

# Postdoctoral Training: Qué es y qué debe ser?

Philip S. Clifford, Ph.D.

# Outline

- Definition of postdoctoral fellow
- Data about postdocs and careers
- Career building tools:
  - APS Professional Skills Document
  - AAMC Postdoc Compact
  - FASEB Individual Development Plan

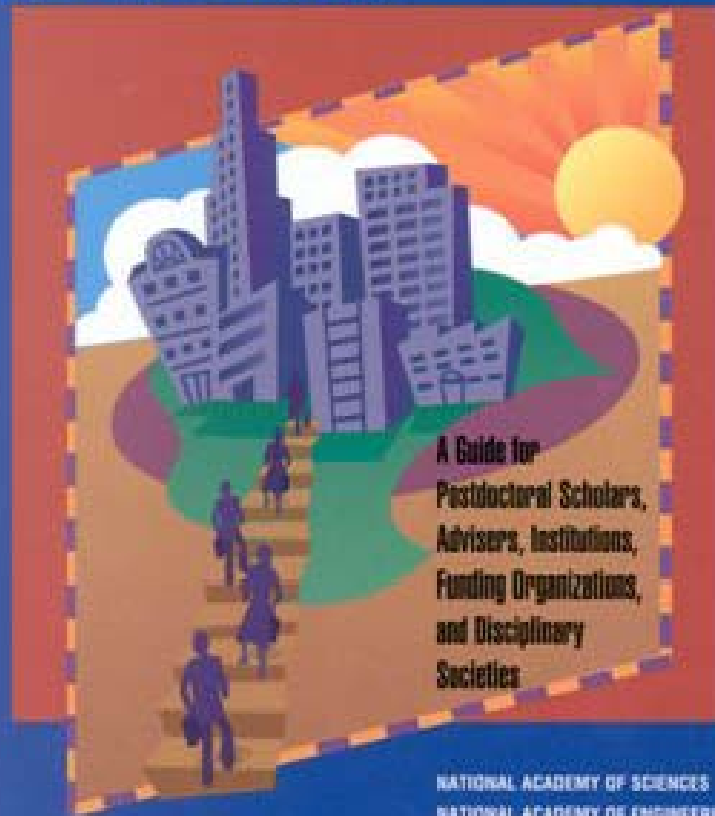
# NIH/NSF Definition of Postdoctoral Scholar

An individual who has received a doctoral degree and is engaged in a temporary and defined period of mentored and advanced training to enhance the professional skills and research independence needed to pursue his or her chosen career path.

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# ENHANCING THE POSTDOCTORAL EXPERIENCE FOR SCIENTISTS AND ENGINEERS



**A Guide for  
Postdoctoral Scholars,  
Advisers, Institutions,  
Funding Organizations,  
and Disciplinary  
Societies**

NATIONAL ACADEMY OF SCIENCES  
NATIONAL ACADEMY OF ENGINEERING  
INSTITUTE OF MEDICINE

# NAS Action Points

In order to enhance the postdoctoral experience, advisers, institutions, funding organizations, and disciplinary societies should:

#8 - Provide substantive career guidance to improve postdocs' ability to prepare for regular employment.

