Webinar Process

- Assisted by Jerryl Somani, Alvaro Encinas, and Helen Thompson

- Presentation first, followed by Q&A

- Please ask questions in Q&A box

- Anonymous submissions allowed

- Chat is disabled

- Your questions will be rendered into FAQs with our answers posted on Hub website

- Webinar is being recorded and will be posted

Relevant Links for Educational Hub

- RFA-HG-22-002: https://grants.nih.gov/grants/guide/rfa-files/RFA-HG-22-002.html

- Notice of Participation by ODSS/NIMHD/All of Us: NOT-OD-22-156 (link coming soon)

- Webinar and FAQ Link: https://www.genome.gov/event-calendar/webinar-educational-hub-for-enhancing-diversity-in-computational-genomics-and-data-science

- NHGRI Strategic Vision: genome.gov/2020SV

- NHGRI Diversity Action Plan: https://www.genome.gov/about-nhgri/leadership-initiatives/diversity-in-genomics-workforce

- Concept Clearance: https://www.genome.gov/event-calendar/94th-Meeting-of-National-Advisory-Council-for-Human-Genome-Research

NIH
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Outline

- Background and purpose
- NIH Partners
- Programmatic Approach
- Application Process
- Q&A

Genomics and data science education
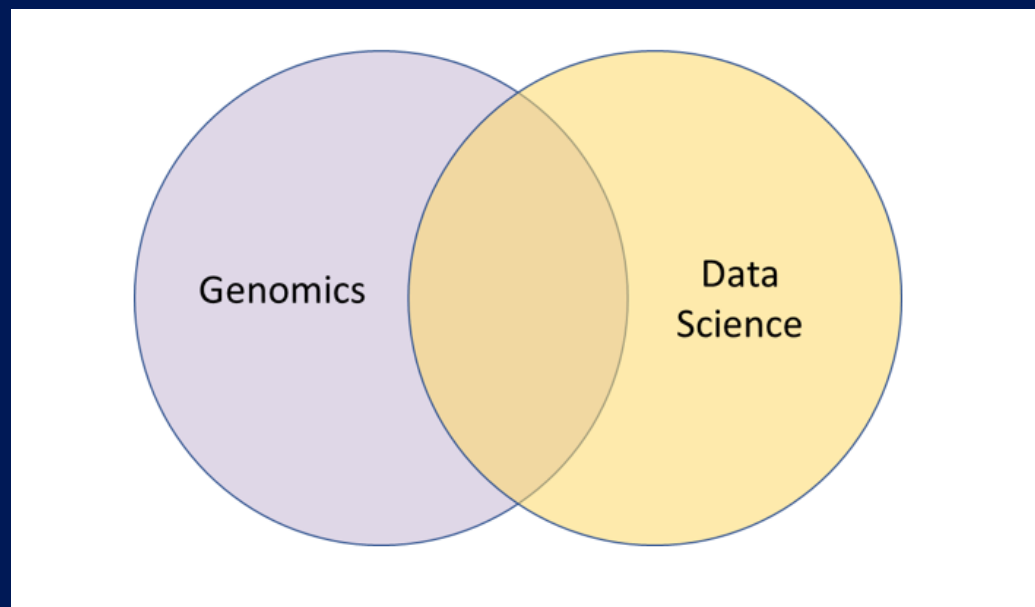
Barriers at MSIs to genomics and data science teaching

- Lack of access to computing resources and data sets

- Need for reciprocal expertise in genomics and data science

Purpose of the Educational Hub
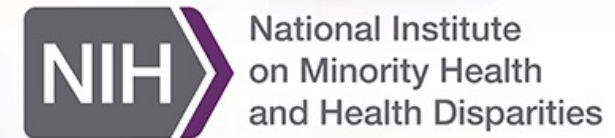
The overarching purpose of this initiative is to leverage the AnVIL and other NIH cloud-based platforms, to enhance the diversity of individuals who have access to educational and research opportunities in computational genomics and data science (CGDS), including those from underrepresented groups.

