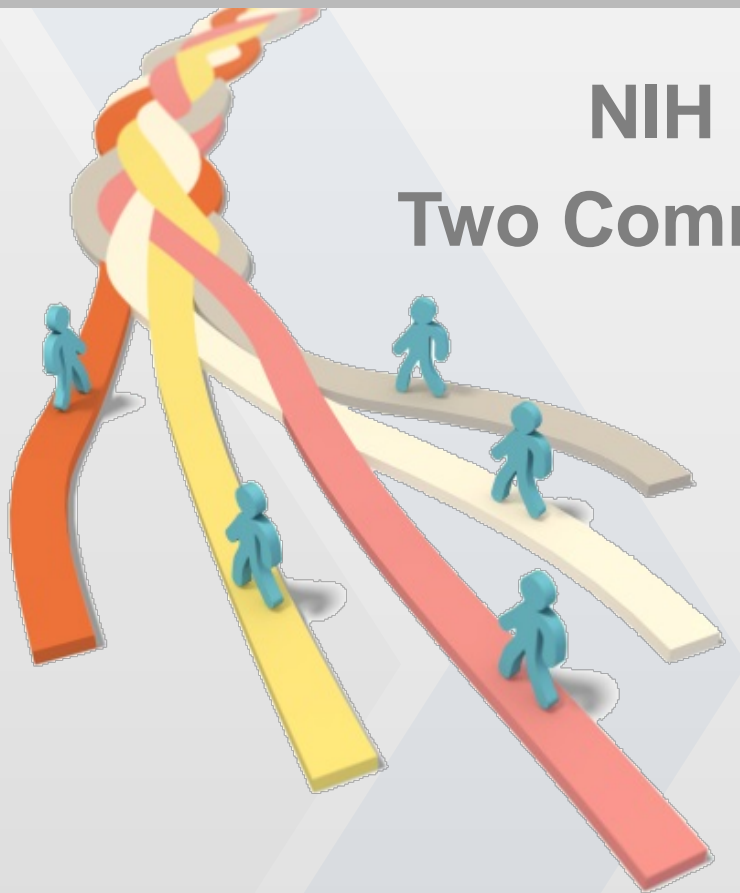


NIH Innovations in Training: Two Common Fund Training Programs

Patricia Labosky, PhD



Future of Biosciences Graduate and Postdoctoral Training

May 4, 2015

Origins of the Common Fund

2004: NIH Roadmap is launched

December 9, 2006: Congress unanimously passes a reauthorization bill affirming importance of NIH and its vital role in advancing biomedical research to improve the health of the Nation



Established the **Division of Program Coordination, Planning, and Strategic Initiatives (DPCPSI)** within Office of the Director and the **NIH Common Fund** to provide a dedicated source of funding to enable **goal-driven trans-NIH research**



One Hundred Ninth Congress of the United States of America

AT THE SECOND SESSION

*Begun and held at the City of Washington on Tuesday,
the third day of January, two thousand and six*

An Act

To amend title IV of the Public Health Service Act to revise and extend the authorities of the National Institutes of Health, and for other purposes.

*Be it enacted by the Senate and House of Representatives of
the United States of America in Congress assembled,*

SECTION 1. SHORT TITLE.

This Act may be cited as the "National Institutes of Health Reform Act of 2006".

TITLE I—NIH REFORM

Common Fund Enables a Different Approach to Science and Science Management

Transformative: Programs are expected to have **exceptionally high and broadly applicable impact**. They should be relevant to many diseases. They should set new standards for research or clinical practice, create entirely new approaches to research or clinical care, or establish new biological paradigms.

Catalytic, Short Term and Goal-driven: Programs must achieve - not just work toward - a goal. They have deliverables - data sets, tools, technologies, approaches, or fundamental principles of biology, etc – that can be achieved within 5-10 years.

Synergistic /Enabling: Programs should be **valued-added** to the NIH Institutes and Centers, with the output enabling the mission of NIH.

Requires a High Level of Trans-NIH Coordination: CF programs should address **complex issues requiring trans-NIH teams, insights, and perspectives** to design and manage. There must be a reason why strategic coordination is required.

