

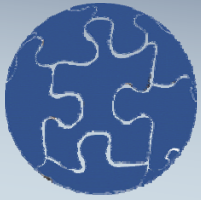
The NPA Core Competencies

University of Virginia
Charlottesville, VA

Lunchtime Postdoc Seminar
November 6, 2009

Presented by:
Cathee Johnson Phillips
Executive Director, National Postdoctoral Association

*With special thanks to Joan Chesney, M. D.,
St. Jude Children's Research Hospital,
for her work and for the use of some of her slides*



Thank YOU!

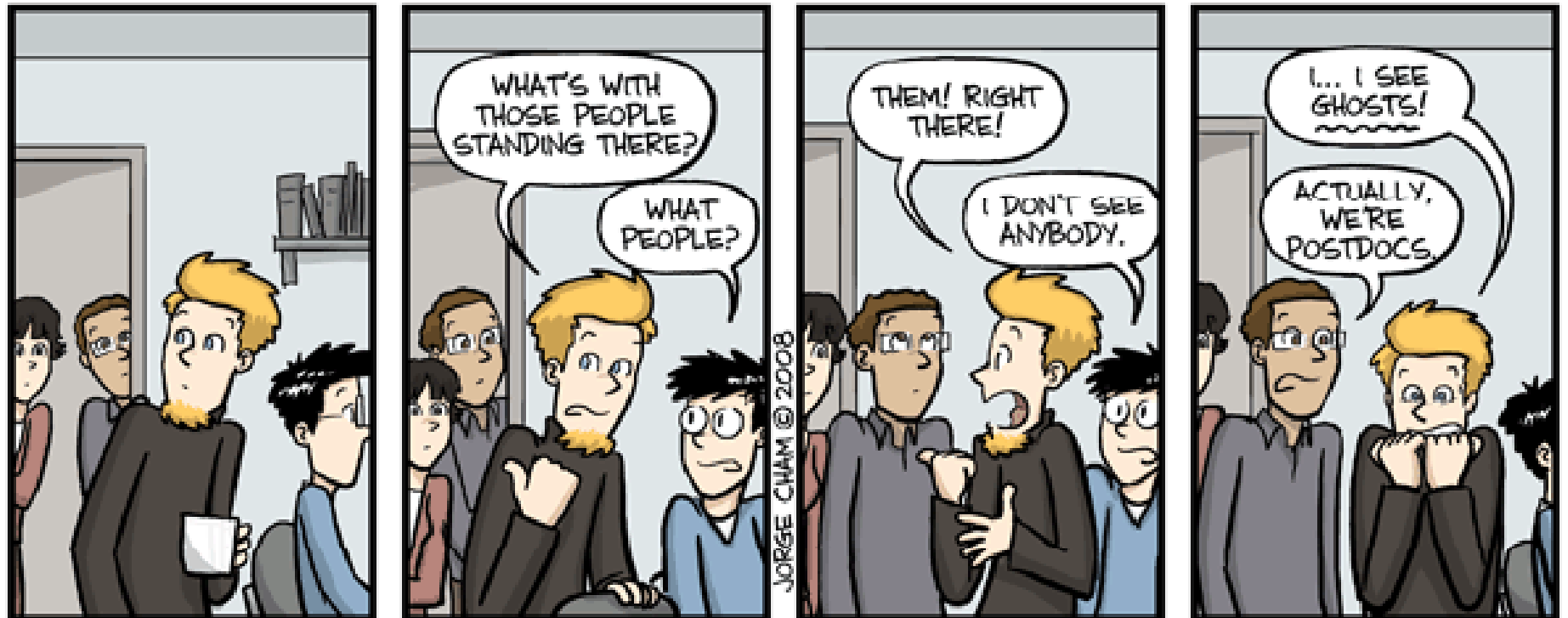
"Consider the postage stamp: its usefulness consists in the ability to stick to one thing until it gets there."

– Josh Billings (1818-1885)

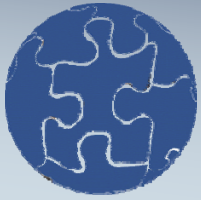




Are postdocs still “invisible”?



WWW.PHDCOMICS.COM



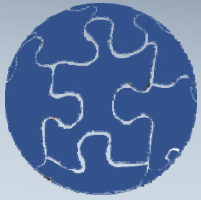
National Postdoctoral Association

The mission of the National Postdoctoral Association is to advance the U.S. research enterprise by maximizing the effectiveness of the research community and enhancing the quality of the postdoctoral experience for all participants.

The NPA is a non-profit 501(c)3 organization headquartered in Washington, DC.



The National Situation: A Context for Competency



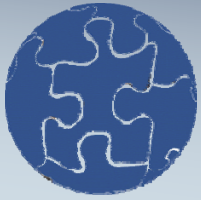
Postdoctoral Scholars Today

- 89,000 in U.S.* (estimate)
- 60% international* (estimate)
- \$38,000 median annual income**
- 51 hours, average work week**
- Early 30s and in a relationship; 1/3 have children**
- 42% women; 58% men**

Sources:

*National Science Foundation Division of Science Resource Statistics. (January 2008). *Science and engineering indicators 2008*. Arlington, VA: National Science Board.

**Sigma Xi 2004-2005 Postdoc Survey



Postdoctoral Scholars Today

How many postdocs who earn their degree in the United States are women?

