

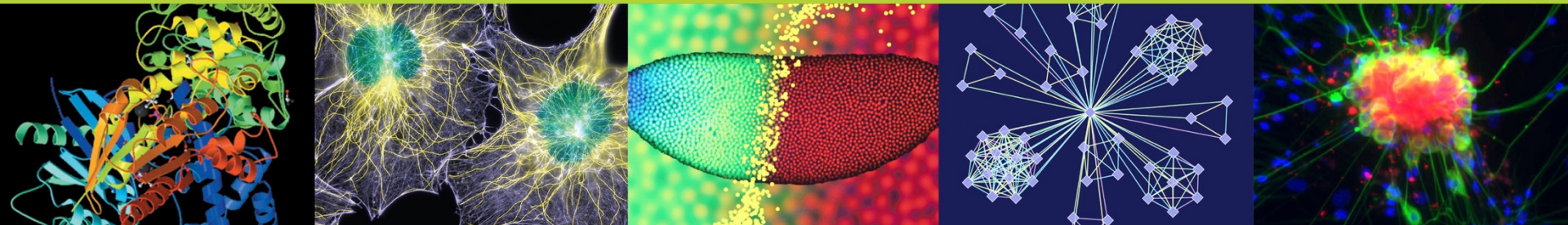


National Institute of
General Medical Sciences



NIH and NIGMS Overview

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The National Institutes of Health

The Nation's Steward of Medical & Behavioral Research



“Science in pursuit of **fundamental knowledge** about the nature and behavior of living systems... and the **application of that knowledge** to extend healthy life and reduce illness and disability.”



The Mission of NIGMS

The National Institute of General Medical Sciences (NIGMS) supports **basic research** that increases understanding of biological processes and lays the foundation for advances in disease diagnosis, treatment and prevention. The Institute also supports research in **certain clinical areas**, primarily those that affect multiple organ systems. To assure the vitality and continued productivity of the research enterprise, NIGMS provides leadership in **training** the next generation of scientists, in **enhancing the diversity** of the scientific workforce, and in **developing research capacities** throughout the country.

Some Ongoing Priorities for NIGMS

- **Expansion of the Maximizing Investigators' Research Award (MIRA) Program**
 - New FOA for established PIs: PAR-17-094.
 - Anyone with an NIGMS R01, R37, DP2 or SC1 award can apply to convert to a MIRA when their current grant is up for renewal.
 - 5 years; renewable; more flexibility to follow new ideas and directions; increased stability; one NIGMS research grant per PI.
 - New FOA for Early Stage Investigators: PAR-17-190.
 - Separate review panels and criteria for established and early-stage investigators.
- **New Technology Development Pipeline**
 - Exploratory/proof of concept grants (R21): PAR-17-046.
 - No preliminary data allowed!
 - Focused technology R&D grants (R01): PAR-17-045.
 - Revised Biomedical Technology Research Resource (P41) FOA: PAR-17-316
- **New Team Science FOA (PAR-17-340)**
 - Designed to support investigator-initiated research that must be done in organized, multidisciplinary teams and which needs a dedicated funding stream for the whole team.
 - Will replace NIGMS P01s and P50 centers grants (except AIDS P50 centers).

Some Ongoing Priorities for NIGMS

- **Catalyze the modernization of graduate biomedical education**
 - Completely Revised T32 Funding Opportunity Announcement (PAR-17-341)
 - Focus on skills development: technical, operational, professional.
 - Use evidence-based approaches to teaching, learning and mentoring.
 - Encourage innovation, experimentation, evaluation, dissemination.
 - Produce diverse workforce trained to conduct rigorous, reproducible, responsible research.