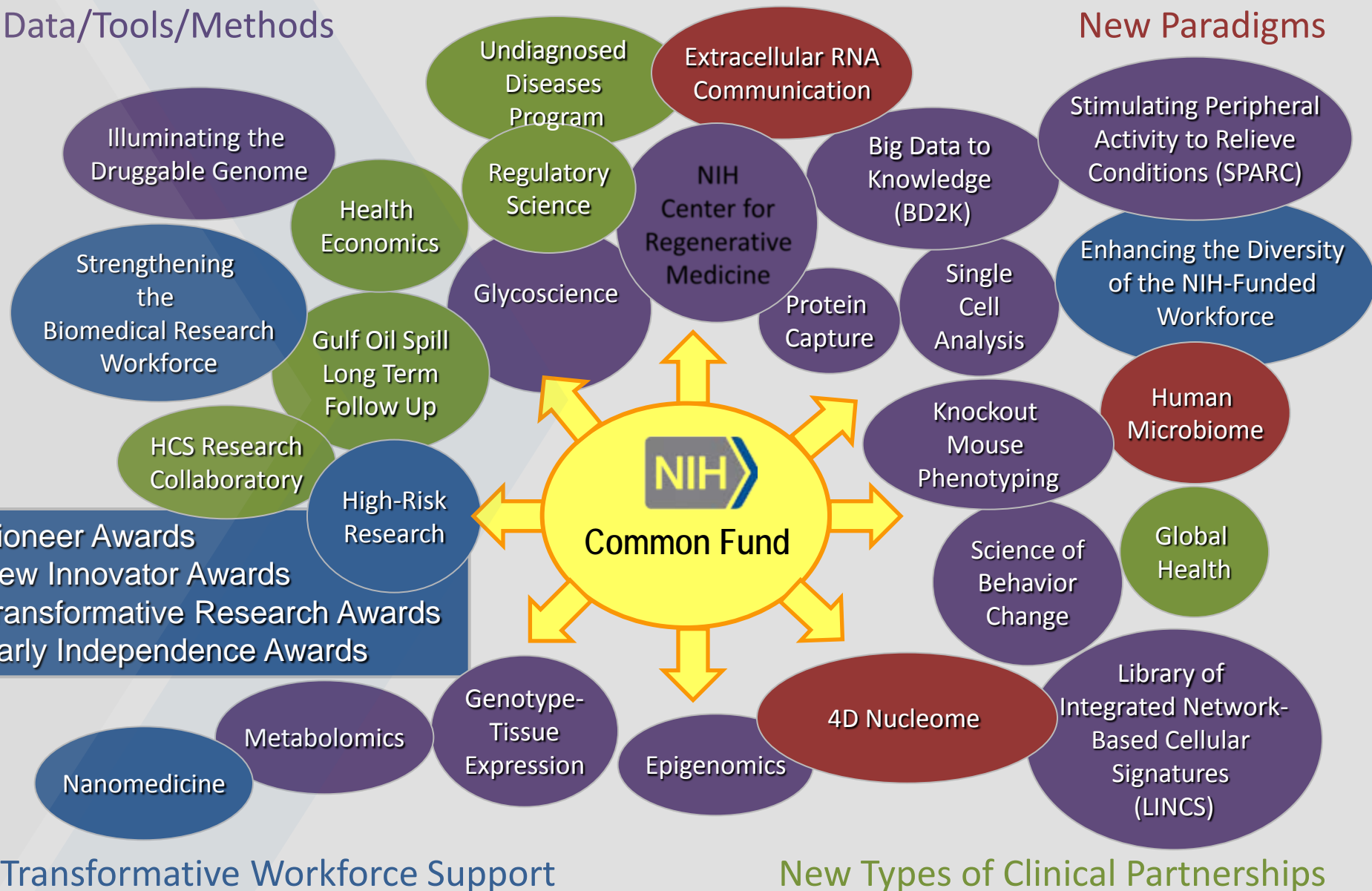
Novel: Programs should provide new solutions to specific challenges.

Designed to accomplish goals and deliverables within 5-10 years
Evaluation of program outputs/outcomes is essential

Current Common Fund Programs (FY15)