NSF Survey

1996 29%

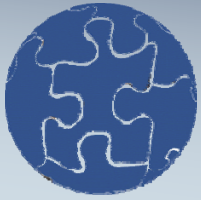
2006 33%

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, 1996 and 2006.

Sigma Xi (2004-05) 42%

(Citizens/residents 51%

Visa holders 35%)



Postdoctoral Scholars Today

Sigma Xi Postdoc Survey Project

- White 75%
- Asian 17%
- Hispanic/Latino 4%
- Black/African-American 4%

- Citizens/Residents 46%
- International 54%



Postdoctoral Scholars Today

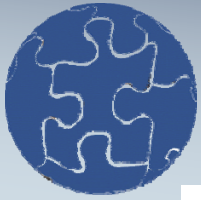
- Where do they go after the postdoc?

Business/Industry 41%

Government 9%

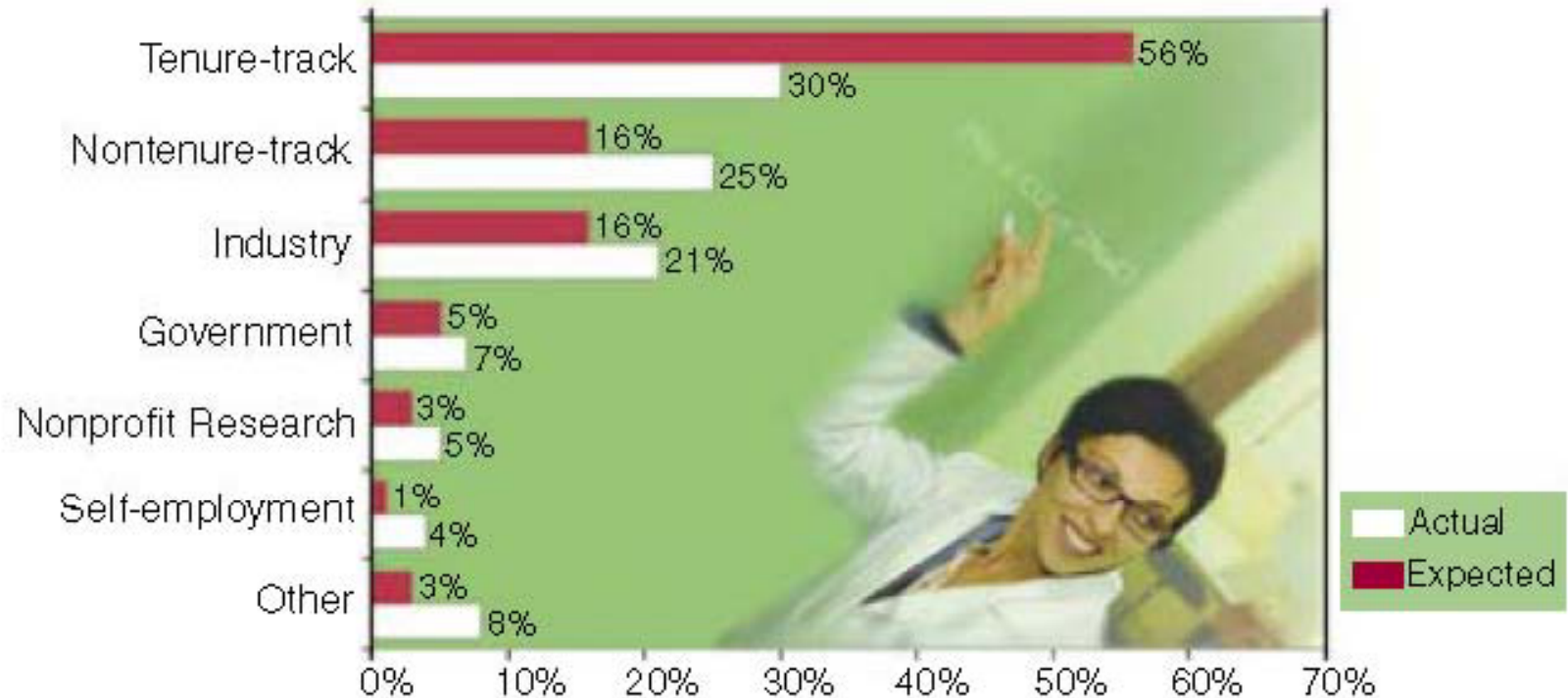
Education 49%

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Doctorate Recipients: 2006.



Postdoctoral Scholars Today

Type of Position Expected vs. Actually Obtained



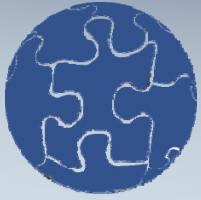
A larger percentage (56%) of former postdocs desired tenure-track academic positions than actually obtained such positions (30%). Similarly, only 16% of former postdocs initially expected to seek nontenure-track research scientist positions, compared with the 25% who ended up in such positions. The "other" types of positions that were cited included nonbench careers such as consulting, technology transfer, and administration.



PI Rankings 2009	Postdoc. Rankings 2008	Attribute
1	7	Communication
2	1	Direction and Vision
3	4	Mentoring
4	9	Training
5	N/A	Work Culture/Environment
6	2	Networking
7	5	Employer/Situation
8	N/A	Quality of Life
9	6	Advancement/Career Options
10	8	Compensation and Benefits
11	10	Considering Spouses/Partners

2008 and
2009 surveys
conducted by
*Science
Careers*

Comparison of attribute rankings from principal investigators (PIs) and postdocs. The table compares certain attributes of a successful postdoc, as rated by PIs in this year's survey, and postdocs in the 2008 survey. Of note are the clearly divergent views on Communication, Networking, and Training.