This initiative will focus on opportunities at the undergraduate and master's degree level.

A trans-NIH partnership

National Human Genome Research Institute

National Institute on Minority Health and Health Disparities

Office of Data Science Strategy

All of Us Research Program
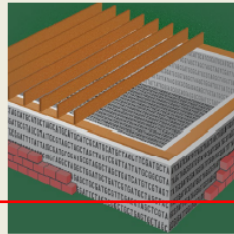
NHGRI

Diversity in the Genomics Workforce

NHGRI 2020 Strategic Vision

Box 2

Sustaining and improving a robust foundation for genomics

Genome structure and function
- Enable the routine generation and analysis of increasingly complex genomic data
- Use evolutionary and comparative genomic data to maximize understanding of genome function

Genomic data science
- Develop new methods and build sustainable data resources for genomics research
- Ensure facile storing, sharing, and computing on large genomic datasets
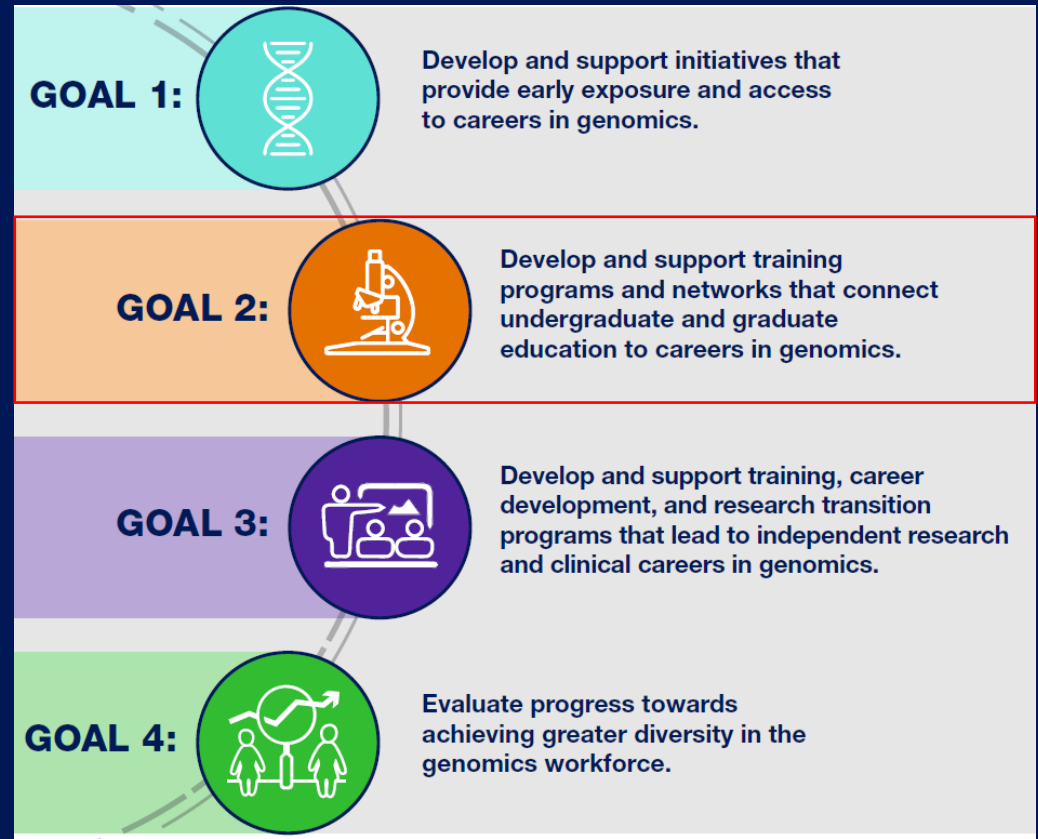- Develop integrated knowledgebases and informatics methods for genomic medicine

Genomics and society
- Understand the interrelationships between genomics and the social and environmental factors that influence human health
- Empower people to make well-informed decisions about genomic data and develop data-stewardship systems that reinforce their choices
- Increase the genomic literacy of all sectors of society

Training and genomics workforce development
- Ensure that the next generation of genomic scientists are sufficiently trained in data science
- Train healthcare providers to integrate genomics into the clinical workflow
- Foster a diverse genomics workforce

NHGRI Diversity Action Agenda

GOAL 1: Develop and support initiatives that provide early exposure and access to careers in genomics.