Data/Tools/Methods

New Paradigms



Background

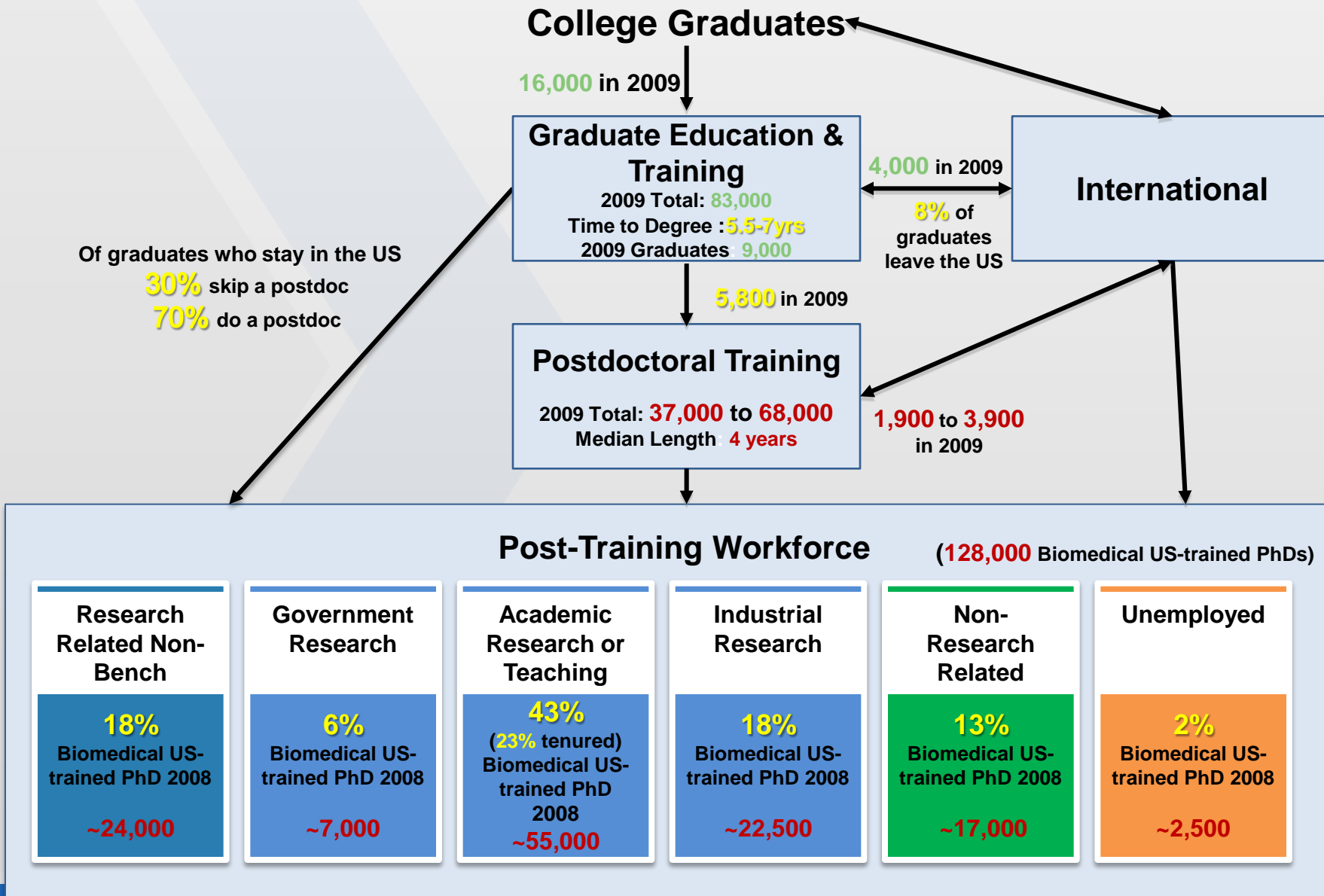
NIH has a sustained commitment to **maintaining a robust and sustainable biomedical research workforce.**

In 2011, the NIH Advisory Committee to the Director (ACD) formed the Biomedical Workforce (BMW) Working Group to examine issues related to the future of the biomedical research workforce.

Working Group Chairs:

- Shirley Tilghman, Ph.D., President, Princeton University, N.J.
- Sally Rockey, Ph.D., NIH Deputy Director for Extramural Research
 - Develop a model for a sustainable and diverse U.S. biomedical research workforce that can inform decisions about training of **the optimal number of people for the appropriate types of positions** that will advance science and promote health.

Snapshot of the PhD Biomedical Research Workforce



Background

Conclusions:

- The combination of the large upsurge in US-trained PhDs, increased influx of foreign-trained PhDs, and aging of the academic biomedical research workforce make **launching a traditional, independent, academic research career increasingly difficult**.
- The **long training time and relatively low early-career salaries** when compared to other scientific disciplines and professional careers may make the **biomedical research career less attractive** to the best and brightest of our young people.
- The **current training programs do little to prepare people for anything besides an academic research career**, despite clear evidence that a declining percentage of graduates find such positions in the future.

One result:

- The NIH Common Fund launched the [Strengthening the Biomedical Research Workforce](#) program to expand the versatility of training opportunities to prepare early career scientists for entry into the dynamic biomedical workforce landscape.

What makes these awards Common Fund'able?