Recent National Trends



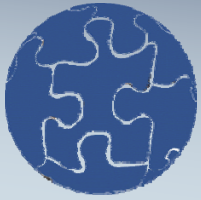
Science & Engineering Ph.D. holders reporting that they had a postdoc:

Before 1972 31%

2002-2005 46%

(Highest in life sciences)

Source: National Science Foundation Division of Science Resource Statistics. (January 2008). *Science and engineering indicators 2008*. Arlington, VA: National Science Board.



Recent National Trends



Recent doctorate holders
hired into full-time faculty
positions

1973

74%

2006

38%

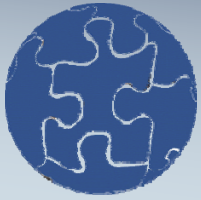
Source: National Science Foundation Division of Science Resource Statistics.
(January 2008). *Science and engineering indicators 2008*. Arlington, VA:
National Science Board.



Recent National Trends

“Recent S&E doctorate holders who entered academic employment at research universities **were more likely** to be in postdoc than in faculty positions.”

Source: National Science Foundation Division of Science Resource Statistics. (January 2008). *Science and engineering indicators 2008*. Arlington, VA: National Science Board.

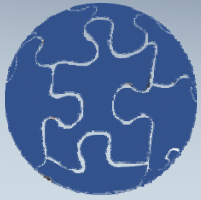


Recent National Trends



Of recent Ph.D.s (1997-2001, all STEM fields) who completed a postdoc, **30.6%** had a tenure-track position; was previously **~20%**.

Source: National Science Foundation Division of Science Resource Statistics. (January 2008). *Science and engineering indicators 2008*. Arlington, VA: National Science Board.

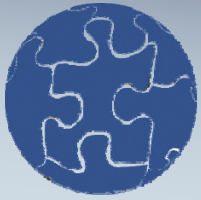


Recent National Trends



“U.S. enrollment in science and engineering (S&E) graduate programs in 2007 **increased by 3.3%** over comparable data for 2006. This is the highest annual growth rate since 2002 and is nearly double the 1.7% growth rate seen in 2006.”

Source: National Science Foundation;
<http://www.nsf.gov/statistics/infbrief/nsf09314/>



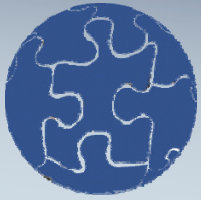
Recent National Trends



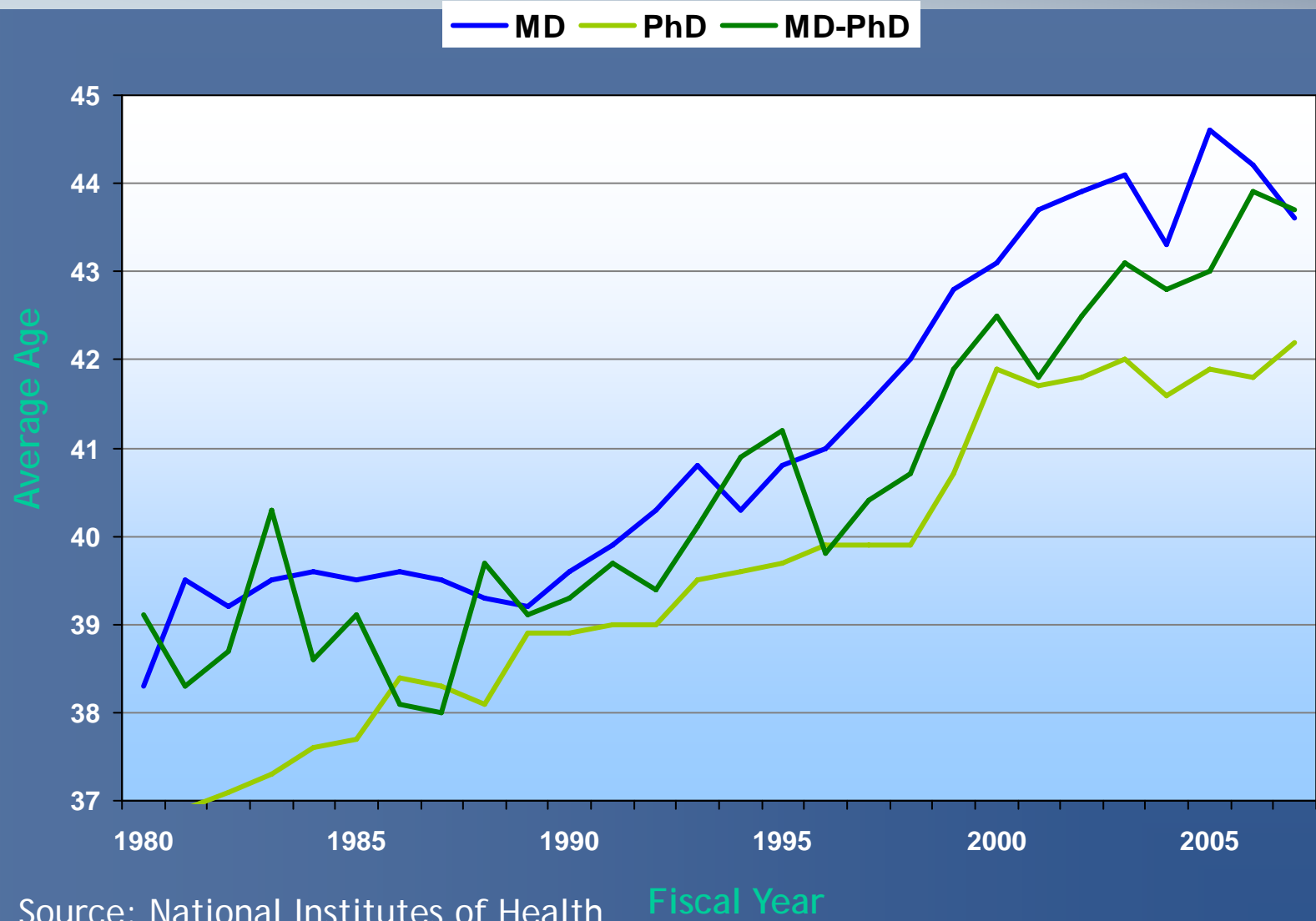
Science & Engineering
postdocs with temporary visas
at U.S. universities

