Midwest Big Data Innovation Hub

Collaboration Cafe

November 2023

Workforce Development for Biomedical Big Data
via
NIH "Education Activities for Responsible Analyses of
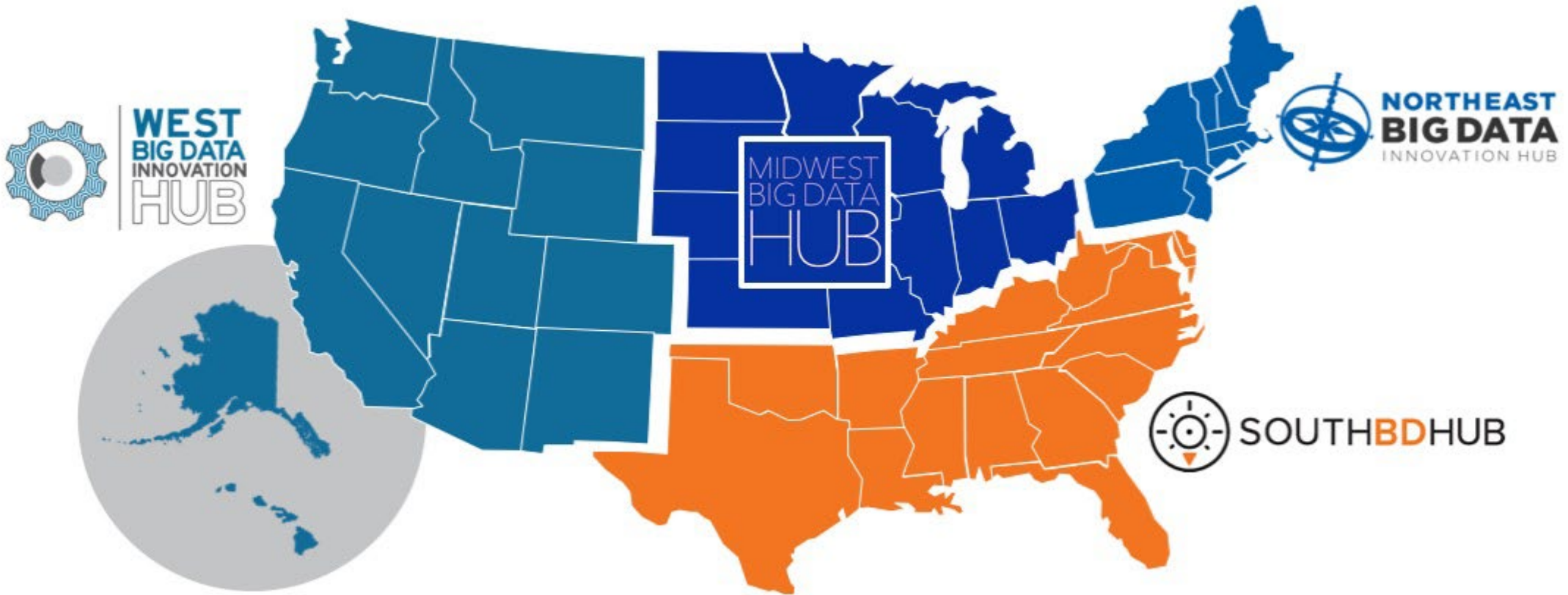Complex, Large-Scale Data" (R25)

Four Regional Hubs, One National Mission

What We Do   Engage communities, share resources, and build partnerships that harness data science to address societal and scientific challenges.

Priority Areas and Cross-cutting Themes

- Advanced Materials and Manufacturing
- ==Big Data in Health==
- Digital Agriculture
- Smart & Resilient Communities
- Water Quality

- ==Data Science Education and Workforce Development==
- Cyberinfrastructure and Data Sharing

Collaboration Cafe webinar series

Goals:

- Building regional capacity for large-scale proposal response

- Growing a cross-disciplinary network of data science collaborators

- Elevating early career researchers

- Creating a more diverse data science community by actively engaging with non-R1 institutions, including minority-serving institutions (MSIs), tribal colleges and universities (TCUs), and predominantly undergraduate institutions (PUIs)

- Partnering with industry, government, nonprofits, and civic organizations to support translational research and transition-to-practice activities

Regular segments:

- Funding opportunity walkthroughs
- Lessons learned from prior awardees
- Researcher lightning talks
- Speed networking
- Small group discussions

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Collaboration Cafe resources

- MBDH website
  - Web page with upcoming sessions
  - Short form for engagement

- Slack community
  - Networking
  - Input on future sessions
  - New solicitations

- Shared Google Drive
  - Running notes doc
  - Relevant prior awards to Midwest institutions