GOAL 2: Develop and support training programs and networks that connect undergraduate and graduate education to careers in genomics.

GOAL 3: Develop and support training, career development, and research transition programs that lead to independent research and clinical careers in genomics.

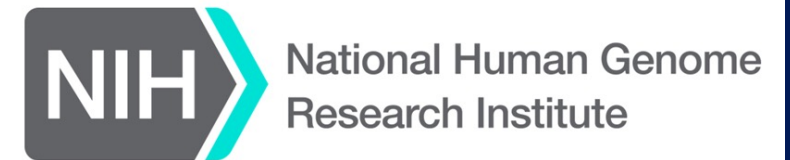**GOAL 4:** Evaluate progress towards achieving greater diversity in the genomics workforce.

Diversity in the Genomics Workforce

- R25 GREAT program*
- F99/K00 predoc to postdoc transition award*
- K18 short-term career enhancement award*
- R25 Research Experience in Genomic Research for Data Scientists*
- R01 for New Investigators*
- R25 Diversity Action Plan (DAP)
- R21 for New Investigators*
- Research supplements to promote diversity*
- F31D Predoctoral fellowship*
- K99/R00 MOSAIC*
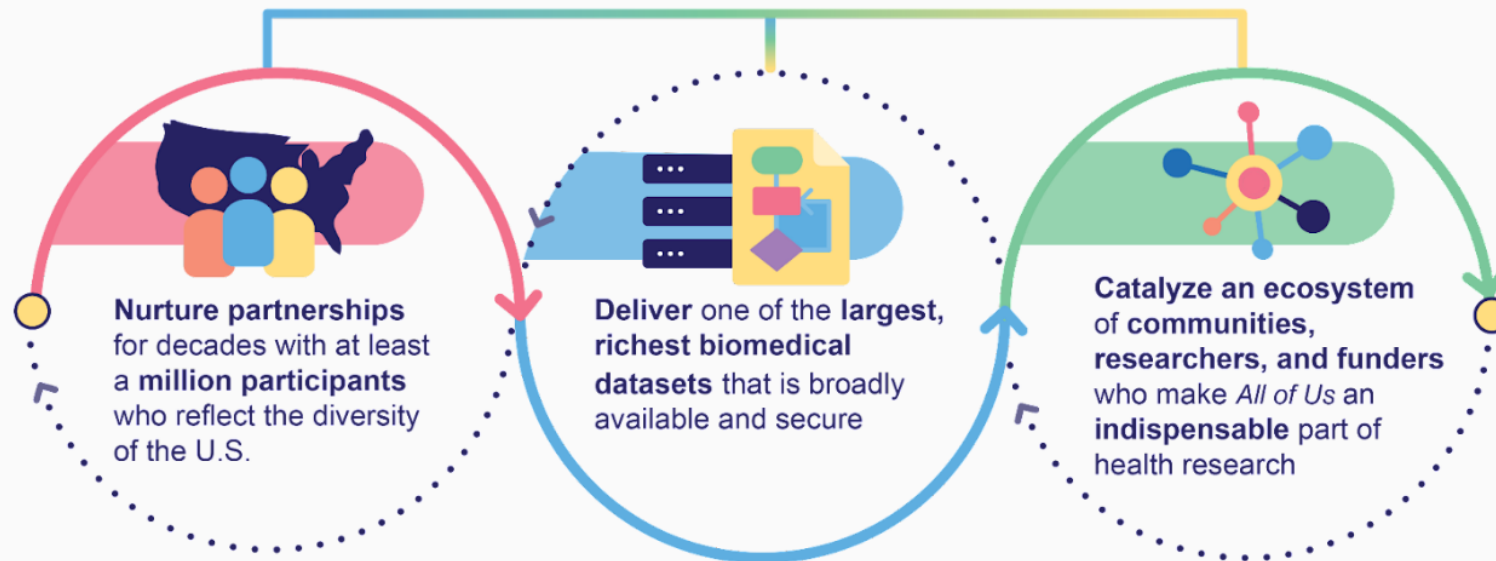- R16 Support for Research Excellence (SuRE)*