1985	8,900
2005	27,000

Source: National Science Foundation Division of Science Resource Statistics.
(January 2008). *Science and engineering indicators 2008*. Arlington, VA:
National Science Board.



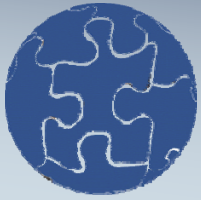
AVERAGE AGE OF FIRST-TIME R01-EQUIVALENT PRINCIPAL INVESTIGATORS BY DEGREE



Source: National Institutes of Health
National Postdoctoral Association

Fiscal Year

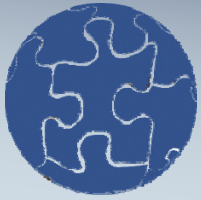
www.nationalpostdoc.org



Recent National Trends

“The share of all NSF grants awarded to new principal investigators (PIs) remained **relatively constant** from 2002 to 2006, at roughly 27%–28%, while the number of proposal submissions from both new and prior investigators **increased** and the funding rate both per PI and per proposal **decreased**.”

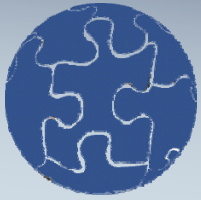
Source: National Science Foundation Division of Science Resource Statistics. (January 2008). *Science and engineering indicators 2008*. Arlington, VA: National Science Board.



Recent National Trends

- “Underrepresented minorities constituted a smaller share of total employment at research universities than at other academic institutions.”
- Underrepresented minorities represent **only 8 to 10%** of total academic employment.

Source: National Science Foundation Division of Science Resource Statistics. (January 2008). *Science and engineering indicators 2008*. Arlington, VA: National Science Board.



Summary: National Trends

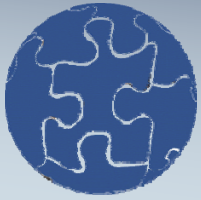


Enrollment in STEM PhD programs
Doctorate-holders in postdoc positions
Length of time spent as postdoc
International postdoctoral scholars
Grant submissions



Funding per proposal/PI
Employment of postdocs in full-time faculty positions

71% of postdocs are supported by or receive federal funding
Challenge: increase diversity of faculty



NPA Priorities

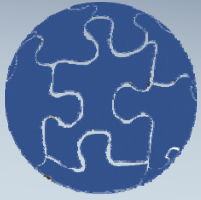
Increase Federal funding and review funding guidelines.

Improve postdoctoral experience.

Emphasize professional development.

Improve efforts to serve international postdocs.

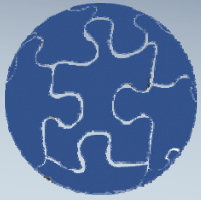
Encourage and facilitate diversity within the postdoctoral community.



National Postdoctoral Association

NPA Core Competencies

Began work in early 2007



The Core Competencies Committee

Lida Anestidou, Ph.D., Program Officer, The National Academies Program

Joan Chesney, M. D., Member, Department of Infectious Diseases, St. Jude Children's Research Hospital

Emil Chuck, Ph.D., Faculty Member, Student Academic Affairs and Advising, Health Professions Advisor & Term Assistant Professor, George Mason University

Phil Clifford, Ph.D., Professor of Anesthesiology and Physiology & Associate Dean for Postdoctoral Education, Medical College of Wisconsin

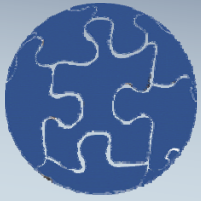
Lisa Curtis, Ph.D., Instructor of Medicine, Department of Medicine, Division of Nephrology, University of Alabama at Birmingham

Keith Micoli, Ph.D., Postdoctoral Program Manager, NYU School of Medicine, Sackler Institute of Graduate Biomedical Sciences

Lucia Mokres, D.V.M., Program Specialist, Hantel Technologies

Alyson Reed, M.B.A., Former Executive Director, NPA

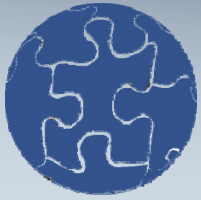
Nancy Schwartz, Ph.D., Professor, Department of Pediatrics, University of Chicago



Supporting Data

According to the 2005 Sigma Xi postdoc survey of U.S. postdoctoral scholars:

Postdocs who reported the highest levels of oversight and professional development were more satisfied, gave their advisors higher ratings, reported fewer conflicts with their advisors, and were more productive than those reporting the lowest levels."