Common Fund programs catalyze research across a broad spectrum of biomedical research

■ New Tools, Technologies, Data, Approaches

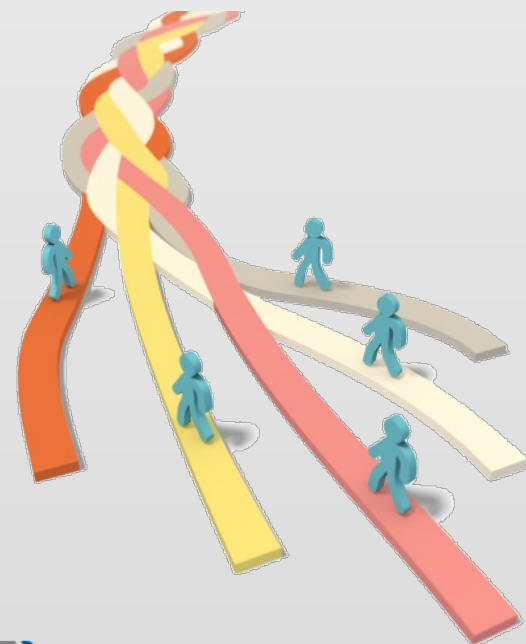
- Trying to affect a “sea change” with this program.
- Alter the training landscape to give pre-doctoral students and postdoctoral fellows direct exposure to a myriad of career options.
- Provide trainees with a working knowledge of the opportunities available to them AND the information to facilitate their path towards these options.
- Evaluate these approaches
- Make tested approaches widely available.

■ Enabling Infrastructure

Enable institutions to build infrastructure, novel courses, internships, training opportunities, etc.

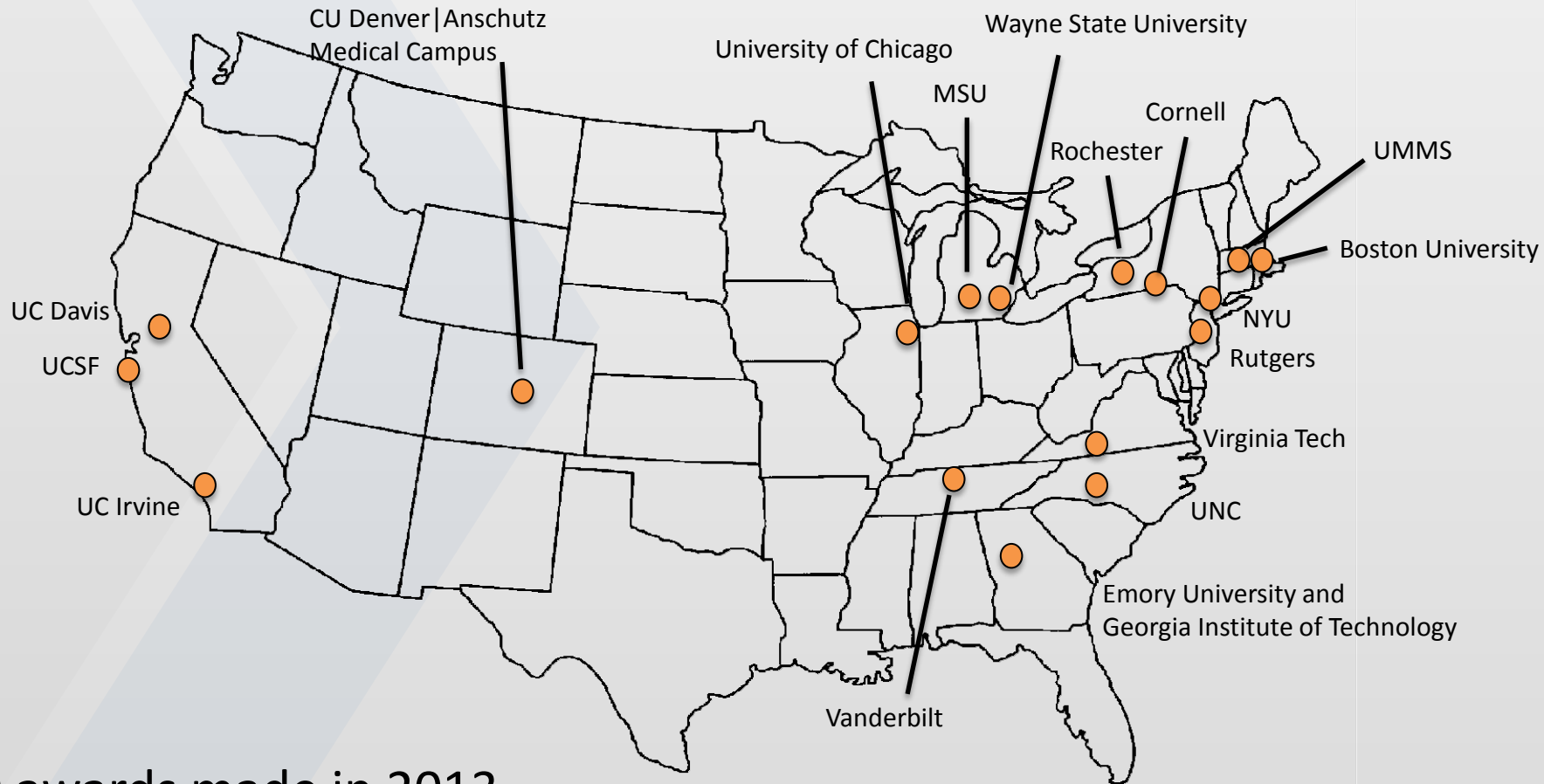
“Strengthening the Biomedical Research Workforce” Program Launched 2013