*new NHGRI FOAs in 2021
*NIH sign ons

NIH National Human Genome Research Institute

https://www.genome.gov/careers-training/Funding-to-Promote-Diversity-in-the-Genomics-Workforce

All of Us Research Program

Our Mission

Accelerate health research and medical breakthroughs, enabling individualized prevention, treatment, and care for all of us

Nurture partnerships for decades with at least a **million participants** who reflect the diversity of the U.S.

Deliver one of the **largest, richest biomedical datasets** that is broadly available and secure

Catalyze an ecosystem of **communities, researchers, and funders** who make *All of Us* an **indispensable** part of health research

Made possible by a team that maintains a culture built around the program's core values

Commitment to Diversity

A   C   G
C   G   T
A   C   G

Diversity

Includes racial and ethnic minorities as well as sexual and gender minorities, people with low income or limited education, and other groups.

50%+ Racial and Ethnic Minorities

80%+ Underrepresented in Biomedical Research

20 — 51,360

This map reflects the number of participants in each state who have completed the initial steps of the program as of June 6, 2022

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A Range of Different Data Types

Surveys

from 329,000+ participants
Including lifestyle, access to care, medical history, and **data from nearly 100,000 participants on their experiences during the COVID-19 Pandemic**
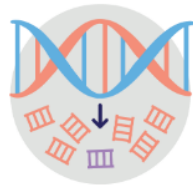
Physical Measurements

from 267,600+ participants
Blood pressure, heart rate, BMI and more

Electronic Health Records

from 214,200+ participants
Standardized to OMOP common data model

Genomics

98,600+ whole genome sequences
Only available via the Controlled Tier

Genotypes

165,000+ genotyping arrays
Only available via the Controlled Tier

Wearables

(from 11,600+ participants)
Physical activity and heart rate from participants who have connected their Fitbit devices

Participant biosamples are forthcoming

DATA: Access

Three Tiers

Public Tier

Contains only anonymized, aggregate data which is available to anyone through the Data Browser and Data Snapshots. Public Tier tools include — Data Browser, Research Projects Directory, Publications, Data Snapshots, and the Survey Explorer

Registered Tier

Contains curated, anonymized, individual-level data which is available to registered researchers on the Researcher Workbench. Registered Tier tools include — Cohort Builder, Dataset Builder, Workspaces, Notebooks, and the Support Hub

Controlled Tier

Available to approved researchers who have taken additional steps and training to access these data. Controlled Tier data includes: Genomic data, additional clinical fields in electronic health records, and additional demographic data from surveys that are suppressed or generalized in the Registered Tier

Counts between all three data tiers and Data Snapshots may vary because of the lag time associated with the data curation process.

NIMHD partnership

NIMHD's mission is to lead scientific research to improve minority health and reduce health disparities. To accomplish this, NIMHD:

- Plans, coordinates, reviews, and evaluates NIH minority health and health disparities research and activities

- Conducts and supports research in minority health and health disparities

- Promotes and supports the training of a diverse research workforce

- Translates and disseminates research information

- Fosters innovative collaborations and partnerships

ODSS partnership

The Office of Data Science Strategy leads implementation of the NIH Strategic Plan for Data Science through scientific, technical, and operational collaboration with the institutes, centers, and offices that comprise NIH.

The ODSS mission is to catalyze new capabilities in biomedical data science by providing trans-NIH leadership and coordination for modernization of the NIH data resource ecosystem, development of a diverse and talented data science workforce, and building strategic partnerships to develop and disseminate advanced technologies and methods.