Resource: APS List of Professional Skills

- Published by The American Physiological Society (APS) and Association of Chairs of Departments of Physiology (ACDP)
- The APS states: “The primary purpose of this list is to serve as a professional development tool for physiology trainees and their mentors. It is important to note that **this document was not designed to serve as a list of standards for graduate or postdoctoral training.**”

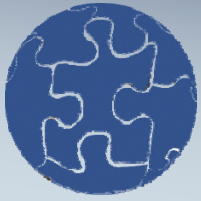
Source: <http://www.the-aps.org/education/skills.htm>



Overview: Core Competencies

Rationale

- “The variety of professional outcomes for postdoctoral scholars today necessitates broad-based training.”
- “For postdoctoral scholars focused on a research-oriented career, mastering a broad range of skills is essential preparation for becoming independent investigators within a complex research-focused enterprise.”

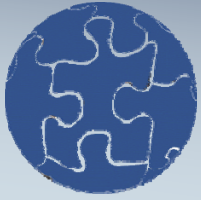


Overview: Core Competencies

Rationale

- The NSF/NIH Definition of a "Postdoc"

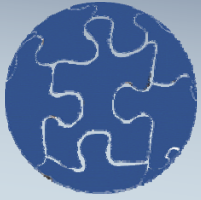
*An individual who has received a doctoral degree (or equivalent) and is engaged in a temporary and defined period of **mentored advanced training to enhance the professional skills** and research independence needed to pursue his or her chosen career path.*



Overview: Core Competencies

Life-long learning

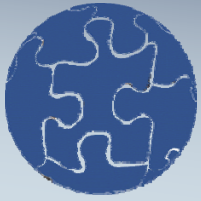
- Competency-based learning assumes stages
- At which stage should postdocs be?
 - Highly individualized
- Not intended to be prescriptive or limiting; should be customized



Overview: Core Competencies

Purpose

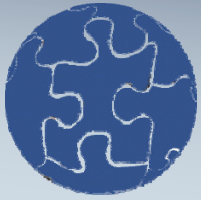
Provide national guidelines for institutional development of curricula to address the needs of postdoctoral scholars for skill acquisition to achieve career success



Overview: Core Competencies

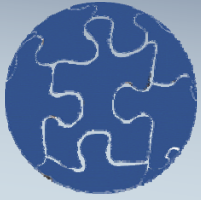
Purpose

Provide guidelines for postdocs and mentors to assess success in completing the steps needed for scientific career fulfillment



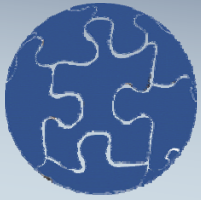
Engage in Self-Assessment

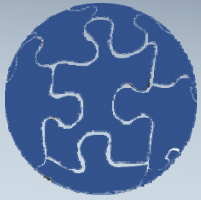
- Review Core Competencies Checklist
- Use with Individual Development Plan (IDP)
- Use customized assessment inventories
 - Scientific Skills Assessment Inventory developed by Phil Clifford and Bill Lindstaedt
- Make a commitment
 - AAMC Compact Between Postdoctoral Appointees and Their Mentors: "I acknowledge that I have the primary responsibility for the development of my own career."



