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
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.

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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
- Illuminating the Druggable Genome
- Health Economics
- Gulf Oil Spill Long Term Follow Up
- HCS Research Collaboratory
- High-Risk Research
- Metabolomics
- Genotype-Tissue Expression
- Epigenomics
- 4D Nucleome

New Paradigms
- Stimulating Peripheral Activity to Relieve Conditions (SPARC)
- Enhancing the Diversity of the NIH-Funded Workforce
- Human Microbiome
- Global Health
- Library of Integrated Network-Based Cellular Signatures (LINCS)

Pioneer Awards
New Innovator Awards
Transformative Research Awards
Early Independence Awards

Transformative Workforce Support
New Types of Clinical Partnerships

http://commonfund.nih.gov/
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

**College Graduates**
- 16,000 in 2009

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

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

**International**
- 8% of graduates leave the US
- 1,900 to 3,900 in 2009

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

**Post-Training Workforce**
- 128,000 Biomedical US-trained PhDs

- **Research Related Non-Bench**
  - 18% Biomedical US-trained PhD 2008
  - ~24,000

- **Government Research**
  - 6% Biomedical US-trained PhD 2008
  - ~7,000

- **Academic Research or Teaching**
  - 43% Biomedical US-trained PhD 2008
  - 23% tenured
  - 18% Biomedical US-trained PhD 2008
  - ~55,000

- **Industrial Research**
  - 18% Biomedical US-trained PhD 2008
  - ~22,500

- **Non-Research Related**
  - 13% Biomedical US-trained PhD 2008
  - ~17,000

- **Unemployed**
  - 2% Biomedical US-trained PhD 2008
  - ~2,500

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

- CU Denver | Anschutz Medical Campus
- University of Chicago
- Wayne State University
- Cornell
- MSU
- Rochester
- NYU
- Rutgers
- Virginia Tech
- UNC
- Emory University and Georgia Institute of Technology
- Vanderbilt
- Boston University
- UMMS
- UC Davis
- UCSF
- UC Irvine
- University of Chicago

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**

**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

**NIH**
National Institutes of Health
Office of Strategic Coordination - The Common Fund

Meyers et al., 2015 manuscript in preparation
<table>
<thead>
<tr>
<th>Desired Impacts</th>
<th>Concepts to Measure</th>
<th>Source of Data</th>
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<tbody>
<tr>
<td>1. Enhance student’s &amp; postdoctoral scientist’s agency to make career decisions.</td>
<td>a. Understanding of career opportunities</td>
<td>Graduate Students’ Survey</td>
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<td></td>
<td>b. Confidence to make career decisions</td>
<td>Post-doctoral Scientists’ Survey</td>
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<td></td>
<td>c. Attitudes towards career opportunities</td>
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<tr>
<td>2. Reduce time to desired, non-training, non-terminal career opportunities and reduce time in postdoctoral positions.</td>
<td>a. Time to desired career</td>
<td>Grantee Data Form</td>
</tr>
<tr>
<td></td>
<td>b. Time in postdoctoral positions</td>
<td></td>
</tr>
<tr>
<td>3. Creation/further development of institutional infrastructure to continue BEST-like activities.</td>
<td>a. Actions which will lead to sustainability of BEST programs</td>
<td>PI Phone Interviews</td>
</tr>
<tr>
<td></td>
<td>b. Extension of BEST activities within and across multiple graduate programs</td>
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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

Race, Ethnicity, and NIH Research Awards

Donna K. Ginther,† Walter T. Schaffer,‡ Joshua Schnell,§ Beth Masimore,§ Faye Liu,§ Laurel L. Haak,§ Raynard Kington§†

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

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

3 Highly-Integrated Initiatives

- **BUILD Sites**
- **CEC**
- **NRMN**
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.