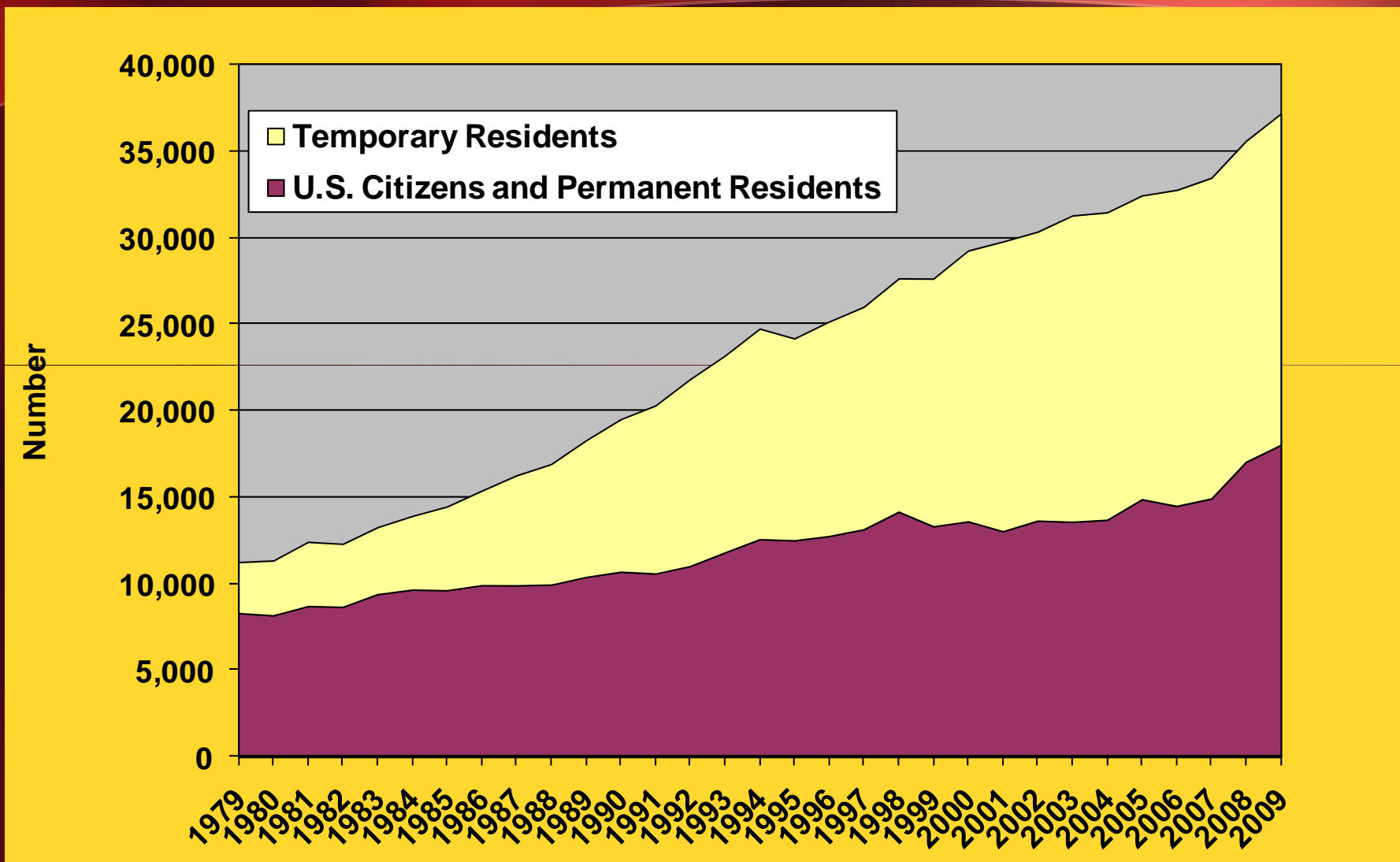
#10 - Take steps to improve the transition of postdocs to regular career positions.