New Accelerator Hubs and Their Major Academic Partnering Institutions

IDeA Region	Grant Number	Program Name	Small Business Concern	Major Academic Partnering Institution
Northeast	UT2GM130176	DRIVEN: Accelerating Medical Entrepreneurship in the Northeast	CELDARA MEDICAL, LLC (Lebanon, New Hampshire)	University of Vermont, Burlington
Central	UT2GM130175	The Sustainable Heartland Accelerator Regional Partnership (SHARP) Hub	BBC ENTREPRENUERIAL TRAINING AND CONSULTING, LLC (Chelsea, Michigan)	University of Kansas Medical Center, Kansas City
Western	UT2GM130166	ASCEND, Accelerating Solutions for Commercialization and Entrepreneurial Development in the Mountain West IDeA States	VIRTICI, LLC (Seattle, Washington)	University of New Mexico Health Sciences Center, Albuquerque
Southeast	UT2GM130174	Southeast Xlerator Network	XLERATEHEALTH, LLC (Louisville, Kentucky)	University of Kentucky, Lexington (WVU and Marshall are both performance sites)

The President's Management Agenda

Cross-Agency Goal 14: Improve Transfer of Federally Funded Technologies from Lab-To-Market



Agencies will focus on five strategies: (1) identify regulatory impediments and administrative improvements in Federal technology transfer policies and practices; (2) **increase engagement with private sector technology development experts and investors;** (3) **build a more entrepreneurial R&D workforce;** (4) **support innovative tools and services for technology transfer;** and (5) improve understanding of global science and technology trends and benchmarks.

Academic Research Enhancement Awards (AREA) Program (R15)

- New Funding Opportunity Announcement “AREA for Undergraduate-Focused Institutions” ([PAR-18-714](#))
- Small scale research grants at institutions that do not receive substantial funding from the NIH
- Emphasis on providing biomedical research experiences primarily for undergraduate students and enhancing the research environment at the institutions
- 5 NIH Institutes participating so far: NIGMS, NIDCR, NHGRI, NIAID, NLM, NCI
- More details tomorrow from Joe Gindhart

Developing an NIH Strategic Plan for Data Science

- Requested by Congress
- The plan focuses on:
 - Modernizing the data resource ecosystem to increase its utility **for researchers and other stakeholders** and to optimize its efficiency of operation
 - Enhancing data sharing, access, interoperability
 - Improving ability to use EHR, clinical, and observational data for research while ensuring data confidentiality
 - Modernizing infrastructure, increasing capacity

A Couple of Definitions...

“Data science is an interdisciplinary field of inquiry in which quantitative and analytical approaches, processes, and systems are developed and used to extract knowledge and insights from increasingly large and/or complex sets of data.”

FINDABLE

ACCESSIBLE

INTEROPERABLE

REUSABLE

Domains of Data Science	Description
Data Infrastructure	<i>Hardware, architecture, and platforms necessary to capture, organize, store, allow access to, and compute on data</i>
Data Resources	<i>Methods, practices, and associated features needed to increase the <u>value</u> and <u>utility</u> of data beyond its native state</i>
Advanced Management, Analytics, and Visualization Tools	<i>Algorithms, software, models, and tools necessary to extract knowledge and understanding from data</i>
Workforce Development	<i>Policies, practices, and programs to train and develop an outstanding data science workforce</i>
Policy, Stewardship, and Sustainability	<i>The policies and practices necessary for governance, financial management, and sustainable stewardship of the biomedical data science ecosystem</i>

Organization of the Strategic Plan

I. Overarching Goals

i. Strategic Objectives

1. Implementation Tactics

a. Milestones and Performance Measures



Overarching Goal 1: **Support Highly Efficient and Effective *Data Infrastructure for Biomedical Research***

