



The Career Landscape: Preparing STEM professionals for the Science of the Future

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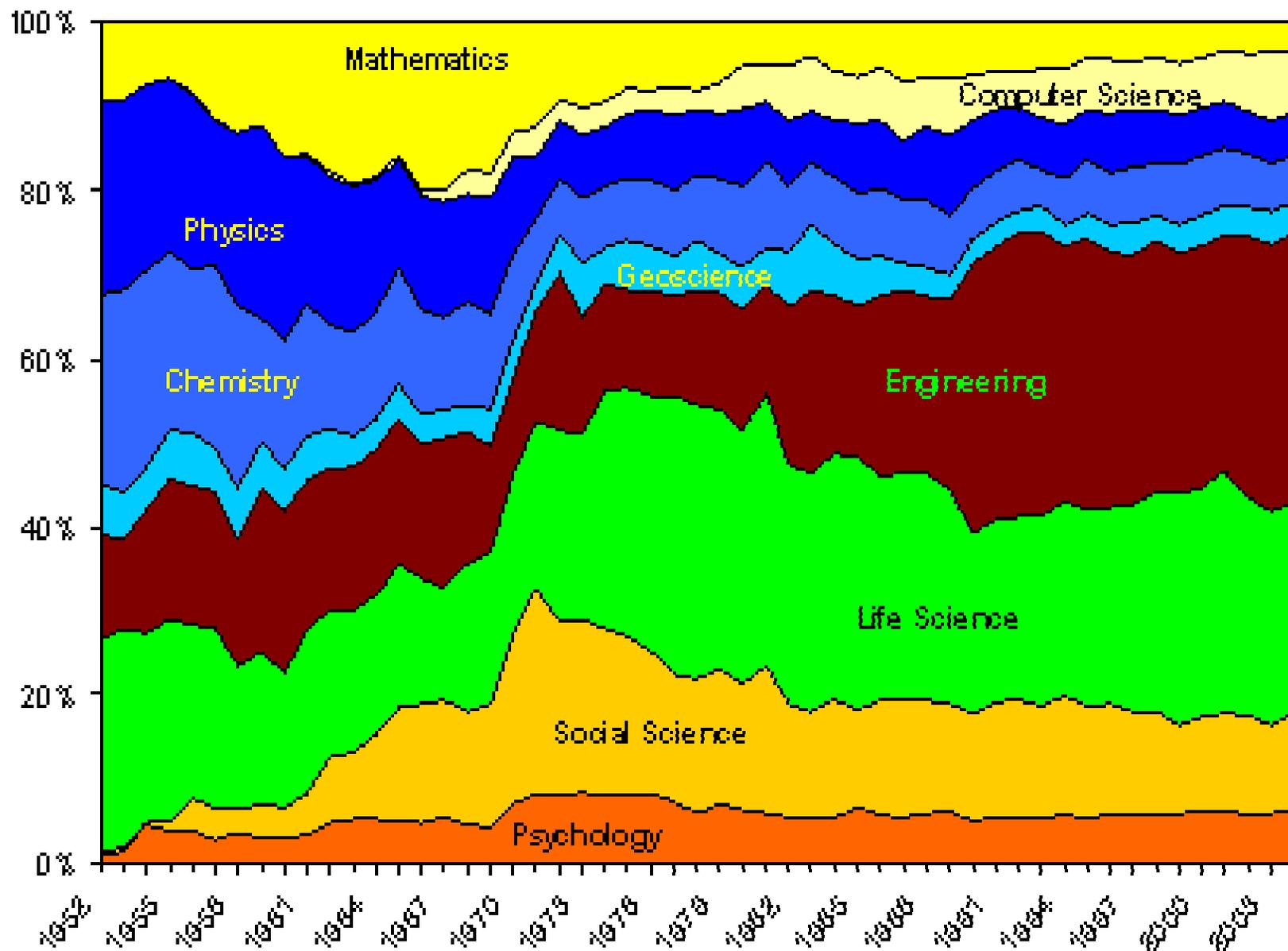
Average Annual Percent Growth Rate for Employment of S&E Doctorate Holders in U.S. Economy (1973-2003)*

Sector	1973-83	1983-93	1993-03	30-yr Average
All Sectors	5.4	2.5	2.0	3.3
Academia	4.1	2.0	1.9	2.6
<i>Research Univs.</i>	3.2	2.3	1.2	2.2
<i>Other</i>	5.0	1.6	2.6	3.2
Business	7.9	4.1	2.7	4.9
Government	5.5	2.5	3.1	3.7
Other	5.3	0.5	-1.6	1.4