# International PhD Production

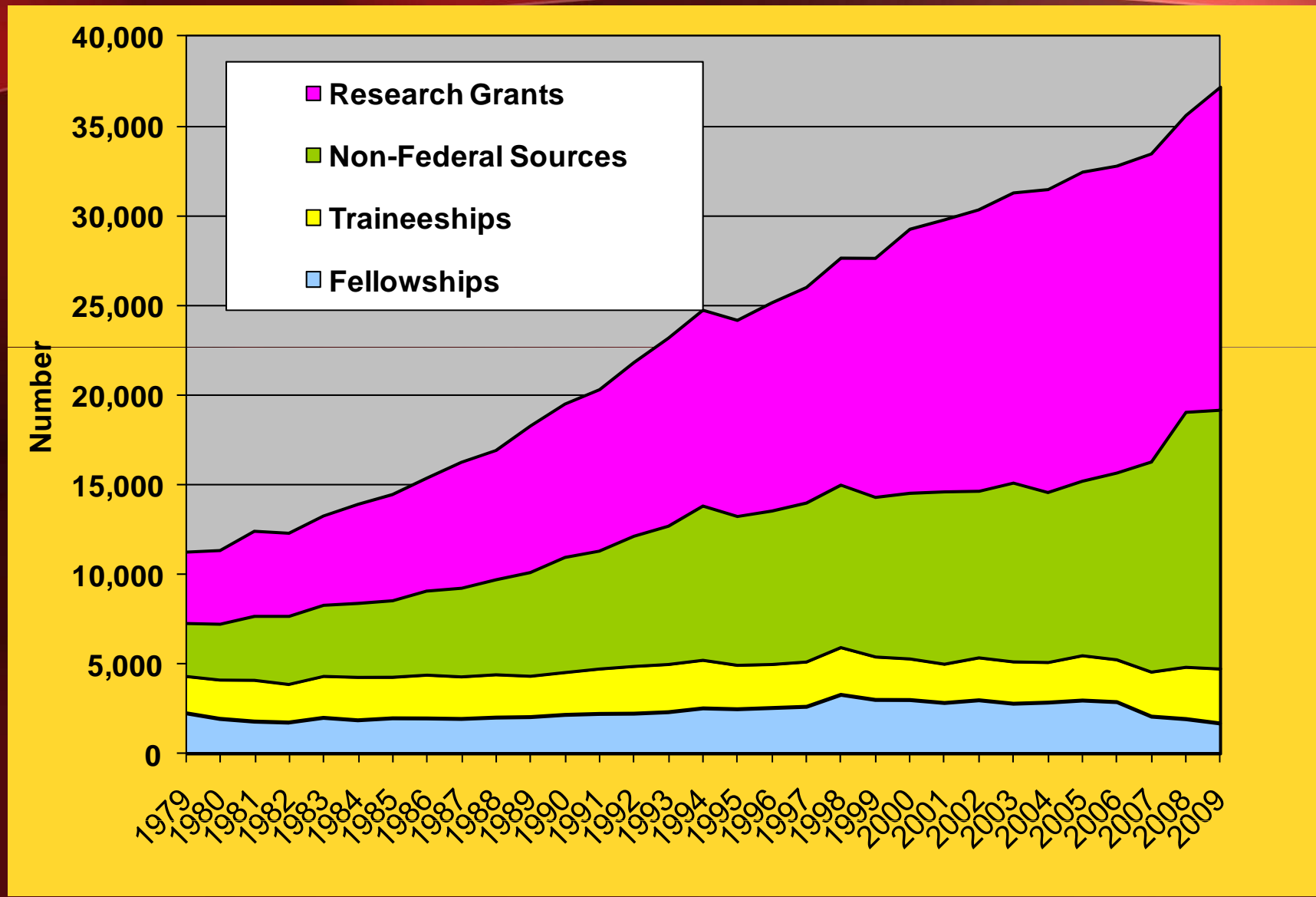
How many?