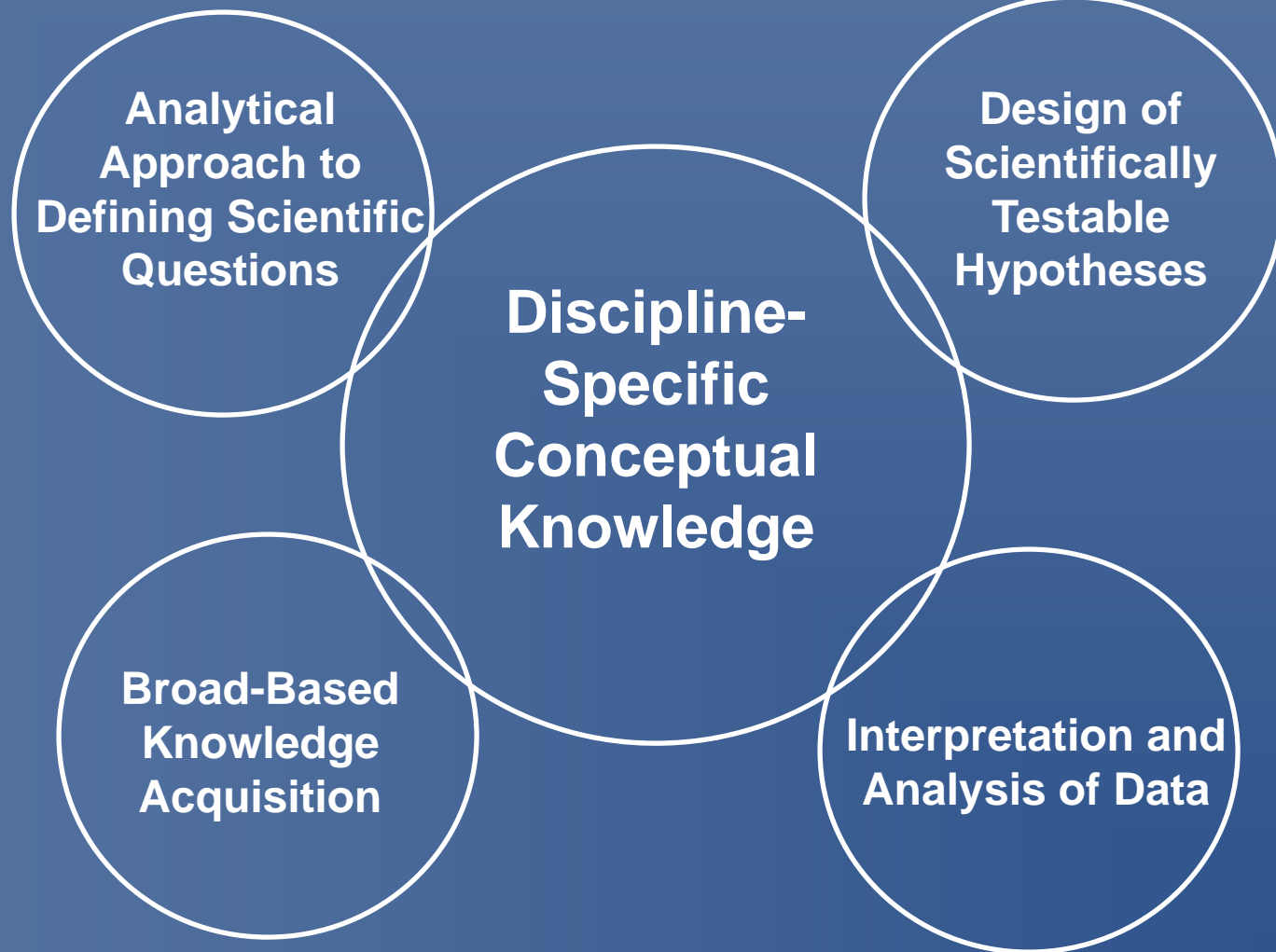
Six Core Competencies

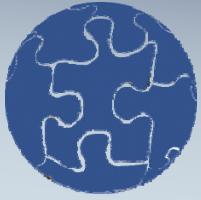
1. Discipline-Specific Conceptual Knowledge
2. Research Skill Development
3. Communication Skills
4. Professionalism
5. Leadership & Management Skills
6. Responsible Conduct of Research



