

**Institutional Development Award (IDeA) Program**  
**CENTERS OF BIOMEDICAL RESEARCH EXCELLENCE (COBRE)**  
**Directory of Active Awards by State and Program**  
as of July 2002

IDeA-Eligible States:

<a href="#">Alaska</a>	<a href="#">Kansas</a> (2)	<a href="#">Montana</a>	<a href="#">North Dakota</a>	<a href="#">South Dakota</a>
<a href="#">Arkansas</a>	<a href="#">Kentucky</a> (2)	<a href="#">Nebraska</a>	<a href="#">Oklahoma</a> (2)	<a href="#">Vermont</a> (2)
<a href="#">Delaware</a> (2)	<a href="#">Louisiana</a>	<a href="#">Nevada</a>	<a href="#">Puerto Rico</a> (2)	<a href="#">West Virginia</a> (2)
<a href="#">Hawaii</a>	<a href="#">Maine</a>	<a href="#">New Hampshire</a>	<a href="#">Rhode Island</a>	<a href="#">Wyoming</a> (2)
<a href="#">Idaho</a> (2)	Mississippi	<a href="#">New Mexico</a>	<a href="#">South Carolina</a>	

**Building a Center for Biomedical Research Excellence for Alaska Native Health**  
**University of Alaska - P20 RR16430**

The research cores are in epidemiology and bioinformatics, genetics, culture and behavior, and outreach. The three research projects are intended to address health disparities experienced by Alaska natives, particularly related to obesity, nutrition and cultural aspects of health. This program will connect multiple University of Alaska campuses and the Alaska State Department of Health with over 200 Alaska native communities and tribal health corporations. The program will recruit a senior-level magnet researcher as the Director. There will be at least three junior faculty and four senior faculty members involved.

<http://mercury.bio.uaf.edu/iab/index.html>

*health disparities, nutrition, obesity, epidemiology, bioinformatics, genetics*

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**Center for Protein Structure and Function**  
**University of Arkansas at Fayetteville - P20 RR015569**

The scientific core is to establish a nuclear magnetic resonance facility, with five multidisciplinary projects on protein structure and function. This research area is crucial to the emerging field of structure-based drug discovery and design. The Center will build on existing faculty strengths in imaging and pharmaceutical chemistry. The new NMR instrumentation will bring state-of-the-art technology to support these projects, and assist in attracting new collaborators. Funds will support eight current junior faculty, five recruited junior faculty, and nine senior faculty mentors and administrators.

<http://www.uark.edu/protein>

*NMR, structural biology, Clostridium, drug design, signaling, protein targeting, oxidative phosphorylation*

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**COBRE: Structural and Functional Genomics**  
**University of Delaware - P20 RR015588**

Research cores are in protein production, mass spectrometry and computation, including four integrated scientific projects with a theme of structural and functional genomics. The program will incorporate collaborations with an adjacent biotechnology institute. It will create the infrastructure and expertise base needed to address biomedical questions by identifying key proteins in genomic databases, determining protein structure, and investigating the biomedical effects of directed structural changes. The benefits of the Center will also be extended to other researchers in related areas through the establishment of the core facilities, by offering small grants to entice new collaborators to join the program, and through the use of cost-sharing funds for equipment. Each project is led by one or two junior faculty members with at least one senior mentor. Plans are established to recruit two new junior faculty and to endow a chair for a senior member. Thus, a total of at least seven junior and four senior faculty will be supported within the program, with more staff added as collaborations grow.

<http://www.che.udel.edu/cobre/>

*genomics, proteomics, mass spectrometry, bioinformatics, molecular biology, protein chemistry, cancer, cardiovascular disease, x-ray diffraction, crystallography, chemical warfare agents, asthma, allergies, arthritis, inflammation, cystic fibrosis, Alzheimer's disease, prion diseases*

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**Osteoarthritis: Prevention and Treatment**  
**University of Delaware - P20 RR16458**

This program includes one research core with three projects. The first project will generate a biomechanical model based on MRI and electromyography to study knee kinematics. The second project is a clinical study of the benefits of wearing in-shoe wedges to patients with osteoarthritis. The third project is a clinical study comparing two different orthopedic surgical procedures. Each project has a junior faculty lead investigator and at least one senior co-investigator, for a total of three junior and four senior faculty researchers supported, with mentoring and administration from two senior faculty.

