

# INBRE

## The IDeA Network of Biomedical Research Excellence

A capacity-building research grant funded through the National Institute of General Medical Sciences division of the National Institutes of Health.



### STUDENTS

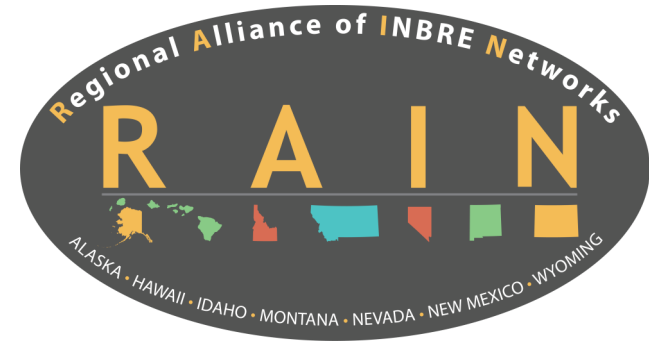
- Regional access to degrees in bioinformatics
  - BS, MS, and PhD degrees
- Student academic research exchanges
- Internships in unique National Laboratories
  - Idaho National Laboratory
  - Rocky Mountain Laboratories
  - Los Alamos National Laboratory
  - Sandia National Laboratories



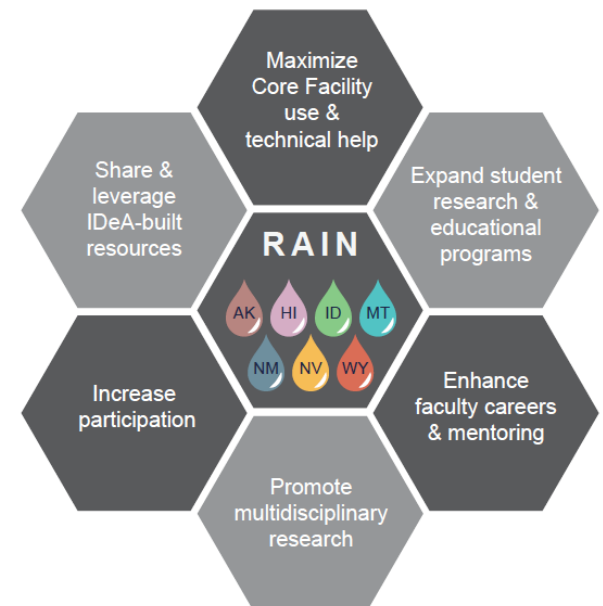
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- Alaska INBRE: P20GM103395
- Hawaii INBRE: P20GM103466
- Idaho INBRE: P20GM103408
- Montana INBRE: P20GM103474
- Nevada INBRE: P20GM103440
- New Mexico INBRE: P20GM103451
- Wyoming INBRE: P20GM103432

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## FACULTY

- Unique mentoring and training resources across the seven states to improve the health of the region and the nation
- Access to
  - scientific mentoring expertise
  - research core facilities
  - technical help
- Collaboration
  - Community engagement research
  - Collaboration studios
  - Professional development
  - Research conferences
  - Seminars
  - Regional COBREs and CTRs

## BIOINFORMATICS

### Degree Programs

Bioinformatics is a field that includes the tools and approaches to analyze large biomedical datasets, including genomes, proteomes, microbiomes, images, health records, and disease physiopathology. This field is consistently mentioned among career opportunities with the highest demand, job satisfaction, and salary.

- **Lewis-Clark State College** offers an INBRE-initiated BA/BS in Bioinformatics.
- **The University of Idaho** offers the INBRE-initiated MS/PhD in Bioinformatics and Computational Biology.

## RESEARCH CORES

AK

### Alaska Genomics Sequencing and Bioinformatics & Stable Isotope Facility

Genomics, proteomics, analytical chemistry, includes library preparation and sequencing on Illumina's MiSeq platform; training workshops and seminars.

Isotopic analyses of individual compounds (e.g. fatty acids, amino acids), muscle, feathers, otoliths, blood, bone collagen, whale baleen, algae & zooplankton, soil & sediment, whiskers & claws, dissolved organic carbon and nitrogen, water, and vegetation.

HI

### Hawaii INBRE Sequencing, Data Science Core and Imaging Facilities

Genomics and Bioinformatics Shared Resource and Training (GBSR\_UH Cancer Center)

- High-throughput NGS sequencing; DNA methylation analysis; RNA expression profiling;
- NanoString; Clariom GeneChip; full -omics data analysis; machine learning

Imaging Shared Resource and Training (John A. Burn School of Medicine; UH Cancer Center)

- Near super-resolution; TIRF - live cell 3D; laser capture; flow cytometry; in vivo IVIS

ID

### Idaho INBRE Data Science Core Facilities at three locations

Institute for Interdisciplinary Data Science (UI, Moscow): Research computing and data services, genomics and bioinformatics resources, optical imaging, etc.

Biomolecular Research Center (BSU, Boise): Biomolecular characterization, mass spectrometry, protein structure, imaging, confocal microscopy, histology, etc.

Molecular Research Core Facility (ISU, Pocatello): Sequencing, imaging, etc.

MT

### Montana INBRE Data Science and Community Engagement Cores

Data Science: Genomics, Bioinformatics, Social Data Collection and Analysis Services

Metabolomics: LCMS, GCMS, QQQ, ICP-MS, project planning, data collection & analysis

Community Engagement: Fostering tribal and rural community partnerships aimed at mitigating health disparities through engagement, dialogue, and collective problem solving

NV

### Nevada INBRE Data Science Core for Biomedical Research

We help you find resources for your research endeavors and support student research trainings.

The Nevada INBRE supported cores are accessible to RAIN members at the internal rate including the Mick Hitchcock PhD NV Proteomics Core, NV Genomics Core, NV Bioinformatics Center, UNLV Genomics Center, Genome Acquisition and Analysis Core, and National Supercomputing Institute.

NM

### New Mexico INBRE Data Science Core

Differential gene expression, simple/complex genome assembly, and variant discovery

Pangenomics, epigenetics/ChIP-seq, small RNA analysis, functional annotation

Data mining, machine learning, systems biology, and web-app/software development

Year-round bioinformatics/STEM internships and workshops for students and researchers

WY

### Wyoming INBRE Data Science Core

Individual and group trainings in scripting, data reproducibility and analysis

Curriculum development

Bioinformatics expertise and support including: microbial community analysis, population genomics from whole genome and reduced representation data, transcriptomics/differential expression, genome assembly and annotation, phylogenomic reconstruction, and gene family evolution