EPSCoR - Established Program to Stimulate Competitive Research



Idaho EPSCoR -

Funded by the National Science Foundation (NSF)

GEM3 is Idaho EPSCoR's current research project

- Statewide program and includes all of Idaho's research institutions (UI/BSU/ISU)
- Primary objective is to build Idaho's research capacity in key areas that can become fully competitive at a national scale

GEM3 –



- Officially known as RII Track-1 Award (2018-2023): Linking Genome to Phenome to Predict Adaptive Responses of Organisms to Changing Landscapes
- Idaho's approach is through Genes to Environment: Modeling, Mechanisms, and Mapping (GEM3)

GEM3 Overview





- GEM3 is seeking to understand how genetic diversity and phenotypic plasticity affect species response to environmental change, shaping both population response and adaptive capacity
- Two focal taxa are under study: **redband trout** and **sagebrush**
- Both are integral to ecosystems in the American West, and are central to land-use management decisions that drive the economy of the region
- This statewide project combines research strengths in bioinformatics, complex modeling, ecology, fisheries science, genomics, geospatial science, remote sensing, and socialecological systems (SES) science

GEM3 Education and Workforce Development



Undergraduate Research

- GEM3 uses a Vertically Integrated Project (VIP) strategy to increase the number, diversity and preparation of skilled scientists and engineers in GEM3 fields
- VIP research teams include undergraduates, graduates, post-docs, and faculty
- Fields include bioinformatics, computational biology, conservation genetics, and ecosystem management
- GEM3 also uses Summer Authentic Research
 Experiences (SARE) and GEM3 Lab Modules as an onramp to the VIP and to get students interested in GEM3 research



Vertically Integrated Projects (VIP)

The **VIP** is designed to increase student access to hands-on learning with faculty mentors and diverse teams.

- Students receive academic credit
- Training, mentoring and professional development available
- The VIP program includes (but not limited to) following majors:

Bachelor of Applied Science Biological Sciences Chemistry Civil Engineering Computer Science Environmental Studies Program Geosciences Interdisciplinary Studies Mathematics Physics





Summer Authentic Research Experiences (SARE)

Summer Authentic Research Experiences (SARE) Promote diverse participation and success in GEM3-related STEM fields.

- Paid research positions
 - up to \$4,000/full & part time positions)
- Seeks underrepresented minority (URM) students
- Provides an intensive laboratory & field experience
- Creates bridge between academic years
- Engages Idaho 2-4 year colleges
 - funding available for 2-4 year college faculty who would like to lead a research project





Lab Modules: On-ramps to Undergraduate Research

GEM3 Lab modules are designed to align with the VIP effort and serve as an additional on-ramp to GEM3 related research. Idaho universities and 2-and 4-year colleges are invited to incorporate GEM3 lab modules into core introductory science lab courses across institutions.

- Use tools of GEM3 disciplines to find answers to scientific issues
- Emphasize designing hypothesis-driven, controlled experiments, data collection and analysis
- Taught by faculty from 2- and 4-year colleges and/or GEM3 graduate students (in person or virtually)





Closing

How to get involved

- Visit EPSCoR and GEM3 websites at: <u>www.idahoepscor.org</u> <u>www.idahogem3.org</u>
- Take a look at our Newsletter "the Researcher" (EPSCoR website) to read more about GEM3 progress
- General Contact Info:

VIP/SARE: Donna Llewelyn (donnallewellyn@boisestate.edu)
Lab Modules: Stephanie Sevigny (stephaniesevigny@boisestate.edu)
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