NIH Institutional Development Award

**IDeA: COBRE and INBRE in Idaho**

Idaho has three awards under the National Institutes of Health (NIH) Institutional Development Award Program (IDeA). Idaho’s statewide program through the IDeA Networks of Biomedical Research Excellence (INBRE) is the Idaho INBRE program. The University of Idaho (UI) is home to two Centers of Biomedical Research Excellence (COBRE) awards.

Idaho INBRE has been awarded more than $60 million since it began in 2001. It has built a statewide biomedical research network, increased Idaho’s competitiveness for new biomedical research dollars, mentored faculty and students, and prepared a workforce skilled in science technologies.

The Center for Research on Processes in Evolution COBRE has received over $26.7 million in COBRE funding since it began 2002. It is organized under the auspices of the Institute for Bioinformatics and Evolutionary Studies (IBEST), which focuses on interdisciplinary research in computational and evolutionary biology and mentoring early-career faculty to develop nationally competitive research programs. Through IBEST, COBRE funding also supports core facilities that provide investigators in the state, region and nation with access to advanced instrumentation and technical support. As this COBRE award sunsets, IBEST has become established as the sustainable, persisting center of excellence that COBRE was funded to establish.

The Center for Modeling Complex Interactions (CMCI) COBRE program was awarded an initial $10.6 million in 2015. The center builds UI’s research capabilities and expertise in the area of collaborative modeling and focuses on using mathematical, statistical and molecular models to address biomedical research questions of urgent relevance in the world today. Initial research projects include studies of viral coinfection and creating behavioral models to understand the spread of viral infections. New projects are scheduled to be added in 2018 and 2019.

**Background**

The IDeA program, established in the NIH Revitalization Act of 1993, invests in biomedical infrastructure in Puerto Rico and 23 states that have not historically received significant levels of NIH support. Funding is distributed through a merit review process with the expectation that recipient institutions' states will develop their biomedical research capacity and research competitiveness.

**Recent Accomplishments**

- In 2017, Idaho INBRE provided research opportunities to more than 233 undergraduate students, 27 graduate students, four postdoctoral fellows and more than 115 faculty across Idaho.
- INBRE outreach programs engaged more than 300 K-12 students in Idaho schools through activities such as Women in Science (North Idaho College), Math and Science Summer Institute (College of Idaho), and Science Camp-in (College of Southern Idaho).
- IBEST staff scientists and faculty, in collaboration with the Idaho Wheat Commission, published the first genome sequence (mitochondrial genome) for the sugar beet wireworm, an economically important crop pest. This has led to ongoing collaboration with the Wheat Commission to identify nuclear genomic regions that control pesticide resistance.
- IBEST research on experimental evolution of bacteria with multi-drug resistance plasmids has shown that single mutation in either the bacterial chromosome, the plasmid or both can broaden a plasmid’s...
host range, and thus promote the spread of antibiotic resistance to human pathogens. This will enable future research to identify ways to slow the rapid spread of bacterial resistance to antibiotics of last resort.

- CMCI hosts over a dozen working groups of faculty, research staff, postdoctoral associates and students that meet weekly to carry out collaborative interdisciplinary research. Examples include working groups on molecular models that predict spectral shifts in opsin genes, mathematical models of human motions using recurrent neural networks, and estimation of obesity-related indicators in Idaho.
- A team of CMCI researchers successfully competed for an NSF Established Program to Stimulate Competitive Research (EPSCoR) grant entitled “RRI Track-2 FEC: Using biophysical protein models to map genetic variation to phenotypes.” This $6 million award includes researchers from UI, Brown University and the University of Vermont.

Upcoming Goals

- INBRE will continue to invigorate faculty careers with collaborative research and provide rich, intensive, competitive research experience for students who are training to be the nation’s next generation of biomedical scientists.
- IBEST will complete the transition to become financially independent of COBRE funding while sustaining core facilities and various programs that were historically funded by COBRE.
- COBRE faculty will submit an NIH training grant (T32) to expand and enhance the UI Bioinformatics and Computational Biology graduate program by developing a focal area in evolutionary biomedicine.
- IBEST will increase its impact through collaborative research in agricultural genomics to better understand the evolution of pesticide resistance, soil microbiomes, species invasion and restoration ecology, in addition to expanding efforts in wildlife and conservation genomics.
- CMCI will expand the number of postdoctoral associates in the Collaboratorium and increase the breadth of modeling areas they cover.
- To increase modeling expertise at UI, two new faculty are currently being hired as an institutional commitment to CMCI.

Projected Impact of Continued and Increased Funding

Robustly funded IDeA programs catalyze development of biomedical research capacity at UI and across the state of Idaho. Investments through INBRE and COBRE allow Idaho investigators to establish their own independently funded research projects. Idaho students trained through IDeA programs become the next generation of biomedical researchers, physicians and educators in the state and beyond. Discoveries made through IDeA programs improve human health and address critical diseases around the world.

Accounts: Labor – HHS Appropriations; NIH, NIGMS, Institutional Development Awards

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