43,000 – 89,000 postdocs in the US

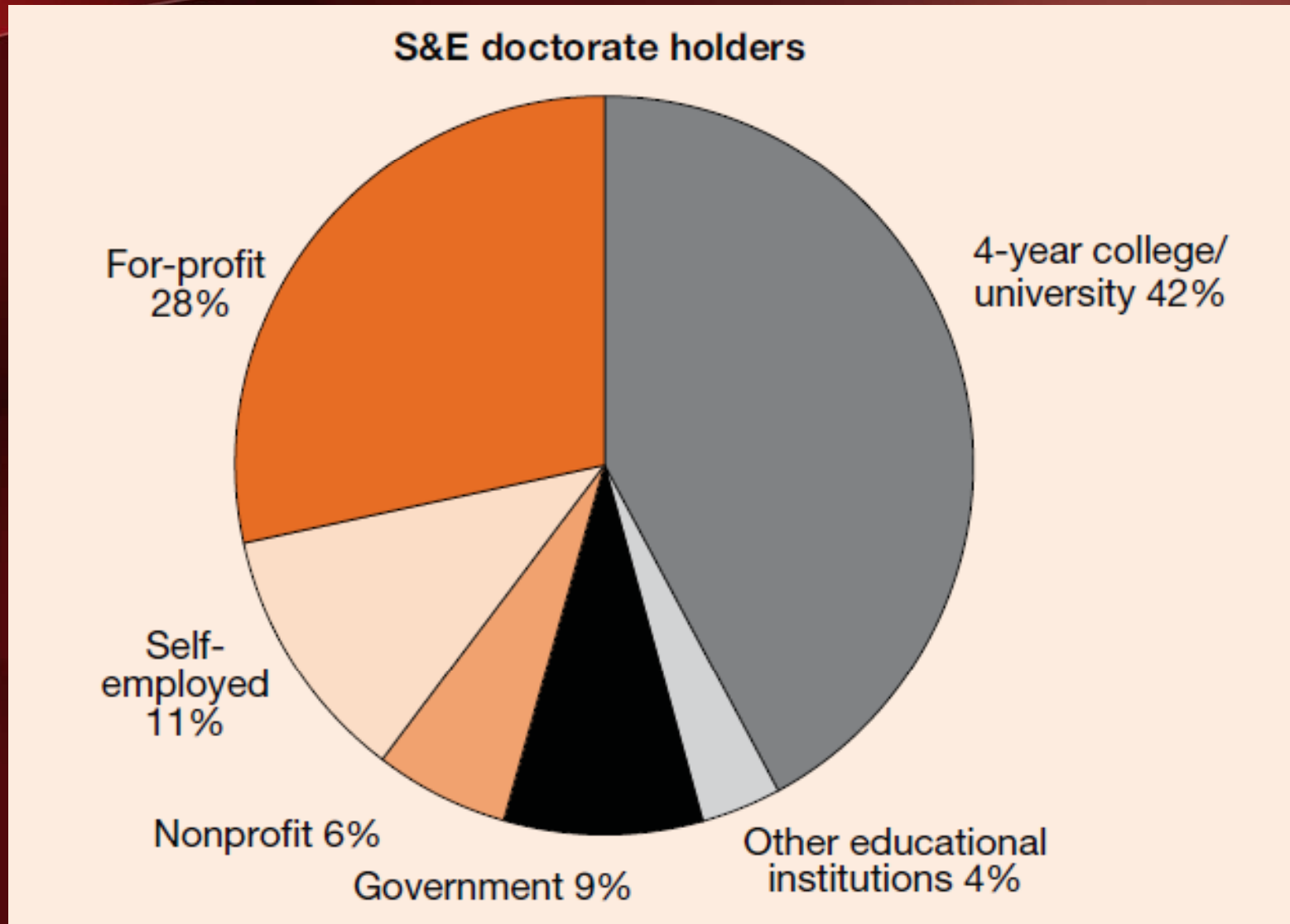
# Biological and Medical Sciences Postdocs by Citizenship/Visa Status