- These DP7 awards are research awards, not training grants - Do not support trainee stipends
- **5 years, non renewable**
- Must propose to establish and evaluate novel training programs with the potential to transform their training environment
- Must work with the NIH on a **cross-site evaluation**
- Must disseminate the programs as they are developed
- Awardees work together as a consortium



17 U.S. Institutions awarded NIH BEST Grants

BEST: Broadening Experiences in Scientific Training.



10 awards made in 2013

7 more in 2014

Common BEST Consortium Programmatic Elements

- **Career Development Skills:** Understanding career options, self-reflections, making use of Individual Development Plans (IDP), networking, and job search skills.
- **Professional Development Skills:** Team building, time management, oral and written communication, networking, leadership training, and cognitive assessment of leadership, conflict, and negotiation skills.
- **Experiential Learning:** Brief intensive experiences with partners outside of the University (*e.g.* biotechnology, science writing) or within the University. Seminar series, Entrepreneurial workshops.
- **Mentorship:** Primary research advisor as well as peer mentoring and/or connecting to alumni and professionals in their career(s) of interest.

BEST Training Programs include Variations in Experimental Design

Format

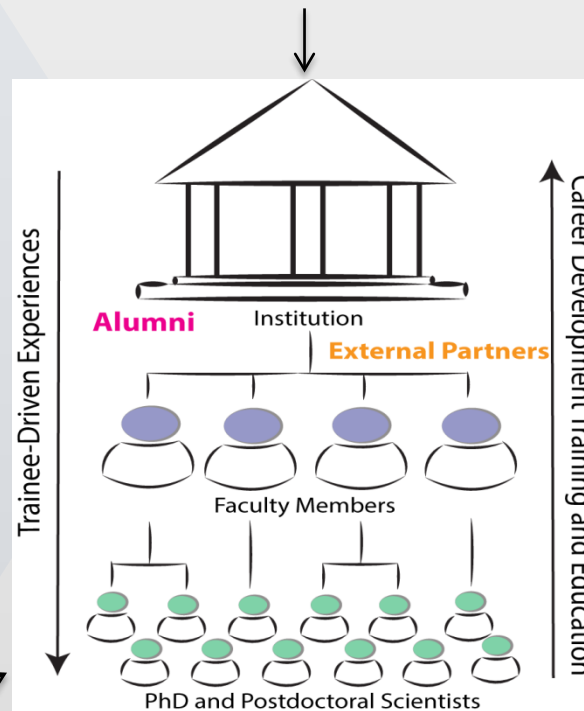
Small Cohort Model
Broad Exposure Model
Alumni Mentoring Model

Content Focus

Academia
Science Communication
Government & Science Policy
Law
Business
Industry/Pharmaceutical Companies

Consortia Influence including NIH
External Panel of Experts

Influence of Job Market and Career Information



Internal and External Advisory Boards

Target Trainee Population

PhD Scientists Only
Postdoctoral Scientists Only
Both PhD and Postdoctoral Scientists

Institutional Environment

Joint Institution Program
Medical School Program Only
Graduate School Program Only
Medical + Graduate School