<http://www.cber.udel.edu/>

*biomechanics, orthopedics, physical therapy, magnetic resonance imaging, electromyography, tissue engineering, gait analysis*

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**A COBRE Center for Cardiovascular Research**  
**University of Hawaii - P20 RR16453**

There are two research cores, one mentoring and the other technical, with five projects. The program will enhance infrastructure through the development of laboratory core facilities in cardiovascular research, and in administrative support and resources. The research projects focus on the regulation of intercellular gap junctional communication and how this regulation contributes to cell growth, and on chemical, biochemical and genetic factors involved in maintaining elasticity of vascular connective tissue and smooth muscle. Collaborations and mentorship will include scientists not only at the home institution but also at two regional health research institutes, six mainland U.S. universities, and one Canadian university. The five research projects will each be headed by a junior or mid-level faculty member, with a total of 17 other people involved in advisory, mentorship or collaborative roles.

*cardiovascular disease, intercellular communication, cell biology, genetics, connective tissue, smooth muscle*

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**Center for Research on Evolutionary Processes**  
**University of Idaho - P20 RR16448**

The research cores are in molecular biology and bioinformatics, and in structural biology, with four projects. This program will bring together expertise in evolutionary biology, structural biology, molecular biology, ecology, computational biology, genetic programming, and statistics. The goal is to investigate the relative importance of mutagenic processes on the time course and direction of adaptive evolution. Computational approaches will be developed to improve understanding of evolutionary history of functional domains in proteins, genes and genomes. Insights into the mechanisms of genetic variation and adaptive evolution, and how they shape phenotypic characteristics, may provide fundamental information in biomedical science. This program will support five junior to mid-level researchers and eight senior faculty in positions of research leadership, collaboration, or administration, with plans to recruit more junior and senior faculty.

<http://www.uidaho.edu/UIcommunications/iRegister/vol14/iReg5.pdf>

*evolutionary biology, molecular biology, structural biology, ecology, computational biology, statistics, genomics, proteomics*

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**Molecular and Cellular Basis of Host-Pathogen Interactions**  
**University of Idaho - P20 RR015587**

This program includes four scientific projects linked through an administrative core, with the focus on their current institutional strengths in the molecular and cellular basis of host-pathogen interactions. Collaborations will be formed between the host institution, the local Veterans' Affairs Medical Center, and universities in five other states in the U.S. northwest. The four projects are independent but complementary within the theme. They include an investigation of the antiviral activity of a bacterial toxin, the molecular biology of immunity in uterine mucosal cells, the mechanism and significance of the internalization of bacteria by epithelial cells, and blood cell interactions in gas gangrene. Four junior faculty members will be paired with established investigators, with six senior faculty serving in mentoring, support, or administrative roles.

<http://www.ag.uidaho.edu/cobre/index.html>

*molecular biology, cell biology, pathogens, E. coli, antiviral, immunology, Staphylococcus,*

*gangrene, colitis, microbiology, virology, sexually transmitted diseases, HIV, trauma, antibiotic resistance, Clostridium*

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**Center for Cancer Experimental Therapeutics**  
**University of Kansas, Lawrence - P20 RR015563**

The research cores are in screening and in medicinal chemistry, with five interrelated scientific projects. Three state institutions will be combining their resources and faculty. The Center will mentor junior faculty in cancer-related research, with emphasis on experimentation involving the interface between chemistry and biology. The focus of the Center is to analyze the role of different compartments of the cell in the development and progression of cancer. This research may identify novel bioactive compounds that are useful research tools and potential therapeutic agents against cancer. Funds will support activities of a total of 18 faculty members, including at least four junior faculty and a variety of senior mentors, administrators, and advisors.

