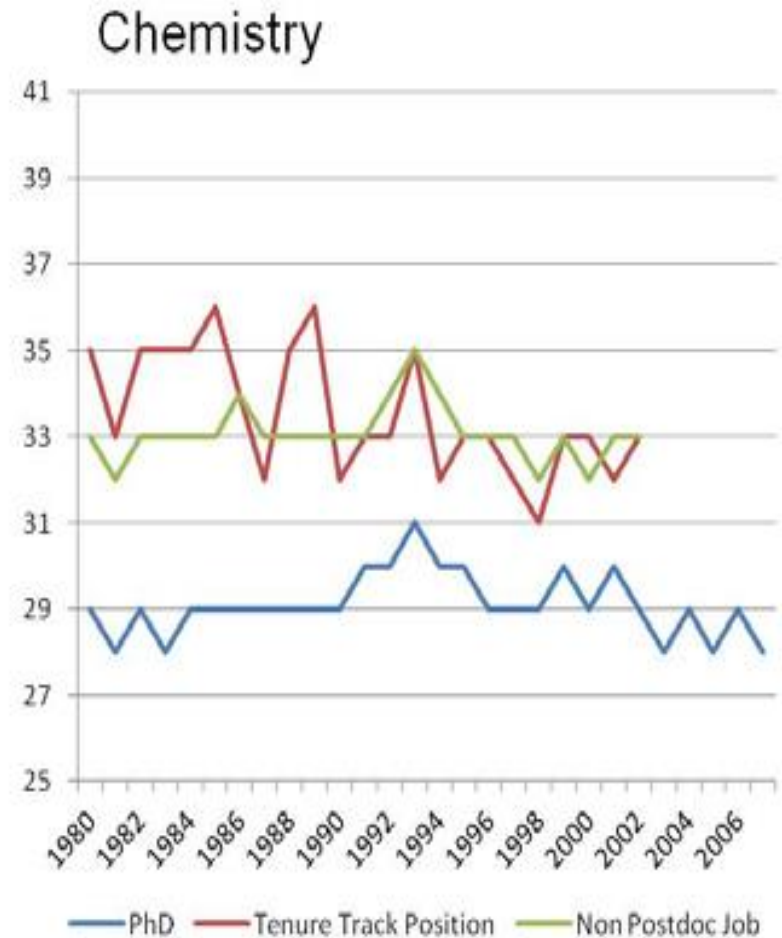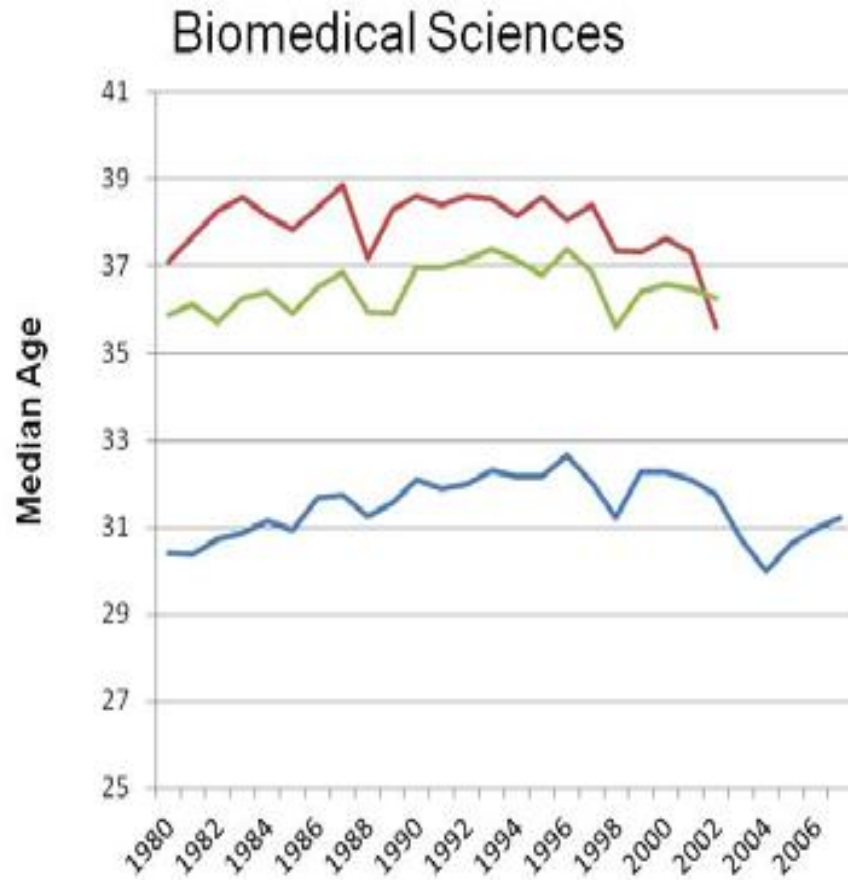
Particular rise in NTTF jobs

Biomedical

Chemistry

Other Life Sciences

- In non-tenure track position
- In tenured or tenure track position

>50% outside of academe
~1 in 4 research in industry or government
~1 in 5 no research at all in science-related job