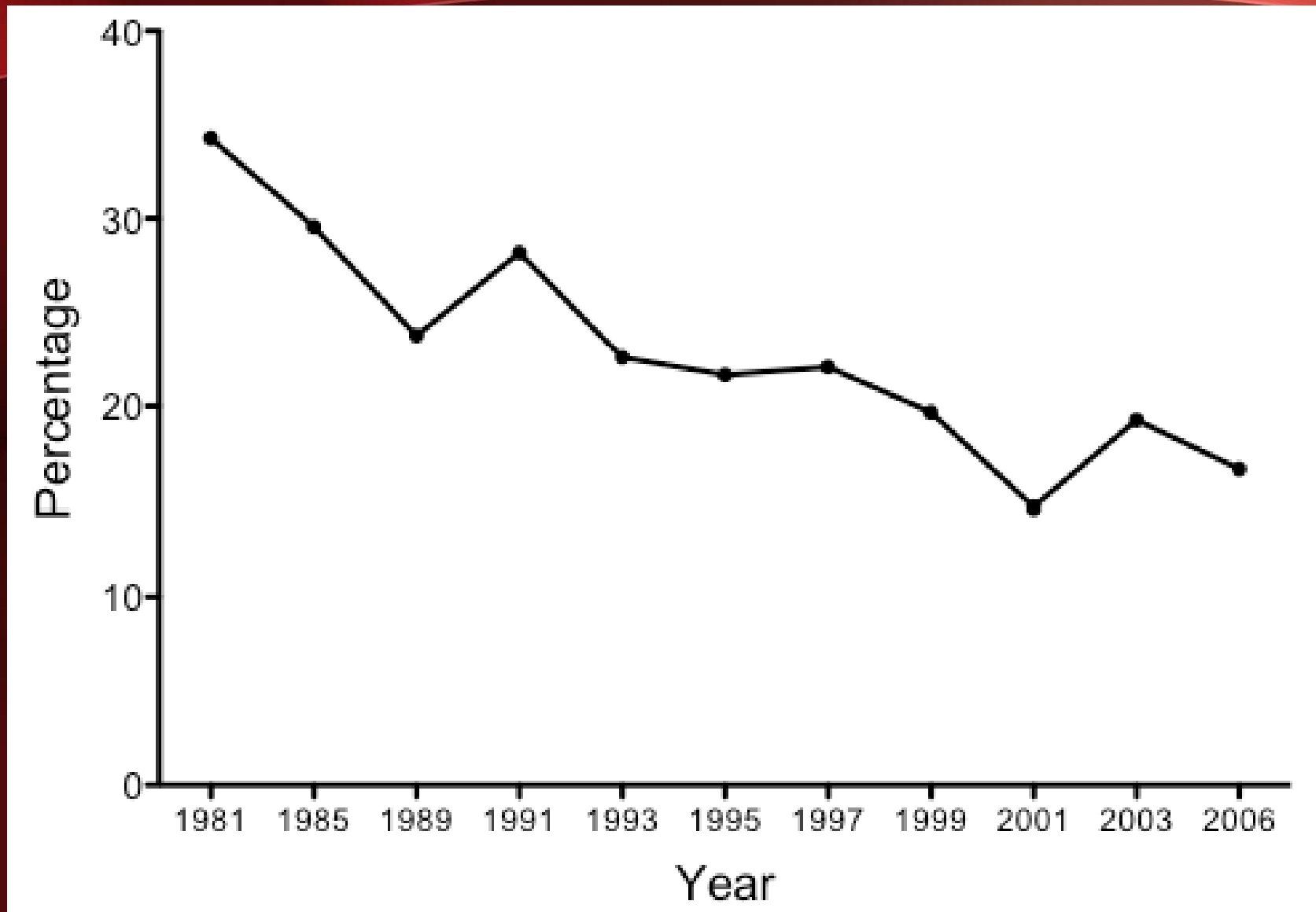
# Biological and Medical Sciences Postdocs by Source of Support