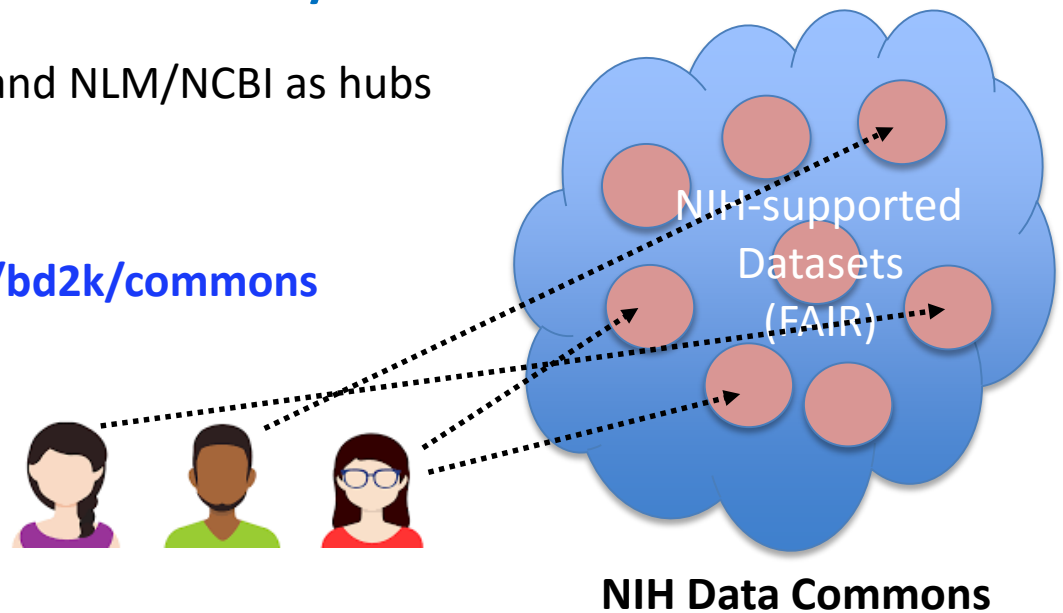
Strategic Objective 1-1: **Optimize Data Storage, Access and Security**

- Rely on private sector where possible

Strategic Objective 1-2: **Connect NIH Data Systems**

- Use NIH Data Commons and NLM/NCBI as hubs

<https://commonfund.nih.gov/bd2k/commons>



Overarching Goal 2: **Promote the Modernization of the *Data Resources Ecosystem***

Strategic Objective 2-2: **Support the Storage and Sharing of Individual Datasets**

Implementation Tactics:

- Link datasets to publications via PubMed Central and NLM/NCBI
- Longer-term: Expand NIH Data Commons to allow submission, open sharing, and indexing of individual, FAIR datasets

Overarching Goal 3: **Support the Development and Dissemination of Advanced Data Management, Analytics, and Visualization Tools**

Strategic Objective 3-2: **Broaden Use of Specialized Tools**

- Example: Algorithms from astronomy adapted for use in cellular imaging.
- Support research for improving methods for using EHRs and other clinical data.

Overarching Goal 4: **Enhance *Workforce Development* for Biomedical Data Science**

