

NIH IDeA Award in New Hampshire

Program	Institution	Years of Operation	Total IDeA Funds Awarded for operation full period
Center for Molecular, Cellular, and Translational Immunology	Dartmouth	2001 – 2016 (NCE)	\$30.2M
Center for Molecular Epidemiology	Dartmouth	2013 - 2018	\$11.7M
Quantitative Biological Research Institute	Dartmouth	2011 – 2016 (NCE)	\$10.7M
Lung Biology Center for Molecular, Cellular and Translational Research	Dartmouth	2003 - 2018	\$27.8M
New Hampshire Network of Biomedical Research Excellence	Dartmouth	2010-2020	\$33.4M
			\$113.8M

NH-COBRE Highlights

Center for Molecular, Cellular, and Translational Immunology

'Immunology' COBRE 2001-2016

- Received 2 ARRA supplements from the COBRE mechanism.
- Junior faculty (project leaders and pilot awardees) have gone on to achieve well over \$10 million additional dollars in extramural, peer-reviewed funding as new principal investigators.
- COBRE-CIR faculty have attained a total of over \$20 million additional dollars resulting from COBRE
- In addition to junior faculty hires in Phase I/II, four more senior NIH R01 funded investigators also recruited with COBRE support
- Supports four research Cores:
 - Education, Mentoring, and Development
 - DartLab Shared Resource (Immune Monitoring and Flow Cytometry)
 - Transgenic and Genetic Construct Shared Resource
 - DartMouse™ Speed Congenic Facility

Center for Molecular Epidemiology at Dartmouth

- Using innovative approaches such as epigenetics (the study of heritable changes in gene activity), we are uncovering the early causes of breast cancer, and will be able to inform cutting-edge strategies for disease prevention.
- Examining the relationship between fetal and neonatal exposures to the developing intestinal microbiome to characterize disease risk.
- Clarifying the association between prenatal vitamin D levels, and childhood allergy and infection risk.
- Using synchrotron imaging and laser ablation to examine and determine the environmental impact of this critical organ, therefore unearthing it's utility as a biomarker of metal exposures in utero.
- Making epidemiological resources available to the scientific community. This includes our newly established Biorepository Core and a wealth of data accrued on individual risk factors and disease, along with our collective epidemiological expertise, unique to northern New England. The state-of-the-art robotic capabilities within the Biorepository advance the pace at which innovative research is conducted. These resources support all of the Center's research projects, and will ultimately serve as a regional/national resource.
- COBRE faculty have achieved more than \$6 million additional dollars in extramural awards, including two NIH R01 awards.

Quantitative Biological Research Institute

- The Integrative biology core provides bioinformatical and computational support for the research projects.
- Developed the Dartmouth Initiative for Supercomputer Ventures in Education and Research (DISCOVERY).
- COBRE faculty have achieved more than \$2.6 million additional dollars in extramural awards
- Established a Center for Genomic Medicine at Dartmouth Medical School.
- Mentoring the development of four junior quantitative biologists across the region
 - Natural Language Processing and Discovery of Somatic Mutations for Lung Cancer
 - Dynamically Weighted FDR for Genomic Studies of Gene-Toxin Interaction (This research led to an independent R01 for Jiang Gui)
 - Machine Learning for the Inference of Cis-Regulatory Modules for Environmental-Response Genes

- Bayesian network modeling of gene-environment interactions and cancer susceptibility

Lung Biology Center for Molecular, Cellular and Translational Research

- Supports 3 research Cores:
 - Host-Pathogen Interaction Core
 - Live-Cell Imaging Core
 - Translational Research Core
- Major focus on mentoring junior faculty: assisting in external grant submission
- Funded 8 Pilot and Feasibility Projects
- Faculty published 20 papers in the fiscal year.
- Dr. Stanton was named the Ussing Lecturer for the 2016 Experimental Biology Meeting.
- External grant funding received for COBRE faculty.
 - Dr. Stanton received a \$2M renewal of the Cystic Fibrosis Foundation Research Development Program (RDP) award through 2019.
 - Dr. Stanton received a \$400K R25 grant to support training in “Bioinformatics for Biologists.”
 - Dr. Madden received a \$200K 2-year internal “Munck-Pfefferkorn” award to catalyze submission of a P01 application focused on “Controlling Host-Pathogen Signaling in Chronic Lung Infections.” The Lung Biology COBRE will provide matching funds for four projects, led by Dr. Madden, Dr. Stanton, Dr. Hogan, and Dr. O’Toole, all LBC members.
 - Dr. Ashare received her inaugural R01.
- A number of approaches being developed to ensure the sustainability of the Lung Biology Center after the conclusion of the phase III award in 2018.
- Co-sponsored a CF research symposium; Attended by ~100 scientists from New England including attendees from drug companies and private foundations.

NH-INBRE Impacts

- **756** students and faculty participating in NHINBRE supported research activities
- **92** students entered research careers, graduate/professional school, or nursing fields in N.H.
- **12** external grants awarded to NH-INBRE funded Partner faculty: 1 COBRE-supported grant, 1 EPA, 2 R15s, 1 NSF EAGER, 7 non-federal grants
- **418** publications
- **2** N.H. undergraduate students have presented their NH-INBRE funded research at the National Posters on the Hill in Washington, D.C.
- **1** NH undergraduate student chosen to represent NH-INBRE to Congress in Washington, D.C.
- Awarded NH-INBRE CORE Supplement grant for \$444,154.
- Build/renovate infrastructure for research investigators.
- Leveraging corporate funding for Partner infrastructure
- Leveraging Dartmouth SYNERGY interactions to benefit young investigator/student scholarly development
 - Careers in Oncology for undergrads
 - Writing for biomedical publication/Grant writing workshops
 - Nursing mentor support and scholarly development activities for nursing faculty
 - Co-sponsoring a statewide nursing collaboration website.
- Added Human Health to the research themes
 - Funding 2 psychology research projects
- Now includes Nursing Research as a human health focus
 - Funded the first Nursing Research Pilot Project
 - Developed a summer nursing research program
- Established a lab safety training website that is available world-wide at no cost
- Provides bioinformatics workshops at all Partner institutions at no cost
- Funding for integrating bioinformatics into courses
- Postdoctoral teaching program where Dartmouth postdoctoral fellows teach courses and/or labs at the NH-INBRE partner Institutions
- Partner Institutions have developed their own 50/50 Teaching Research Fellow program. NH-INBRE funds the 50% research activity.
- Created an inter-institutional equipment “exchange/loan” program to provide new and used equipment and supplies to NH-INBRE researchers free of charge