# Employment Sector S&E PhDs



# Tenure-Track Faculty Positions



*NSF Survey of Doctorate Recipients*

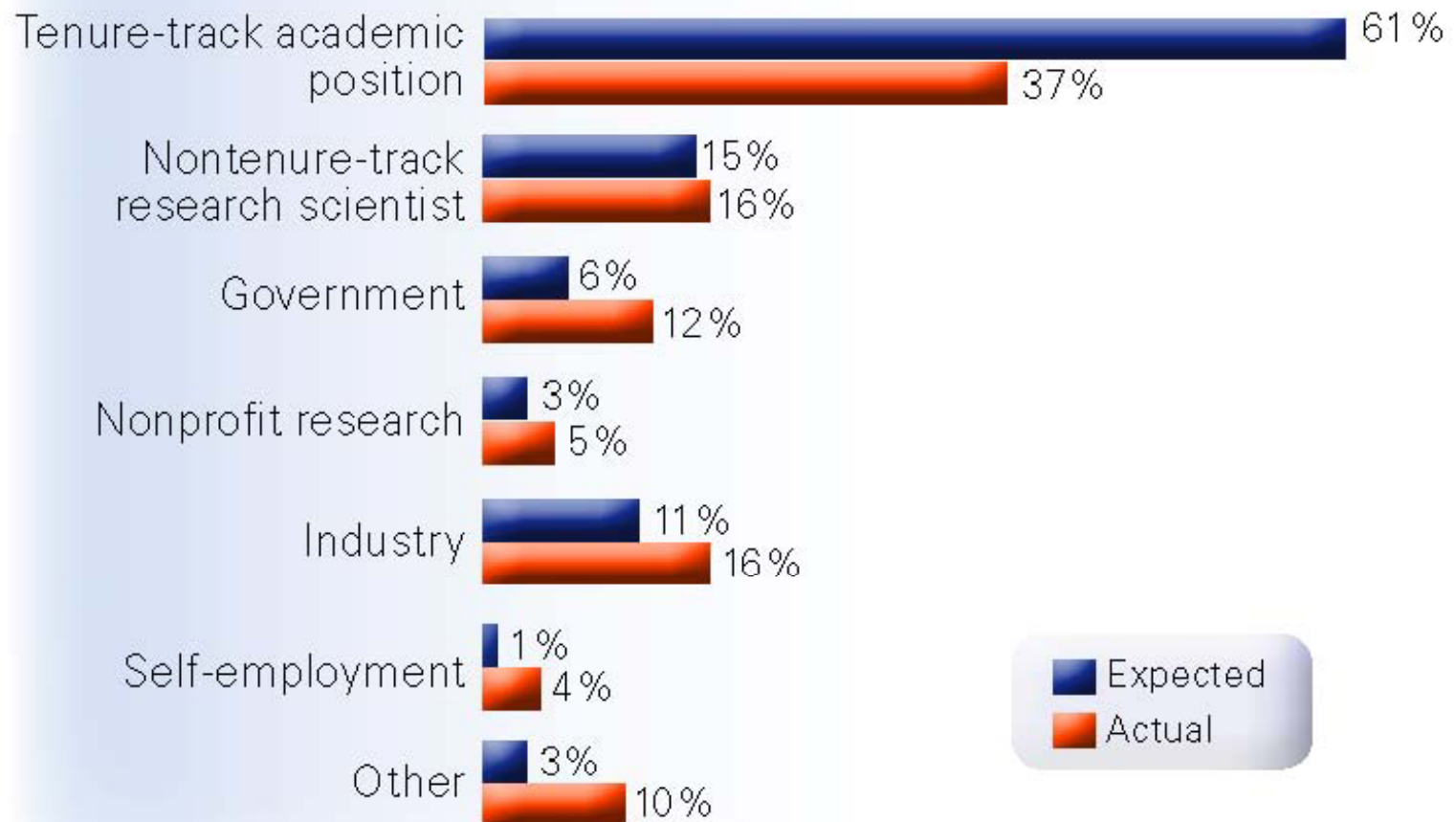
# Age at Time of First Major Award

# Pharma Job Losses 2010

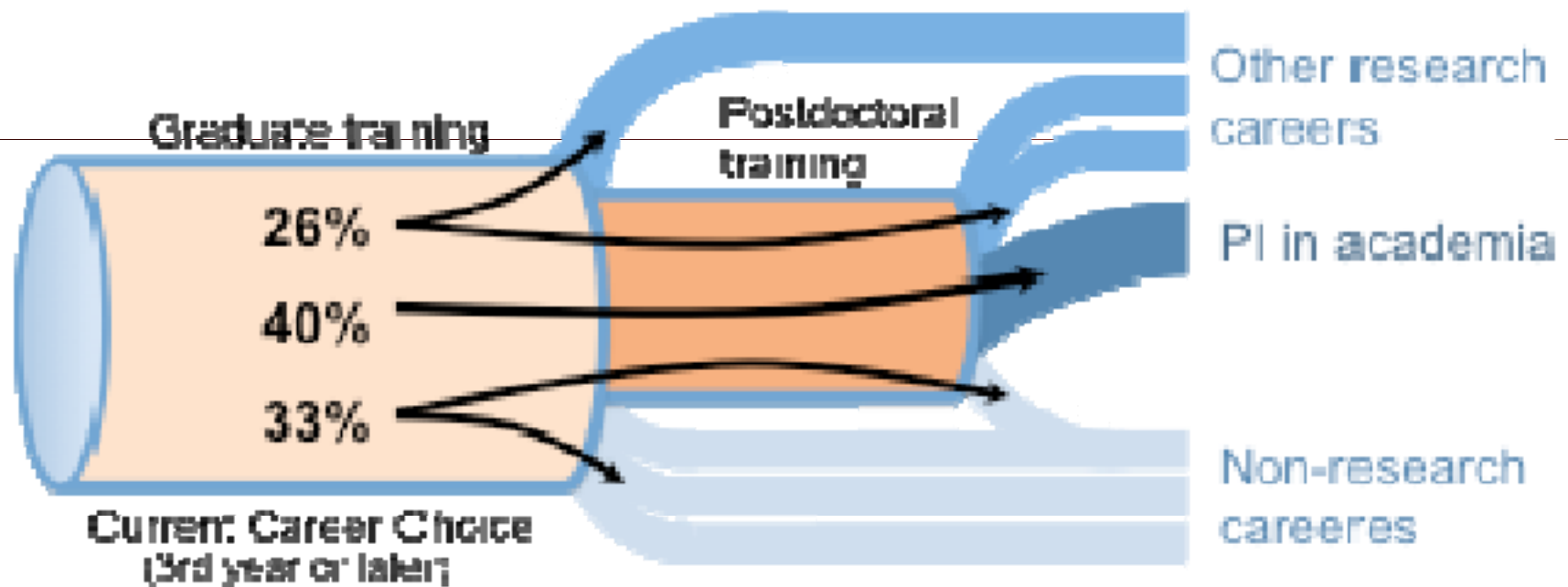
- Astra-Zeneca - 8550 positions
- Pfizer - 8480 positions
- GlaxoSmithKline - 5200 positions
- Roche - 4800 positions
- Bayer - 4500 positions
- Abbott Labs - 3000 positions
- Sanofi-Aventis - 2500 positions