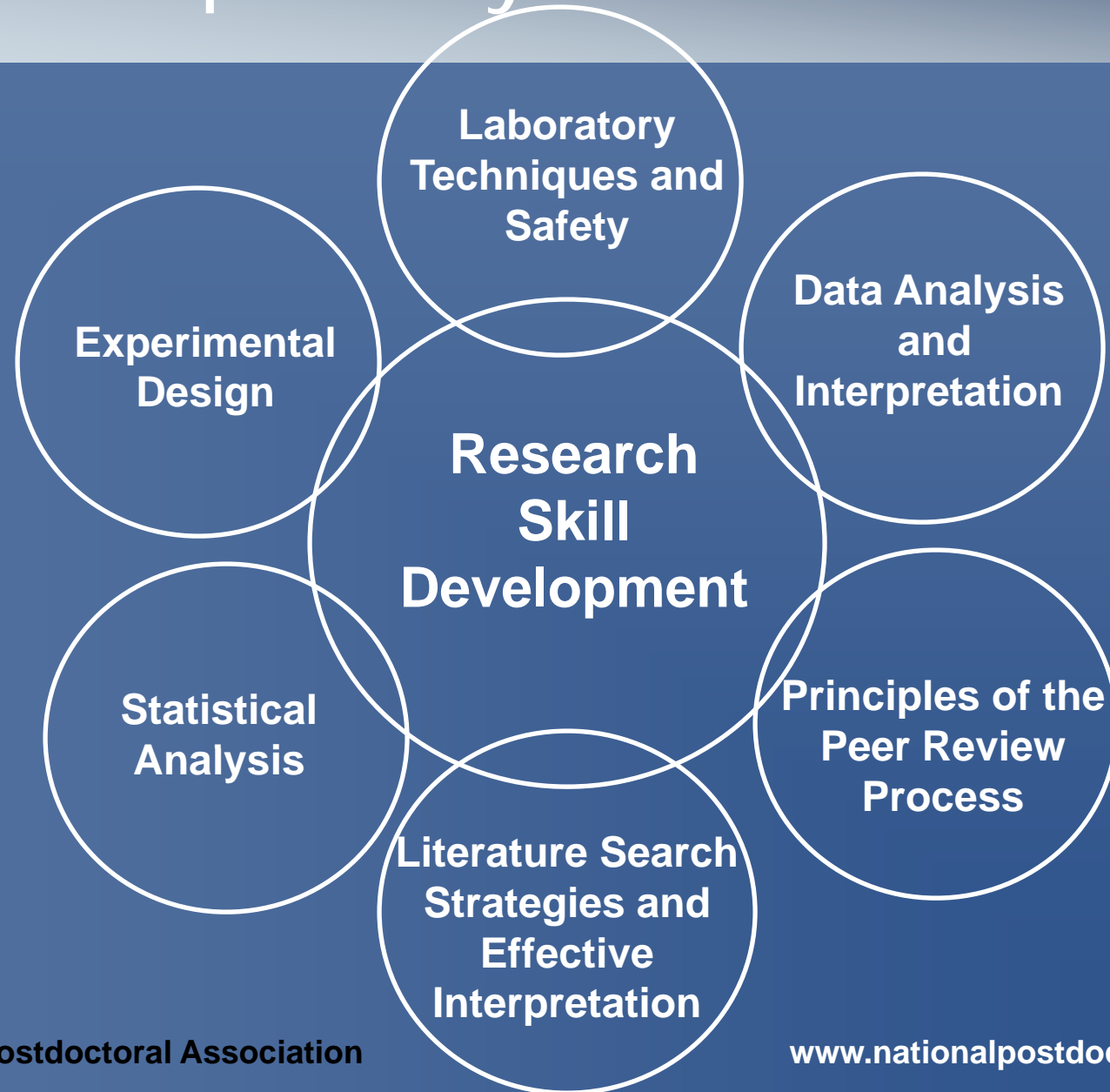


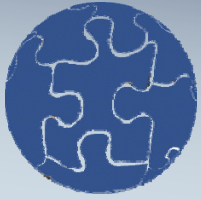
Core Competency #1



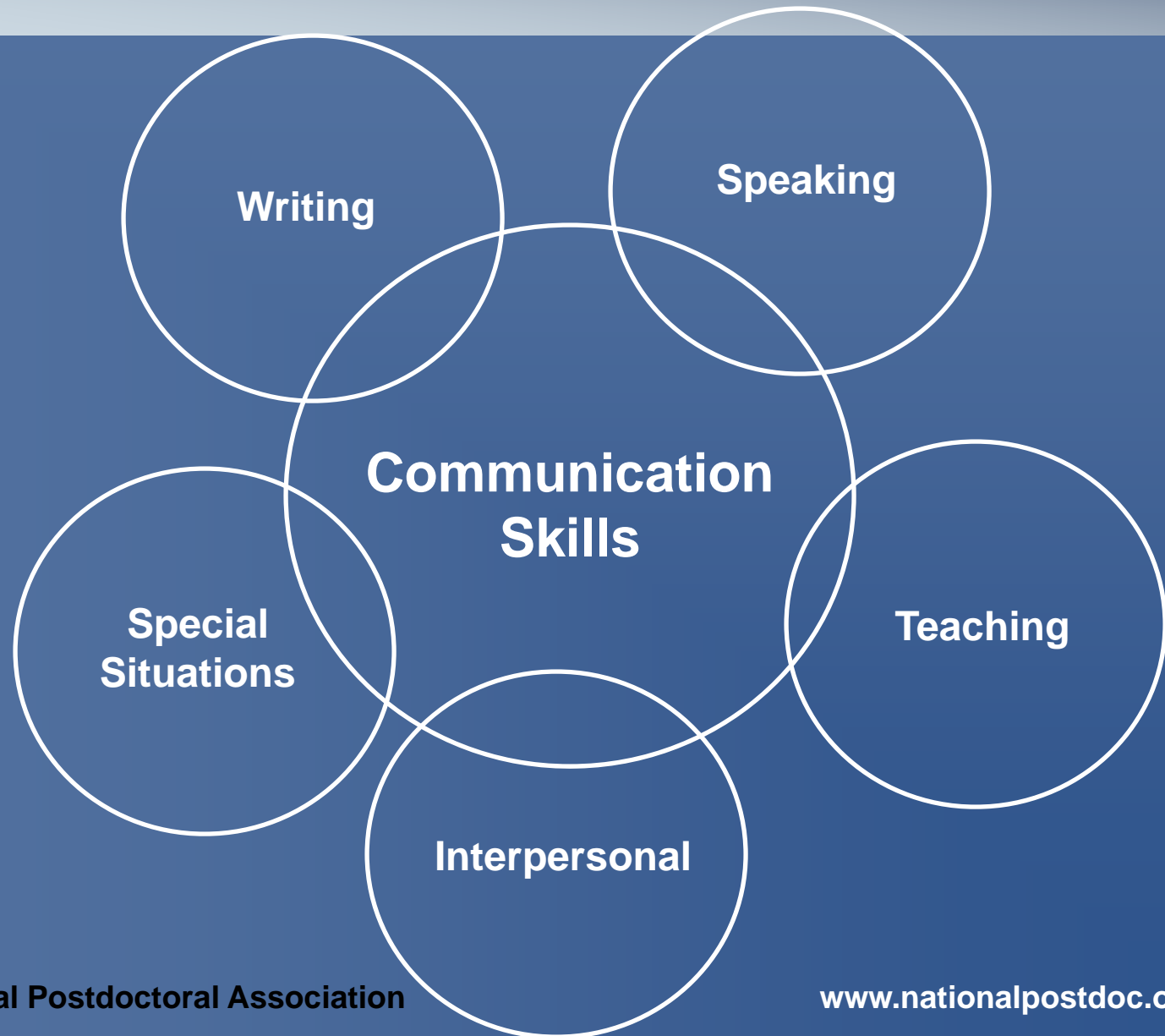


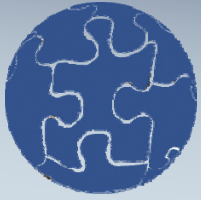
Core Competency #2





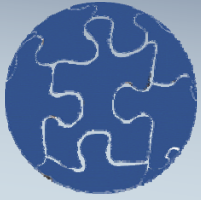
Core Competency #3





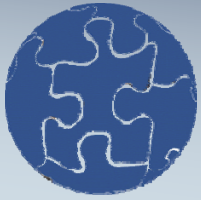
Core Competency #4





Core Competency #5





Core Competency #5

Leadership

Change/movement

Establishing direction

Aligning people

Motivating/inspiring

Followers

Management

Order/consistency

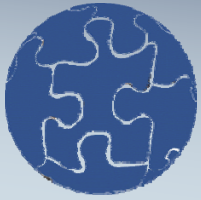
Planning/budgeting

Organizing/staffing

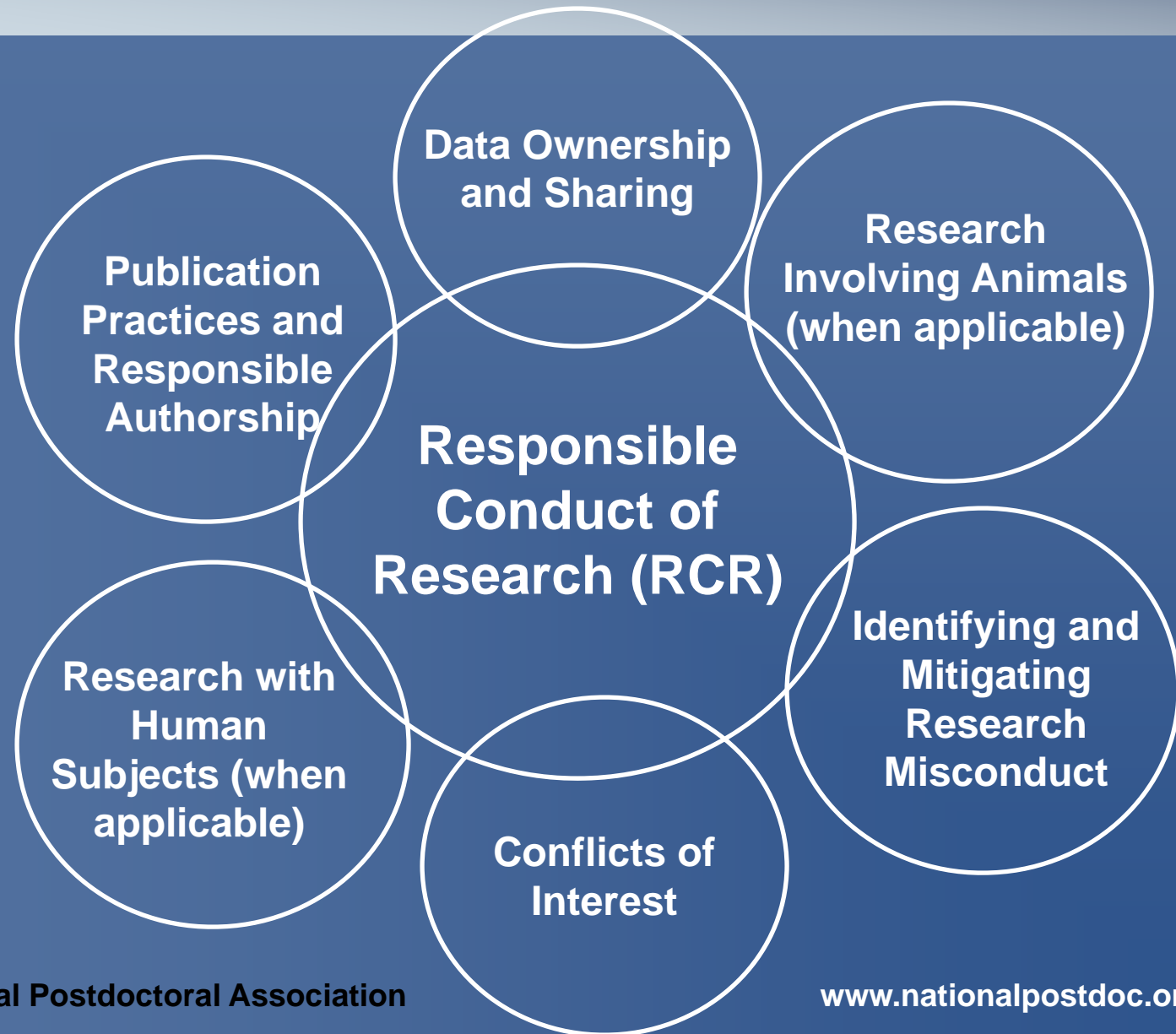
Controlling/problem solving

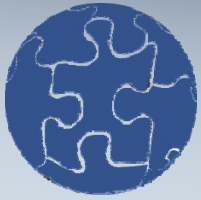
Subordinates





Core Competency #6





Ways to Use the Competencies

Postdoctoral scholars: Basis for self-evaluation and to determine areas for their own self-improvement.

Investigators: Incorporate training in these skills into mentoring activities or group meetings. (NSF mentoring requirement)

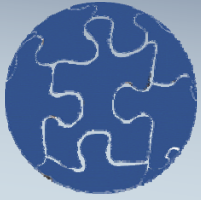
PDOs: Develop professional development programs around the competency areas.

Institutions:

Play a more substantive role in the training of postdoctoral scholars by adopting an overarching curriculum of development opportunities.

Use the competencies as a template for preparing graduate students so that they can continue their training in these areas as postdoctoral scholars.

Disciplinary societies: Offer programming and services to their postdoctoral scholar constituents to enhance these competencies.



Thank you!

www.nationalpostdoc.org/competencies