IDeA programs - INBRE

Lakshmi K Matukumalli Program Director, NIGMS-NIH





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The IDeA (Institutional Development Award) Program

- Authorized by Congress in 1993 to strengthen biomedical research in states receiving limited NIH funding (23 States and Puerto Rico)
- First IDeA Award funded in 2000 by NCRR
- IDeA Program moved to NIGMS in 2012







Steady Congressional Support for IDeA Program

FY	IDeA Appropriations	NIH Appropriations	IDeA/NIH (%)
2022	\$410,453,000	\$45,000,000,000	0.91
2021	\$396,573,000	\$43,010,500,000	0.92
2020	\$386,573,000	\$41,760,000,000	0.93
2019	\$361,573,000	\$39,306,349,000	0.92
2018	\$350,575,000	\$37,311,349,000	0.94
2017	\$333,361,000	\$34,300,999,000	0.97
2016	\$320,840,000	\$32,311,349,000	0.99
2015	\$273,325,000	\$30,311,349,000	0.9
2014	\$273,325,000	\$30,142,653,000	0.91
2013	\$261,554,421	\$29,315,822,000	0.89
2012	\$276,480,000	\$30,860,913,000	0.9

Research Capacity Building







IDeA Supported Programs







The IDeA Program Supports Four Funding Initiatives

- Centers of Biomedical Research Excellence (COBRE) (3 5-yr phases; 129 active awards)
 - Centers of research excellence to support the development of infrastructure and investigators to compete for independent NIH funding and to advance the science in the area
- IDeA Networks of Biomedical Research Excellence (INBRE) (24 awards)
 - Statewide networks of PUIs and research-intensive institutions that support faculty research with student participation and build research infrastructure
- IDeA Clinical and Translational Research Networks (IDeA-CTR) (12 active awards)
 - Statewide/regional networks that develop C&T research capacity and support health research to addresses health concerns of the populations of the state/region
- IDeA Co-Funding: Co-funds R01/R15 and major instrument applications submitted to NIH
 - Encourages all NIH Inst/Cent/Offices to expand research funding for IDeA states



IDeA Networks of Biomedical Research Excellence (INBRE)

Goals:

- Develop a statewide multi-disciplinary research network of doctoral degree granting and undergraduate institutions;
- To build and increase the research capacity by supporting faculty, fellows and students at participating institutions;
- Provide undergraduate faculty and students research support, serve as "pipeline" to health research careers;
- Provide outreach to students at undergraduate institutions, community colleges and tribally controlled colleges and universities;
- Enhance statewide science and technology knowledge base.





INBRE Network > 24 INBRE networks; One per IDeA state









LOUISIANA STATE UNIV A&M COL BATON ROUGE



Bioinformatics, Biostatistics and Computational Biology



Molecular and Cell Biology Resources

Grambling State University

La Tech University

Louisiana State University - Shreveport

LSU Health Shreveport

LSUHSC-New Orleans

Southeastern Louisiana University

Southern University Ag Center

Southern University of Baton Rouge & AM College

University of Louisiana Monroe

Jniversity of New Orleans

Xavier University of Louisiana



Supporting INBRE Through Collaboration with Other Programs

INBRE Supplements to Develop Research Collaborations (2019-present)

With COBRE, IDeA-CTR, IDeA co-funded R01s and R15s;

IDeA States Pediatric Clinical Trials Network (**ISPCTN**), Clinical and Translational Science Awards (**CTSA**) and Native American Research Centers for Health (**NARCH**) awards located in IDeA states

- Provide investigators and students from INBRE partner institutions greater access to research supported by the IDeA Program at research-intensive institutions
- Encourage investigators supported by collaborating programs to be involved in mentoring undergraduate students and building a deeper bench of research workforce



Supporting Research and Research Capacity Building in IDeA States







Other Programs & NOSIs

Notice of Special Interest: Availability of Administrative Supplements to INBRE Awards to Fund Research Collaborations - <u>NOT-GM-21-016</u>

Notice of Special Interest: Administrative Supplements for Research on Women's Health in the IDeA States - <u>NOT-GM-22-005</u>

Notice of Special Interest: Alzheimer's-Focused Administrative Supplements for NIH Grants that are Not Focused on Alzheimer's Disease - <u>NOT-AG-22-025</u>;

R15 "NIH Research Enhancement Award" Goals: support meritorious research, expose students to research, and strengthen the research environment of the institution.

Programs

1.Academic Research Enhancement Award (AREA) for Undergraduate-Focused Institutions 2.Research Enhancement Award Program (REAP) for Health Professional Schools and Graduate Schools





Enabling Cloud-Computing at IDeA Institutions through INBRE

- Cloud computing can provide students and investigators at under-resourced institutions access to big data tools/approaches and analytic/storage capacities essential for biomedical research without heavy capital investment in institutional high performance computing infrastructure.
- INBRE awardees are collaborating w/ NIH STRIDES to lead the way on expanding access to data science tools and skillsets
 - Providing basic Cloud Computing training
 - Developing Cloud tools for self-learning of biomedical research methods
 - Demonstrating to investigators and institutional leaders the benefits of using Cloud tools to facilitate transitioning of research activities to the Cloud





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Interactive Training on Cloud Fundamentals

48 classes (through 60 six-hour sessions) by Google (27) or AWS (21) June–December 2021

- Beginner (Cloud Basics)
- Intermediate (App Development)
- Advanced (Architecture)

15 students/class; 720 class seats; 500 participants from ~ 90 Institutions

GM staff enrolling participants through INBREs; STRIDES staff managing logistics; GCP and AWS providing instruction/training

24 classes; 24 sessions 12 classes; 16 sessions 12 classes; 20 sessions



Google Cloud







Build Cloud-Based Learning Modules





Biomedical Research Learning Modules

Category	University	Торіс
Introductory Bioinformatics Module	Dartmouth College	Fundamentals of Bioinformatics
Single-omics Approaches	University of Maine*	RNAseq
FildSel	University of Arkansas for Medical Sciences*	Proteomics
	University of Hawaii	DNA Methylation
	MDI Biological Laboratory	Transcriptome Assembly
	University of Nevada Reno	Genomic Annotation & Pathway Analysis
	University of Nebraska Medical Center	ATACseg and sc-ATACseg
Multi-omics and Metagenomics	University of South Dakota	Metagenomics of Biofilm
	University of North Dakota	Multi-omic Analysis
Machine Learning	University of Arkansas	Biomedical Image Analysis
	University of Rhode Island	Biomarker Discovery with ML/AI
	University of San Francisco	Biomedical Data Science







Our goal is to work with NIH to achieve our shared long-term vision of:

Creating a Cloud Laboratory that will provide NIH and NIH-affiliated researchers of various cloud skill levels (novice to advanced) an environment to

- evaluate GCP products
- run proof of concepts
- gauge price and technical implications
- create a launchpad to accelerate research

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Cloud-based Learning: Serving Large Number of Students



Limitations

Access to servers limited Need to install software and backup data Limited computing and storage capacity Providing training one class/workshop a time

Objectives

Easy access via cloud user accounts A collection of learning modules each covering a topic in biomedical research Enables self-learning Capable of serving large number of students