Grad Ed needs to change

College Graduates

16,000 in 2009

Graduate Education & Training
2009 Total: 83,000
Time to Degree : 5.5-7yrs
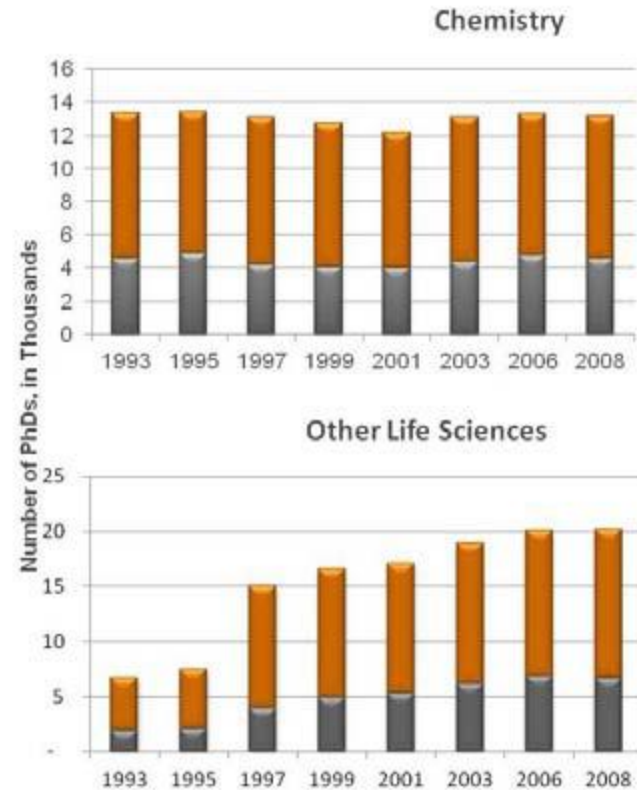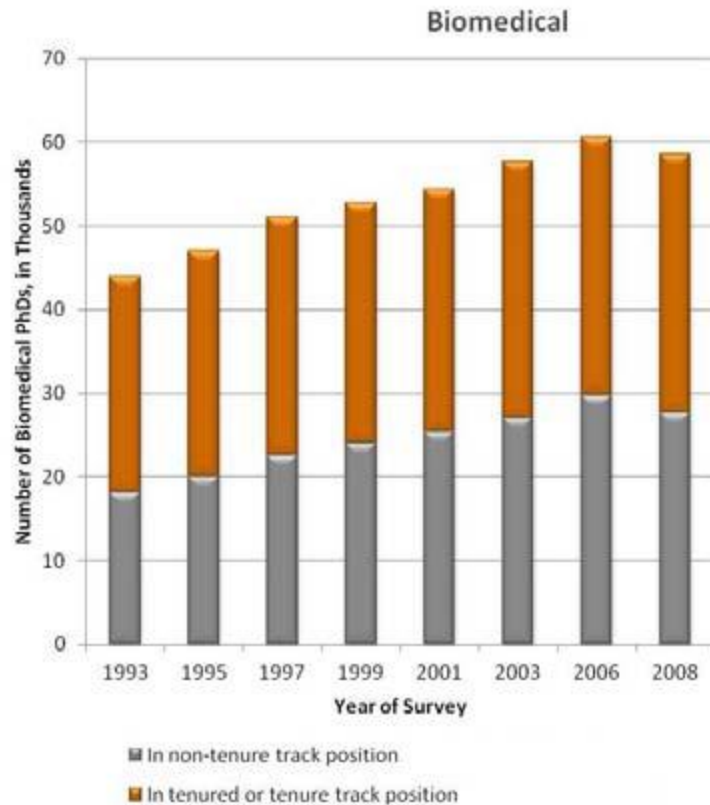2009 Graduates 9,000

4,000 in 2009
8% of graduates leave the US

International

Of graduates who stay in the US
30% skip a postdoc
70% do a postdoc

5,800 in 2009

Postdoctoral Training
2009 Total: 37,000 to 68,000
Median Length 4 years

1,900 to 3,900 in 2009

Post-Training Workforce (128,000 Biomedical US-trained PhDs)

Science Related Non-Research	Government Research	Academic Research or Teaching	Industrial Research	Non-Science Related	Unemployed
18% Biomedical US-trained PhD 2008 ~24,000	6% Biomedical US-trained PhD 2008 ~7,000	43% (23% tenured) Biomedical US-trained PhD 2008 ~55,000	18% Biomedical US-trained PhD 2008 ~22,500	13% Biomedical US-trained PhD 2008 ~17,000	2% Biomedical US-trained PhD 2008 ~2,500

Goals:

- Attract and retain the best and most diverse scientists, engineers and physicians from around the world to conduct biomedical research

- Increase the number of domestic students from diverse backgrounds who excel in science and become a part of the STEM workforce.

- Prepare biomedical PhD students and postdoctoral researchers to participate in a broad-based and evolving economy.

Recommendations:

Prepare students for a wide array of career options

- Provide additional training and career development experiences to equip students for various career options via TG supplement
  - project management, communication and business entrepreneurship skills
    - Involve stakeholders in program design
    - SBIR/STTR awardees to provide internships for hands on training at small businesses
  - teaching experience needed for a successful faculty position in liberal arts colleges
    - benefit those students to all
- Institutions should develop other degree programs, e.g. master's degrees for specific science-oriented career outcomes in industry or public policy.
  - Also can be exit pathways for PhD students who pursue research career track.
    - Change the definition of "success" in faculty, program culture, TG reviewers/NIH institutes.
- Inform prospective students of true career outcomes of their graduates
  - Prospective students can align their study with programs that suit them

Recommendations:

Shorten the length of training (Ph.D + Postdoc) in preparation for biomedical career

- Cap the # of years of NIH supported training (TGs + Fs + RPG) to an institutional M of 5 years (and not > 6 for any individual)

- NIH has no influence over the quality of the training of students supported by RPGs.
  - Increase the relative proportion of graduate students supported by TGs and Fs

- NIH TG motivates graduate programs to provide all students with training that conforms to NIH guidelines and expectations.
  - Revise the peer review criteria for TGs to include outcomes of all students in the relevant PhD programs at those institutions
  - Educate study sections reviewing graduate TGs on the value of the full range of career outcomes

- Harmonize requirements and characteristics of TGs among NIH ICs

Are there examples that might inform our thinking?

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