Programmatic Approach: Hub + Sites
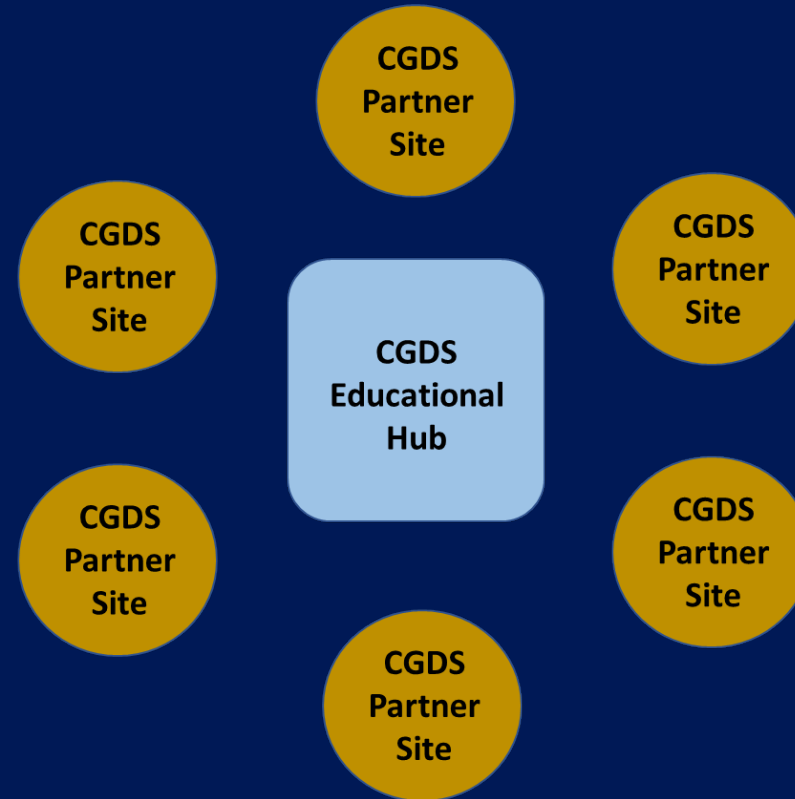
Sites: future FY23 R25 FOA for CGDS content development by MSIs

Programmatic approach for Hub

- **Scope – facilitator/coordinator for cloud-based CGDS education**

- Engage stakeholders interested in CGDS education

- Host CGDS and cloud computing seminars (incl. travel support)

- Collect feedback on challenges faced in teaching CGDS

- Train-the-trainer and disseminate educational content

- Support funds for student research projects at Sites

- NIH partners join NHGRI in co-funding (FY23-27)

Programmatic approach for Hub

- U24 cooperative agreement mechanism

- $1.5M total costs/year (FY23-25)

- $1.8M total costs/year (FY26-27) with opportunity funds

- Create a pool of competitive applicants for the R25 Sites funding announcement

- Organize Annual Programmatic Meetings

- Convene a Scientific Experts Group (SEG) to consult on the progress and priorities of the Hub

Opportunity funds administration

- Opportunity Funds program in FY26 and FY27 administered by the Hub

- Faculty develop independent projects in genomics and/or data science

- Data to be used as the substrate for hands-on cloud-based CGDS analysis

- Include a description of the following:
  - administrative structure
  - process for solicitation, review, and selection of projects
  - recommendation process for NHGRI review and approval
  - procedures for funds disbursement
  - plans for monitoring and reporting progress