Source: NSF Science & Engineering Indicators 2006
Survey of Doctorate Recipients



Changes in Distribution of GFRP Awardees by Field (Chiang, et al. 2004)

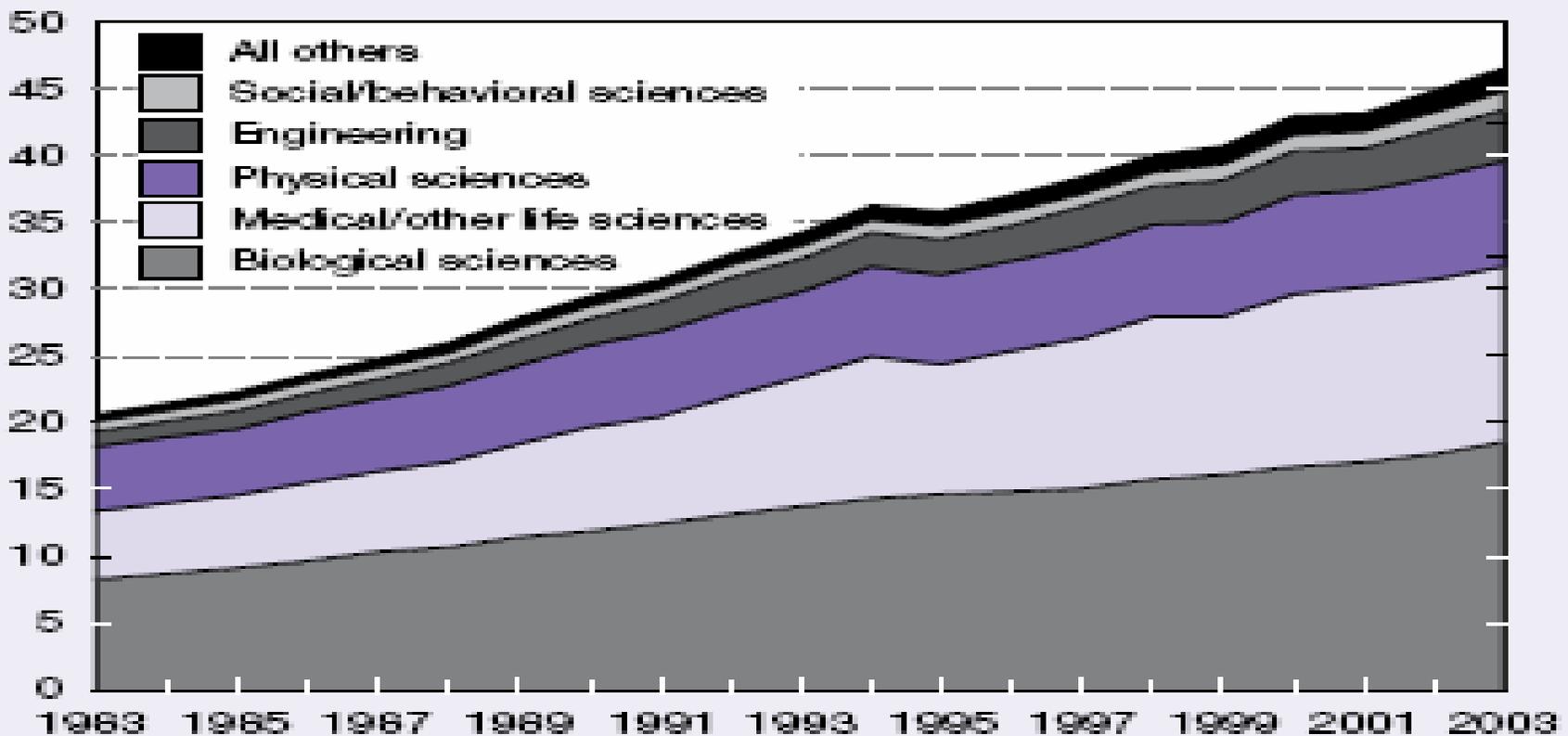


Postdoc Presence in Universities by Broad Field

Figure 2-28

Postdocs at U.S. universities, by field: 1983–2003

Postdocs (thousands)



SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, Web/CASPAR database, <http://webcaspar.nsf.gov>. See appendix table 2-35.