Partnerships Outside Academia

Industry/Pharma
Law
Business
Government

Evaluation: NIH Desired Impacts over course of Program

Desired Impacts	Concepts to Measure	Source of Data
1. Enhance student's & postdoctoral scientist's agency to make career decisions.	a. Understanding of career opportunities	Graduate Students' Survey Post-doctoral Scientists' Survey
	b. Confidence to make career decisions	
	c. Attitudes towards career opportunities	
2. Reduce time to desired, non-training, non-terminal career opportunities and reduce time in postdoctoral positions.	a. Time to desired career	Grantee Data Form
	b. Time in postdoctoral positions	
3. Creation/further development of institutional infrastructure to continue BEST-like activities.	a. Actions which will lead to sustainability of BEST programs	PI Phone Interviews
	b. Extension of BEST activities within and across multiple graduate programs	

Note: Cross-site Evaluation being conducted in collaboration with NIH and Windrose Vision

Some Long Term Consortia Goals

1. Training at U.S. institutions will value a **commitment** to development of higher levels of research skills as well as exposure to and education in preparing for a broader and diverse range of careers.
2. Establishment of high caliber **Offices of Professional Career Development** at all U.S. research institutions focused on graduate and postdoctoral education.
3. Truth in **Recruiting** will become widespread, offering **data** on career outcomes.
4. Universal recognition and support for the philosophy **that choosing a non-academic career is not viewed as failure.**
5. Tested training paradigms for career advisors and scientists-in training will be available on the **NIH BEST Consortium website** and **disseminated through publications.**
6. Trainees will **have increased confidence** to pursue their career goals and will spend shorter times in training – the default into a postdoctoral training period will decrease/disappear.



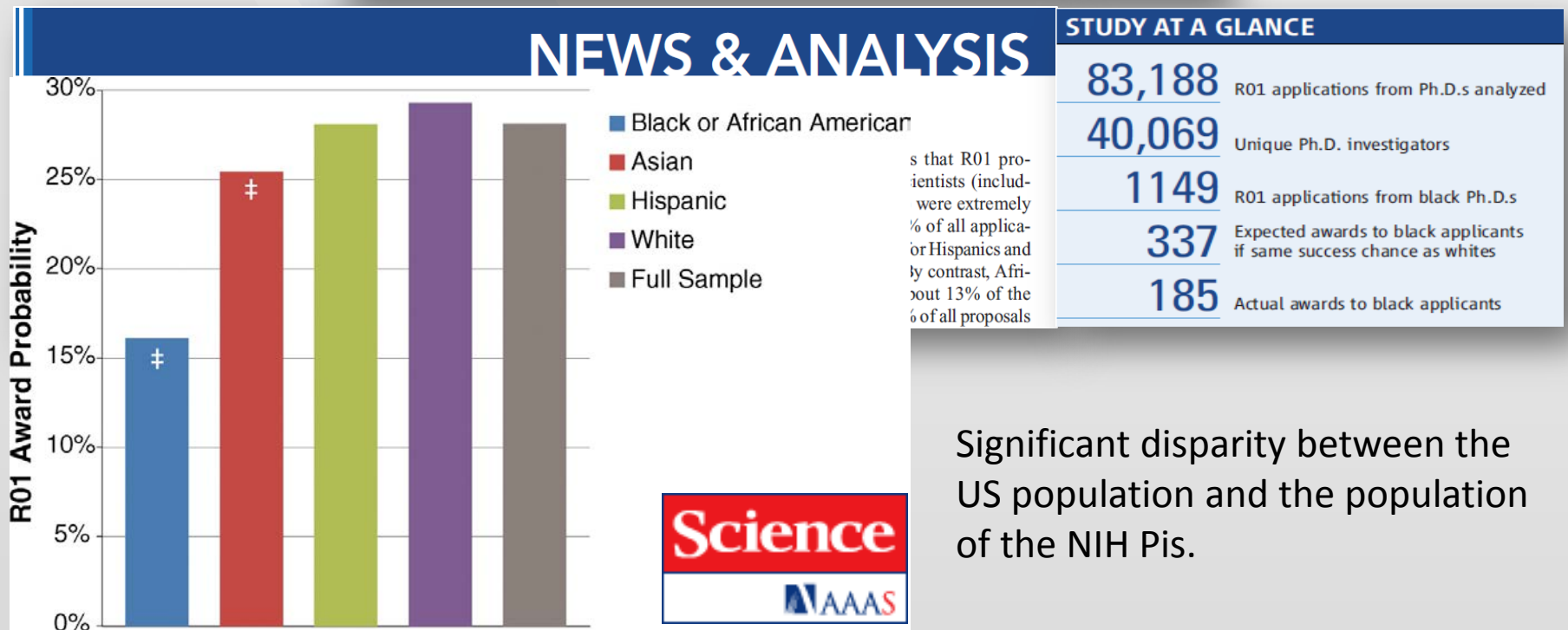
Policy Advances Affecting BEST and the Whole NIH Training Community

- NIH recognizes that traditional research-intensive positions are not the only means by which PhD graduates can meaningfully contribute to biomedical research
- Review Criteria in T32 FOA have been changed to reflect the inclusion of research-related careers
- OMB recognizes the dual role of postdoctoral researchers



Enhancing the Diversity of the NIH- Funded Workforce

Underrepresentation at NIH: The Ginther Paper



Donna K. Ginther et al. Science 2011;333:1015-1019

Significant disparity between the US population and the population of the NIH Pis.