- YouTube playlist of webinar recordings

Cafe Ground Rules
- Multi-disciplinary team science is a core focus here - all proposal ideas are welcome for discussion

- Research proposals are competitive; some people may not be willing to discuss the details of their projects in this venue

- Private conversations in breakout rooms or Slack private messages are private

- Participating in Collaboration Cafe activities falls under our NSF Code of Conduct

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MBDH engagement on proposals

There are multiple opportunities to have MBDH participate on proposals for this program, or other projects:

- <u>Engagement partner</u>: Communications, outreach, community assessments, participation in Hub events and activities
  - Non-exclusive Letter of Collaboration
  - Minimal to no funding to MBDH

- <u>Collaborative partner</u>: Engagement roles + involvement in developing and managing project activities
  - Non-exclusive Letter of Collaboration, subaward, co-PI roles, etc.
  - Funding to recover costs of MBDH staff time and other expenses

- Note: The MBDH is a neutral party and often provides non-exclusive Letters of Collaboration to multiple proposers to a solicitation

Prior webinars on biomedical data / workforce development

- January 2022: NIH Research Experience in Genomic Research for Data Scientists (R25)

- May 2022: NSF/NIH Smart Health and Biomedical Research in the Era of Artificial Intelligence and Advanced Data Science (SCH)
  - Dr. Fenglou Mao, NIH Office of Data Science Strategy (ODSS)

- September 2022: NIH Support for Conferences and Scientific Meetings (R13)

- February 2023: NIH Research Experience in Genomic Research for Data Scientists (R25)
  - Dr. Sandhya Xirasagar and Dr. Lucia Hindorff, NHGRI

- August 2023: NIH/NLM Research Grants in Biomedical Informatics and Data Science (R01)
  - Dr. Allison Dennis, NIH/NLM

- Prior Midwest awards lists (available via MBDH)

Collaboration Café
YouTube playlist

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Selected NIH grant program types

- R01 – Basic research
- R21 – Exploratory and early stage research
- R25 – Education and training programs
- R13 – Support for conferences and scientific meetings
- Kxx – Post-doctoral career development
- Fxx / Txx / NRSA – Pre-doctoral training

- Single Institute/Center focus - National Institute on Drug Abuse (NIDA)
- NIH-wide
- Interagency

NIH Education Activities for Responsible Analyses of Complex, Large-Scale Data

R25 RFA-DA-24-027	Due by: Jan 8, 2024 (LOI), Feb 8, 2024 (full proposal) [FOA]
Program goals	"The overarching goal of this NIDA R25 program is to support training and educational activities for **responsible analyses of complex large-scale data involving brain, behavioral, genomic, and socioenvironmental data** that complement and/or enhance the training of a workforce to meet the nation's biomedical, behavioral, and clinical research needs."
Size and duration (max)	$300k/yr in direct costs, up to 3 years
Estimated # of awards	Up to four awards this cycle
LOI/preproposal	Non-binding LOI due by January 8, 2024 (not required) – see guidance
Eligibility limits & guidance	• IHEs as well as other organizations (nonprofits, for-profits, government agencies, others; non-U.S. entities are eligible • All PIs must have an NIH eRA Commons account (set up via your institution's sponsored research office; can take 2 weeks) • Proposed work must be distinctly different from any existing institutional training grants

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NIH Submission Timeline

Application Due Dates			Review and Award Cycles		
New	**Renewal / Resubmission / Revision (as allowed)**	**AIDS**	**Scientific Merit Review**	**Advisory Council Review**	**Earliest Start Date**
February 08, 2024	Not Applicable	Not Applicable	July 2024	August 2024	September 2024

Solicitation background and guidance on scope

Context

- Driven by the availability of "large, open datasets (e.g., Human Connectome Project, the Adolescent Brain Cognitive Development[SM] Study, the Healthy Brain and Cognitive Development Study (planned), and the All of Us Research Program)", with goals of "understanding the social determinants of health"

Rationale

- "Responsible use of such data therefore requires knowledge of analytical and statistical considerations specific to large datasets, such as population inference, sampling variability, covariate inclusion, and data missingness. Additionally, with the increasing availability of open datasets, many investigators are attempting analyses of large-scale, complex data for the first time and with varied levels of training and knowledge about how to use these large datasets."

Scope

- "support creative educational activities with a primary focus on methodological rigor in the analysis of large complex datasets involving brain, behavior, genomic, and socioenvironmental data. This could involve:

- **Courses for Skills Development:** For example, advanced statistics and research design courses in a specific discipline or research area, rigor and robustness in research practice, or ethical conduct of biomedical research.