<http://www2.kumc.edu/cobre/>

*chemistry, cancer, cell biology, molecular biology, bioassays, screening, oncology, retrovirus, drug design*

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**Novel Approaches for Control of Microbial Pathogens**  
**University of Kansas - P20 RR16443**

The research cores of x-ray crystallography, and fermentation and screening, support five projects at this Center. This research will link the University of Kansas (KU) with Kansas State and KU Medical School. The long-term goal is to control infectious diseases important to human health, by examining mechanisms inhibiting replication of pathogenic microbes. Analysis of 3-D structure of microbial proteins may be useful for development of potential drugs. Funds will provide support for six junior faculty and recruitment of three new faculty members per year, with nine faculty members in mentorship or administrative roles.

*pathogens, molecular structure, fermentation, infection, drug development*

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**Center of Biomedical Research Excellence in Women's Health**  
**University of Kentucky - P20 RR015592**

Research cores are in imaging, transgenic mice, DNA microarray, and bioinformatics, with four interdisciplinary and interactive scientific projects. The theme of this program is the role of female reproductive hormones and selective estrogen receptor modulators in manifestations of health and disease in women. Research projects include: a study of the mechanisms by which estrogen regulates ovarian function; the effects of estrogen on brain and pituitary function; the role of estrogen in modulating HIV-induced neurodegeneration; and the action of estrogen on cognition and mood. The program will include 10 junior faculty, and 13 mid-level or senior faculty from six different departments. There are also plans to recruit new faculty members, and funds for two to four pilot projects annually to enlist existing faculty to participate in the program. Thus, a total of at least 33-43 people will be involved over the course of this program.

<http://webdev.mccs.uky.edu/medicine/cobre/>

*women's health, estrogen, reproduction, cell biology, molecular biology, behavior, steroids, HIV, neurodegenerative diseases, cognition, aging, cancer, ovary, brain*

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**Central Nervous System Injury and Repair**  
**University of Louisville - P20 RR015576**

Research cores are in cell culture and molecular biology, surgery, behavior and electrophysiology, and microscopy, with five interdependent scientific projects. The goal is to develop a multidisciplinary, interactive and collaborative research center focused on developing new strategies to facilitate central nervous system (CNS)-repair and regeneration. This research may ultimately lead to clinical applications for CNS repair. Investigators will be drawn from the departments of neurological surgery, anatomical sciences and neurobiology, pediatrics, and pharmacology and toxicology. The multiple core facilities created with this program will also serve other investigators at this institution. This Center will involve a total of 26 people, including four current and one new investigator as project principal investigators, three postdocs to be recruited, and 18 faculty members as directors, collaborators, and mentors.

<http://www.kscirc.org/>

*neurobiology, cell culture, molecular biology, surgery, behavior, electrophysiology, microscopy, apoptosis, immunology, signaling, central nervous system, spinal cord injury, stem cells*

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**Mentoring Neuroscience in Louisiana**  
**Louisiana State University Health Sciences Center - P20 RR16816**

The three research cores are in neurochemistry and lipid messengers, molecular neurobiology, and confocal imaging, with four research projects. The scientific focus is to understand the cellular and molecular basis of neurological plasticity and survival following disorders such as stroke, neuronal trauma, and neurodegenerative diseases. Funding will support four current junior faculty and four members to be recruited, with one senior faculty member as administrative head.

<http://neuroscience.lsuhscc.edu/>

*neuroscience, stroke, neurological trauma, neurodegenerative diseases, imaging, molecular biology, cell biology*

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**Center for Biomedical Research Excellence in Angiogenesis**  
**Maine Medical Center Research Institute - P20 RR015555**

Research cores are in structural biology and molecular genetics, with five pilot projects that are complementary and collaborative. The theme is mechanisms involved in the regulation of angiogenesis by means of receptor-mediated signals and molecular interactions. Angiogenesis is a key regulator of wound repair and of the pathobiology of numerous disease states such as solid tumor growth. Funds will establish and expand core resources in structural biology and molecular genetics to support ongoing and future investigator needs. Support will be provided for four junior and three senior investigators and administrators; the recruitment of six new investigators is also a major feature of the program.