NIH ACD Working Group on Diversity in the Biomedical Research Workforce



In June of 2012, the ACD WGDBRW provided a set of 13 recommendations in four main categories:

- Mentoring/Career Preparation and Retention
- Research and Intervention Testing
- Institutional Support
- Data Collection and Evaluation

Office for Scientific Workforce Diversity

MISSION: To build a diverse trans-NIH scientific workforce that is a model for supporting the careers of and capturing the brightest and most talented individuals into biomedical research across our nation through research innovations and data-driven interventions in diversity and inclusion policies, processes, and programs.

Diversity Program Consortium:
BUILD/NRMN/
CEC

Reducing Bias in the Peer Review Process

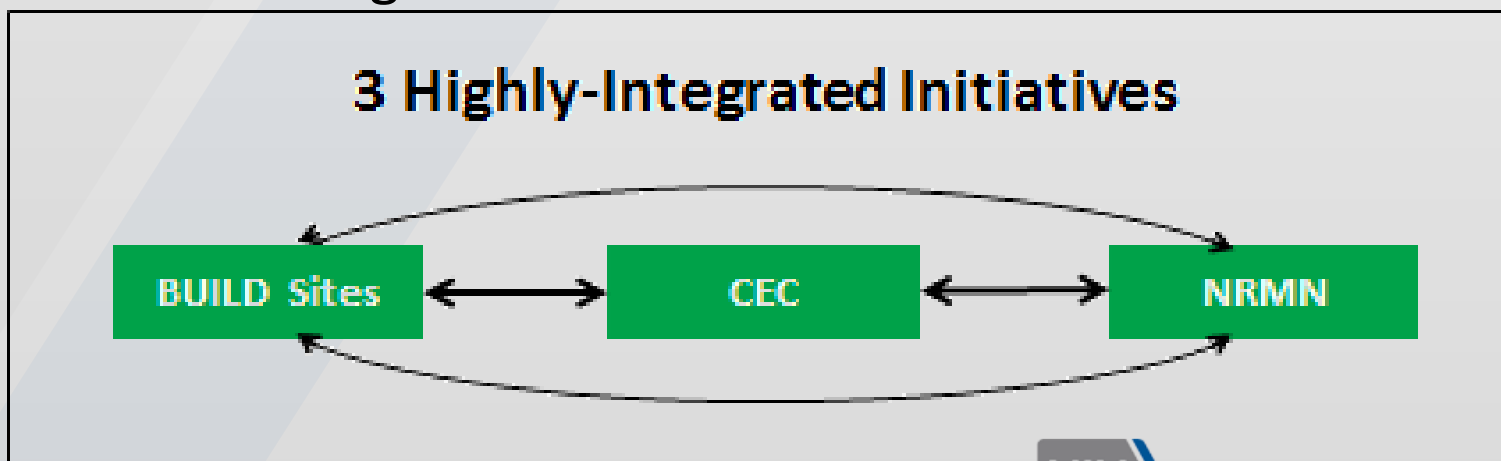
Enhancing Diversity in NIH's Intramural Program

Coordinate NIH's Initiatives to Enhance Diversity (OER, ICs)

Overview of the Diversity Program Consortium



- **GOAL:** To enhance diversity in the biomedical research workforce through the *development, implementation, assessment, and dissemination* of innovative and effective approaches to (a) student outreach, engagement, training, and mentoring, (b) faculty development, and (c) institutional research training infrastructure.



Research Training, Mentoring, and Evaluation



Building Infrastructure Leading to Diversity (BUILD): provides support to undergraduate institutions (and their pipeline partners) to design and implement innovative intervention programs, strategies, and approaches to undergraduate student engagement, research training, and mentorship which effectively address individual, institutional, and social barriers to participation across diverse student populations.