- **Curriculum or Methods Development:** For example, to improve biomedical, behavioral or clinical science education, or develop novel instructional approaches or computer-based educational tools that support methodological rigor in analysis of large complex datasets."

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Solicitation guidance on intellectual scope

"Topics of interest include, but are not limited to:

- Analytical approaches for large-scale, longitudinal data

- Enhanced rigor and robustness in research practice (e.g., pre-registration of experimental protocols, plans, and analyses)

- Estimation of meaningful associations, including population inferences, effect sizes, control of covariates, and interpretation of associations

- Ethical conduct of biomedical and behavioral research, including consideration of social constructs such as race/ethnicity and gender, and the potential for stigmatization

- Community-partnered research to inform data analyses and interpretation

- Consideration of socioenvironmental contexts known to introduce inequities, such as family income and education, employment, housing, neighborhood-level characteristics, and exposure to violence

- Factors to consider when examining the influence of socioenvironmental factors (e.g., non-random data missingness, sampling methodologies)"

Solicitation guidance on allowable costs

- Personnel – Salary and fringe for people designing, directing, and implementing the research education program is allowed

- For applications proposing courses for skills development: It is recommended that the combined personnel costs (administrative, program coordinator, PD/PI salary support, consultants, and mentor costs) not exceed 30% of the requested direct costs of the grant

- Participant costs are allowed (see detailed guidance)

- "costs to support full-time participants (supported for 40 hours/week for a continuous, 12-month period) are not allowable"

- Consultant costs, equipment, supplies, travel for key persons, and other program-related expenses may be included in the proposed budget.

- "Indirect Costs (also known as Facilities & Administrative [F&A] Costs) are reimbursed at 8% of modified total direct costs", not the institutionally-negotiated rate

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Proposal Elements

The Research Plan must include these elements: (see detailed guidance)

- Research Education Program Plan
- Recruitment Plan to Enhance Diversity of Program Participants
- Plan for Instruction in the Responsible Conduct of Research
- Evaluation Plan
- Dissemination Plan

- Letter of institutional commitment
- Plan for Enhancing Diverse Perspectives (PEDP) - (see guidance)
- Resource Sharing Plan
- Facilities & Other Resources – relevant to the proposed training program
- Advisory Committee plan – optional, not required - (see guidance)

- See also: Special Considerations for NIDA Funding Opportunities and Awards

Distinct institutional elements
- Institutional Commitment Letter of Support
- Facilities & Other Resources
- Institutional Environment and Commitment

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Review Criteria

Scored Review Criteria

1. Significance
2. Investigator(s)
3. Innovation
4. Approach
5. Environment

Additional Criteria

1. Protections for Human Subjects (if applicable)
2. Inclusion of Women, Minorities, and Individuals Across the Lifespan
3. Vertebrate Animals protections (if applicable)
4. Biohazards protections (if applicable)
5. Recruitment Plan to Enhance Diversity
6. Training in the Responsible Conduct of Research
7. Resource Sharing Plans
8. Budget and Period of Support

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Relevant awards in the region

- Jing Liu, University of Michigan–Ann Arbor
  - "Training Biomedical Research Teams for Rigor and Reproducibility in Data Science" (NIGMS)

- Courtney Herbert, The Ohio State University
  - "OSU Summer Internship Program in Biomedical Informatics and Data Science" (NLM)

- Bhramar Mukherjee, University of Michigan–Ann Arbor
  - "Transforming Analytical Learning in the Era of Big Data: A Summer Institute in Biostatistics and Data Science" (NHLB)

- Jessica Faul, University of Michigan–Ann Arbor
  - "Genomics for Social Scientists" (NIA)

- Sarath Chandra Janga, Indiana University Purdue University Indianapolis (IUPUI)
  - "DataWiz-IN scholars program for Biomedical Informatics workforce in Indiana" (NLM)

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Q&A and Discussion

- Please note that Dr. Hoffman cannot provide feedback today on any specific proposal concepts that you have

- First-time NIH proposers: what questions do you have?

- Those with prior experiences with NIH proposals:
  - What would you recommend to first-time proposers?

- Regional needs and opportunities
  - Where are the gaps?
  - Are there specific disciplinary drivers?

- Other topics

Get involved

- https://midwestbigdatahub.org/cafe
- info@midwestbigdatahub.org

New Collaboration Cafe sessions in 2024!

Contact us to suggest topics and guests

NSF Virtual Grants Conference

December 4-7, 2023

https://nsfpolicyoutreach.com/

Get Involved ˅

MBDH Collaboration Cafe

Community Development and Engagement Program

Community Advisory Panel

Midwest Carpentries Community

Data Science Student Community

Regional Activities

Event in a Box Tool Kit

Explore Funding Opportunities

Join a Working Group

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