# Career Disconnect

## Type of Position Expected vs. Actually Obtained (Former Postdocs)



# Branching Career Pipeline



Career building tools:

APS/ACDP Professional Skills  
Document

AAMC Postdoc Compact

FASEB Individual Development Plan

# Professional Skills

- Core Science Knowledge
- Lab Skills
- Analytical Skills
- Teaching Skills
- Communication Skills
- Management Skills
- Career Development Skills
- Professional Ethics

# NPA Core Competencies

- Scientific Knowledge
- Research Skills
- Communication Skills
- Professionalism
- Leadership and Management
- Responsible Conduct of Research

# Compact Between Postdocs and Mentors

- Core Tenets

  - institutional commitment

  - quality postdoctoral training

  - importance of mentoring

  - foster breadth and flexibility in careers

- Commitments of Postdoctoral Scholars

- Commitments of Mentors

# Individual Development Plan

## 1. Self-assessment

Consider your skills, interests, and values.



**Your own  
IDP**



Submit



## 2. Career exploration

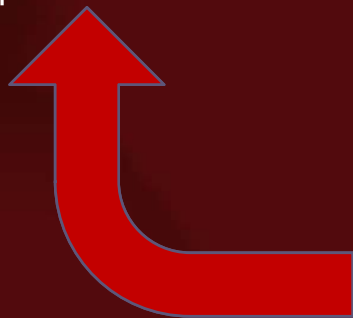
Learn about career options for PhD-level scientists, and compare your skills, interests, and values to each option.

## 3. Set goals

Make a concrete plan for how you will improve your skills, build your network, and get the experience you need to prepare for your desired career path.

## 4. Share your plan with mentors

Recruit mentors to help with various parts of your plan.



# Skills Assessment



## INDIVIDUAL DEVELOPMENT PLAN

Welcome bruce!  
Log Off  
About  
My Account

### Overview

Overview Summary

### Assessment

Skills Assessment

Interests Assessment

Values Assessment

Assessment Summary

### Career Exploration

Consider Career Fit

Read About Careers

Attend Events

Talk to People

Choose a Career Path

### Setting Goals

Career Advancement Goals

Skill Goals

Project Goals

### Development Plan

Mentoring Team

Plan Summary

## Scientific Skills Assessment

Previous Step

Next Step

Quick Tips

Assessment

Summary

Assess your **skills** in these areas on a scale of 1-5 where:

1 = Drastic improvement needed

5 = Highly proficient

### Scientific Knowledge

1 = Drastic improvement needed | 5 = Highly proficient

1  2  3  4  5

Broad based knowledge of science

1  2  3  4  5

Critical evaluation of scientific literature

### Research Skills

1 = Drastic improvement needed | 5 = Highly proficient

1  2  3  4  5

Experimental design

1  2  3  4  5

Statistical analysis

1  2  3  4  5

Interpretation of data

1  2  3  4  5

Creativity/innovative thinking

1  2  3  4  5

Navigating the peer review process

### Communication

1 = Drastic improvement needed | 5 = Highly proficient

1  2  3  4  5

Basic writing and editing

1  2  3  4  5

Writing scientific publications

1  2  3  4  5

Writing grant proposals

# Matching Skills and Interests to Careers



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## Career Fit

[Return to Wizard](#)

Quick Tips

Career Path Matches

The table below lists career paths commonly followed by PhD-level scientists. An ideal career fit would be a job that intersects your skills, values, and interests.

**Click on the percentages in the right-hand columns** to compare how your self-assessments matched with the ratings for each career path (as estimated by career counselors).

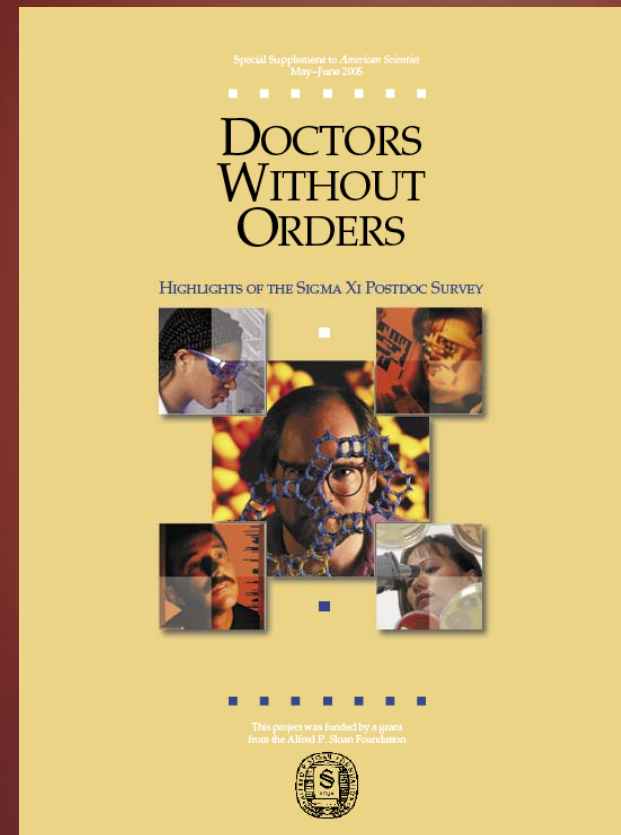
Career Path	Skill Match	Interest Match	Values
<b>Combined research and teaching career:</b> Faculty at a selective liberal arts college, masters-granting university, or doctoral-granting university whose job includes both research and major teaching responsibilities	<a href="#">26%</a>	<a href="#">48%</a>	
<b>Teaching-intensive careers in academia:</b> A primarily teaching faculty position in a research university, liberal arts college, community college	<a href="#">26%</a>	<a href="#">46%</a>	
<b>Principal investigator in a research-intensive institution:</b> Including medical schools, private research institute or government lab or university with minimal teaching responsibilities	<a href="#">26%</a>	<a href="#">43%</a>	
<b>Entrepreneurship:</b> Starting your own business	<a href="#">26%</a>	<a href="#">42%</a>	
<b>Science education for non-scientists:</b> Working in education or public outreach such as at a science museum or scientific society	<a href="#">26%</a>	<a href="#">41%</a>	
<b>Research in biotech/pharma:</b> Conducting discovery or preclinical research, managing research teams or research facilities	<a href="#">26%</a>	<a href="#">40%</a>	<i>Consider Your Values!</i>

# Sigma Xi Survey

22,000 postdocs contacted  
7600 postdocs surveyed

Postdocs who developed a plan with their advisors:

- More satisfied
- More productive
- Fewer conflicts with PI



# Take Home Message

- Trainees are not just workers
- Challenges in scientific careers
- Creating an IDP has benefits for both trainee and mentor