<http://zappa.mmcri.mmc.org/research/COBREsite.htm>

*structural biology, molecular biology, molecular genetics, angiogenesis, signaling, vascular biology, cancer, inflammation*

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**Center for Structural and Functional Neuroscience**  
**University of Montana - P20 RR015583**

The research cores are in a shared spectroscopy laboratory, computational molecular modeling, and mass spectroscopy-proteomics. There are five research projects in structural and functional neuroscience. The research will emphasize protein structure and function in the central nervous system, as related to signal transduction, development and neurodegeneration. The long-term health goal is to understand and lessen the burden of neurological diseases. This program will be a collaborative effort among researchers at two universities in the state and a private research institute, with scientific advisors drawn from the in-state institutions and from neighboring states. The research projects will be headed by five junior researchers, with strong mentorship from senior faculty not included financially in the program. Funding will permit the recruitment of three new faculty, and provide a total of 24 12-month stipends to graduate students.

<http://www.umt.edu/csfn/>

*spectroscopy, molecular modeling, proteomics, neuroscience, central nervous system, protein structure, protein function, signaling, neurological diseases, prion diseases, depression, anxiety, obsessive-compulsive disorder, migraine, hearing*

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**Nebraska Center for Viral Pathogenesis**  
**University of Nebraska, Lincoln - P20 RR015635**

Research cores are in bioinformatics, microscopy, and structural biology, with four interrelated scientific projects. Collaborations will be formed between three universities within the state. The scientific aim of this program is to conduct innovative research addressing fundamental questions about the replicative cycle of the human immunodeficiency virus (HIV) and other infectious viral agents, and the host responses that may lead to pathological changes. Projects will be conducted by 11 junior or mid-level investigators, with mentorship and administrative support from 15 senior faculty. Five new faculty members, targeted to bring in specific skills, will also be recruited during the program.

<http://www.unl.edu/virologycenter>

*virus, pathogens, bioinformatics, microscopy, structural biology, HIV, neurodegenerative diseases, apoptosis, herpes, inflammatory disease, signaling, immunology, neuropharmacology, electrophysiology, stress, trauma, antiviral, prion diseases*

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**Chloride Channel Function and Role in Cardiovascular Disease**  
**University Of Nevada, Reno - P20 RR015581**

Research cores are a transgenic animal facility, molecular biology and genomics, and optical imaging, with four interrelated research projects focused on studying the function of chloride channels and their role in cardiovascular disease. Ion channel mutations have been implicated in a growing list of acquired and inherited human diseases such as cystic fibrosis. Cation channel defects have been linked to cardiovascular disease; this program will systematically study the role of anion channels in these diseases. The experimental approaches will use well-defined animal disease models, transgenic mice, and human molecular genetics. Projects will involve collaborations between eight junior and four senior faculty members, with nine additional people involved in the research cores, 11 students and postdocs named to collaborate on projects, and 11 people in administrative roles.

<http://www.unr.edu/med/dept/pharmacology/COBRE>

*transgenic animals, molecular biology, genomics, imaging, cardiovascular disease, electrophysiology, genetics, cystic fibrosis, myotonia, kidney disease, cardiac arrhythmia, congestive heart failure*

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**Immune Mechanisms Controlling Inflammation and Cancer**  
**Dartmouth Medical School - P20 RR16437**

The research cores are in molecular biology and animals. This program will join Dartmouth Medical School with a Dartmouth Medical Center campus and the University of New Hampshire. The theme among the five research projects is modulation of immunity in various disease states, using both non-specific and specific immune pathways. Studies will include tumor necrosis factor, macrophages, cytokines, septic shock mechanisms, and antigen presenting cells. The goal is to find creative new ways to modulate immune responses to combat tumors and bacterial infections, or suppress inflammation and autoimmunity. This funding will support the research projects of five current junior faculty and the recruitment of five additional junior faculty, with a total of 24 other faculty members in administrative, consultant or mentorship roles, and 11 staff members in support roles.