Strategic Objective 4-1: **Enhance the NIH Workforce**

- E.g., data science training and education for NIH staff

Strategic Objective 4-2: **Expand the National Research Workforce**

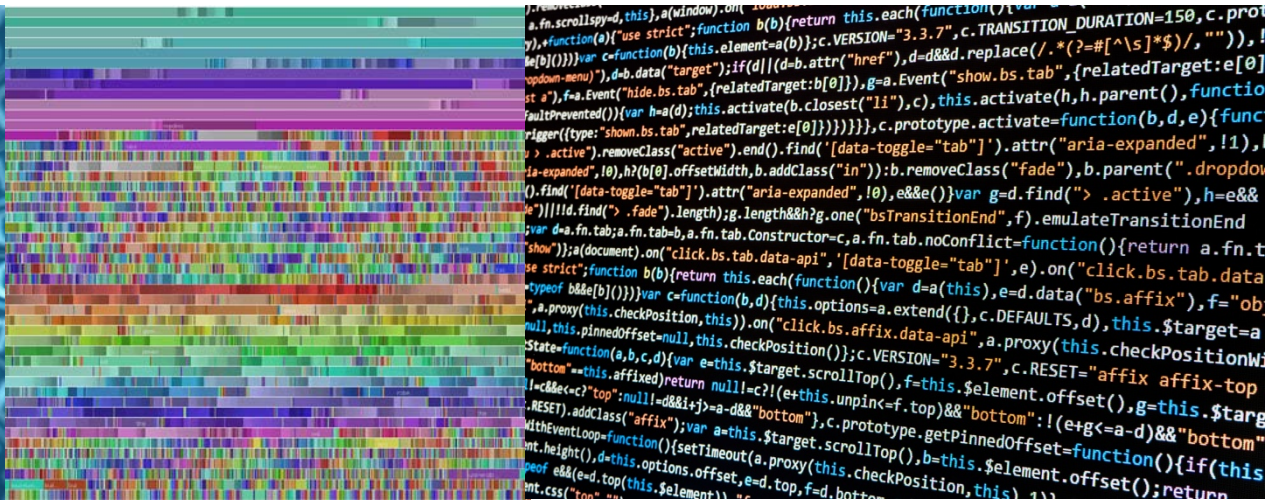
- Enhance quantitative and computational training for students and postdocs

Strategic Objective 4-3: **Engage a Broader Community**

- E.g., code-athons, bug-bounty programs, contests

Next Steps

- The Strategic Plan was delivered to Congress in early May
- The implementation phase has already started and will be ramping up fast
 - Implementation teams are planning, executing, coordinating & monitoring each implementation tactic or set of closely related tactics
 - Development of performance measures and milestones is key
- Recruitment of NIH Chief Data Strategist



STRIDES Initiative: Maximizing Research Data



STRIDES allows NIH and NIH-funded researchers to take advantage of state-of-the-art data storage and computational capabilities, tools, and expertise.

STRIDES Launch: A Series of Partnerships

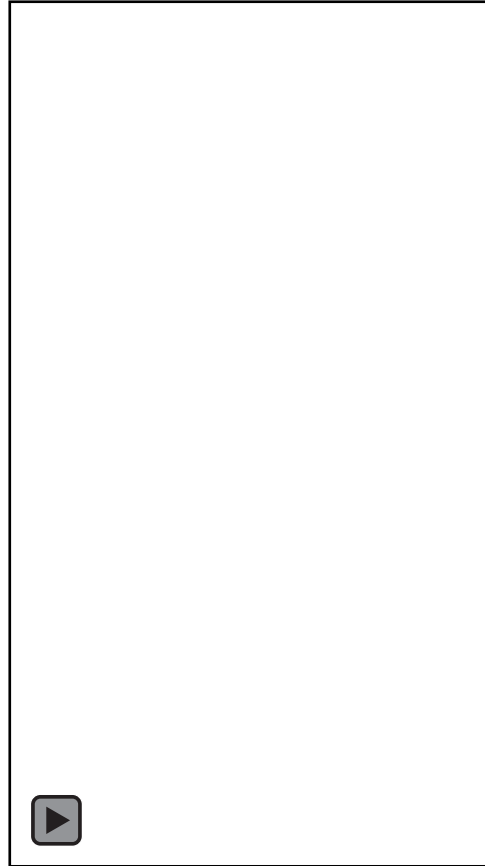
STRIDES' first agreement is with Google Cloud. NIH anticipates more agreements with other partners in the coming months



Key Takeaways

- **STRIDES implements goals of new NIH Strategic Plan for Data Science**
 - Closely aligned with NIH Data Commons Pilot
 - Supports community standards and best practices on sharing and using data in cloud environments
- **Partnership with Google Cloud offers NIH multiple important benefits**
 - Favorable pricing on compute and storage for NIH and NIH-funded investigators
 - Free storage for some of NIH's highest-value data sets
 - Training programs for researchers on how to use the cloud
 - Partnership on innovations such as machine learning and artificial intelligence, cybersecurity, and data analytic tools

The NIH Is Always Thinking about West Virginia



Questions & Comments