Light Scattered by Gold Nanorods



Graduate education must prepare young professionals for the excitement of discovery and a meaningful livelihood through which to pursue it.



Key Issues Facing Today's Graduate Students

- ❑ **The imperative for interdisciplinary preparation**
- ❑ **The need for knowledge about career alternatives**
- ❑ **The need for international exposure**



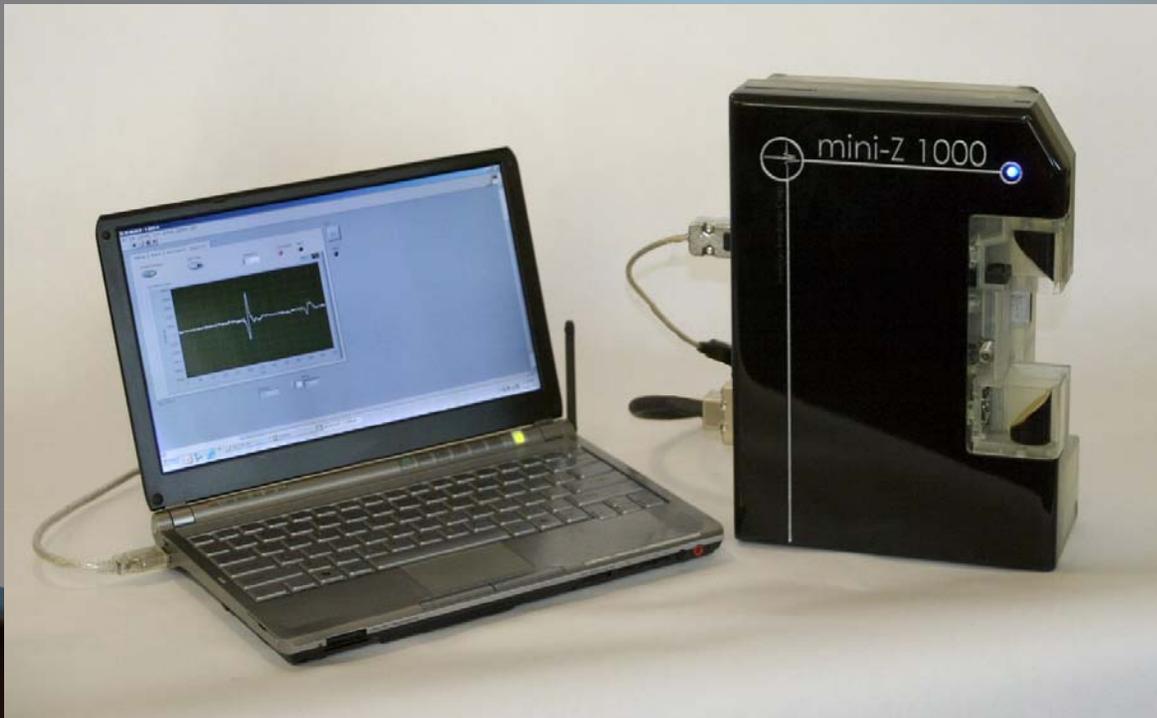
The IGERT Model

- **Training in cross-disciplinary laboratories and the value of diversity in scholarship**
- **Co-advisor from a complementary discipline;**
- **An external internship at a company, government lab or abroad**
- **Seminars in effective communication skills, and problem-solving problems in interdisciplinary teams**
- **Responsible conduct of research**
- **Seminars in alternative career paths**



“Young Inventor’s Research Transforms Marketplace”

IGERT-funded researcher develops hand-held terahertz spectrometer. The device has applications in medical, aerospace, security and other fields. It has already proven its ability to detect cracks in space shuttle foam, image tumors in breast tissue, and spot counterfeit watermarks on paper currency.



Partnership for International Research and Education (PIRE)

The intellectual interactions of people from different cultures is indispensable in the development of a diverse STEM workforce capable of addressing important problems in science and engineering.



What Could We Do Now?

- ❑ Explore strategies through the NSTC Subcommittee on Education for improving knowledge about:
 - ❖ Institutional conditions likely to affect success of graduate students and postdoctoral trainees;
 - ❖ Postdoctoral trends and the experiences of postdocs;
 - ❖ Lessons emerging from organizations and economic sectors concerned with the future of STEM education and the U.S. workforce.