https://grants.nih.gov/grants/forms-f/data-tables.htm

Timeline for Hub and Sites
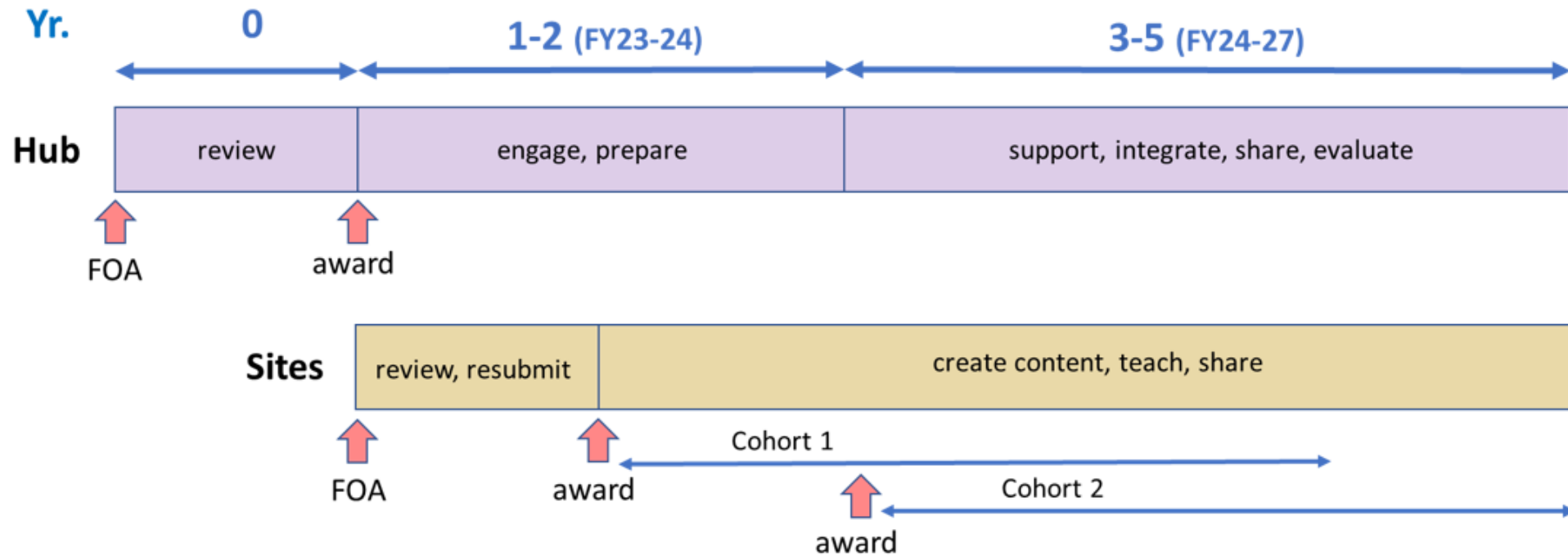
Application Process

- Contact NHGRI Program Officer (Shurjo Sen) *before* submitting your application to check for responsiveness

- Follow instructions in SF424 (R&R) Application Guide

- Main body of application – PHS 398 Research Plan

- Read RFA carefully, know what to include in your application

Make sure to include:

- Plan for Enhancing Diverse Perspectives*
- Plan for Instruction in Responsible Conduct of Research*
- Evaluation Plan*
- Resource Sharing Plan
- Leadership and Project Management Plan
- Dissemination Plan
- Letters of Support

*will not be reviewed if missing in application

Relevant deadlines

- Letter of intent: June 27 (not required)

- Application due date: July 27

- Do not wait until last day to submit!
  - Grants.gov submission errors
  - Contact eRA Service Desk (see RFA for contact info)
  - Application submitted to NIH not NHGRI (very little NHGRI staff can do if errors)

Review and Selection Process (Section V.2)

- First level peer review convened by NHGRI

- Second level review by NHGRI's Council

- Funding decisions based on:

    - Scientific and technical merit of proposed project as determined by peer and Council review

    - Availability of funds

    - Relevance of proposed project to program priorities

Hub FAQ

A   C   G
C   G   T
A   C   G

- Do Hub applicants have to be MSIs?

- What background will the students engaged by the Hub have in genomics and data science?

- Will the Hub develop classroom teaching content?

- Who will provide cloud computing costs for this work?

- Will the Hub be helping with Sites applicants?

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Questions?