National Research Mentoring Network (NRMN): provides support for the development of an expansive national network of mentors from diverse disciplines to enhance the preparation, training, and career development of diverse groups of mentees pursuing careers in biomedical research. NRMN will develop best practices for mentoring, provide evidence-based training for mentors, and provide networking and professional opportunities for mentees.

Coordination and Evaluation Center (CEC): will facilitate the establishment of program-wide goals and hallmarks of a successful biomedical research career across -levels; and provide support for the development of instruments, data collection procedures, and evaluation designs to assess the impact of BUILD and NMRN interventions on program participants. CEC will also facilitate the dissemination of effective approaches and best practices to the broader research and training communities.

NIH's Vision for the Consortium



- **Innovation and flexibility** to maximize impact and efficacy in training, mentoring, and infrastructure development
- **Experimentation** across sites to explore different training approaches within a variety of different contexts
- **Rigorous evaluation**, coordinated by the CEC, of the training and mentoring approaches implemented across sites
- **Highly-collaborative** work between sites in the consortium, the CEC and NIH program staff
- **Transformative impact** on the biomedical research workforce nationwide

“Enhancing the Diversity of the NIH-funded Workforce” Funded Projects



Awards made September 2014

BUILD: 10 sites

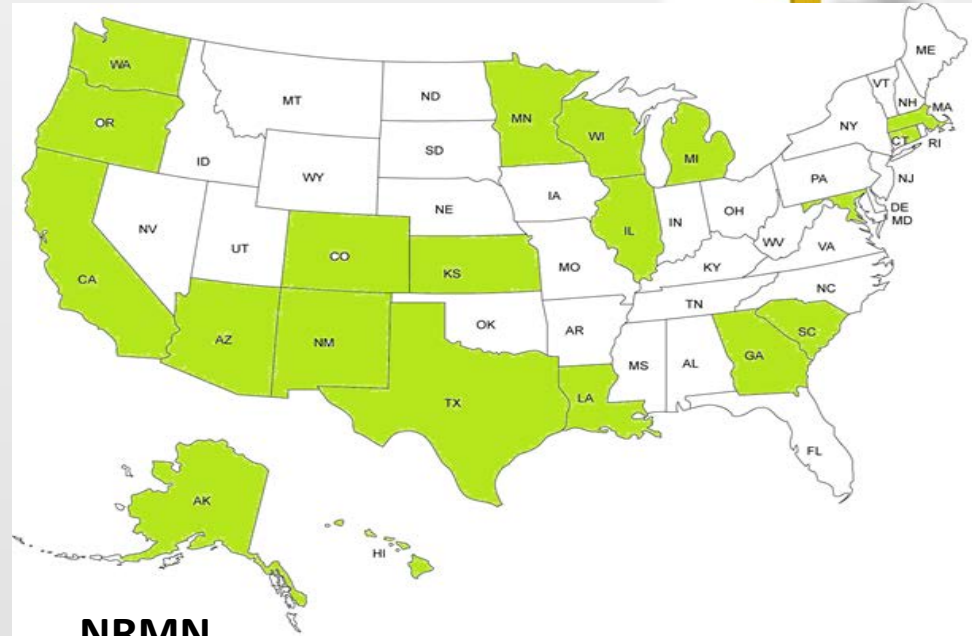
NRMN

CEC

Total funding: \$31.3 M/yr (5 yrs)

BUILD

- California State University Long Beach
- California State University Northridge
- Morgan State University
- Portland State University
- San Francisco State University
- University of Alaska Fairbanks
- University of Detroit Mercy
- University of Maryland Baltimore County
- University of Texas El Paso
- Xavier University of Louisiana



NRMN

- Boston College NRMNet.net
 - Morehouse S of M; U. Min.; U. of North Texas; U. of Wisconsin

CEC

- University of California Los Angeles

Expectations of NIH's Workforce Diversity Efforts



- Broaden the perspective in setting research priorities
- Broaden the recruitment of talented researchers from diverse populations
- Improve the quality of research training and mentoring for all trainees
- Broaden the nation's capacity to address and eliminate health disparities
- Improve the nation's capacity to recruit and retain clinical research participants from diverse backgrounds



Conclusions

NIH has a sustained commitment to **maintaining a robust and sustainable biomedical research workforce.**

BEST seeks to transform training by **broadening experiences** for all trainees regardless of career choice thereby producing a more well rounded group of trainees.

Diversity (BUILD, NRMN, and CEC) seeks to determine which approaches work for which populations in which environments.

Both programs are **experimental** and have a large **evaluative** component. Both are **time-limited and goal-oriented.**

Both programs will **disseminate** their findings widely to enable others to adapt their own programs.