[http://www.dartmouth.edu/dms/news/publications/news\\_digest/digest1201/research\\_funded.shtml](http://www.dartmouth.edu/dms/news/publications/news_digest/digest1201/research_funded.shtml)

*cancer, inflammation, immunology, infection*

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**Integrative Program in Central Nervous System Pathophysiology Research**  
**University Of New Mexico - P20 RR15636**

Cores will be established in human and animal magnetoencephalography, human and animal magnetic resonance, electron paramagnetic resonance, optical imaging, and cellular and molecular biology research. There will be four scientific research projects. The program goal is to strengthen the institution's existing unique neuroimaging facilities to create an integrated, state-of-the-art center for applying functional neuroimaging techniques in brain research. Projects are on the pathobiology of brain ischemia, traumatic brain injury, intracerebral hemorrhage, and epilepsy. Collaborations will be formed among faculty at different schools within the university and at a local Veterans' Administration Medical Center. The program will include 19 junior to mid-level faculty as project investigators or core directors, and seven senior faculty as mentors or administrators.

<http://hsc.unm.edu/som/cobre/>

*magnetoencephalography, magnetic resonance, electron paramagnetic resonance, optical imaging, cell biology, molecular biology, central nervous system injury, pathophysiology, inflammation, ischemia, intracerebral hemorrhage, electrophysiology, stroke, epilepsy*

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**New Strategies for Targeting Proteases in Disease**  
**North Dakota State University - P20 RR15566**

A core research facility will be established for the analysis of *in vitro* cellular interactions. The goal of this program is to investigate unique strategies for targeting diseases through protease inhibition. It includes four integrated research projects. The Center will coordinate the expertise of faculty members from the chemistry and pharmacy departments, and will use a multidisciplinary approach that starts with *in vitro* cellular interactions and continues through the stages of product synthesis, drug design and delivery, and biopharmaceutics. Funds will support three junior and three senior faculty members.

<http://www.ndsu.nodak.edu/cobre/>

*drug design, cancer, drug delivery, arthritis, multiple sclerosis, osteoporosis, Alzheimer's disease*

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**Mentoring Immunology in Oklahoma: A Biomedical Program**  
**Oklahoma Medical Research Foundation - P20 RR015577**

This program will link four universities within the state. It will contain five scientific support cores in DNA microarray, signal transduction, imaging, peptide synthesis, and microinjection. These cores are either already in place and will be expanded, or are currently under development. The four scientific projects are focused on immunology and molecular biology. They include the development of a DNA vaccine against the herpes virus, a study of lymphocyte formation, an analysis of gene expression in arthritis, and an examination of homeostasis and signaling within the immune system. There will be four recent hires receiving mentorship from four senior faculty, and one-year starter grants for five junior faculty members. Recruiting packages are in place for four years, with senior faculty drawn in to mentor each new hire. There are also five current faculty who will head each of the research cores, and a number of other people in administrative, mentoring, and support roles. A total of 26 people are currently named to be supported throughout this program, and up to eight more people will be recruited.

<http://www.omrf.ouhsc.edu/OMRF/Information/IDeA/IDeAGrant.asp>

*immunology, molecular biology, vaccine, drug design, herpes, virus, signaling, inflammation, inflammatory disease, DNA microarray, imaging, proteomics, microinjection, stem cells, immunodeficiency, autoimmune disease, arthritis, genomics*

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**Functional Genomic/Proteomic Analysis of Bacterial/Host Interactions**  
**University of Oklahoma Health Sciences Center - P20 RR015564**

Research cores are in functional genomics and proteomics, with four scientific projects. The Center will link three institutions in the state. Oklahoma has been in the forefront of genome-scale analysis of bacterial pathogenesis in recent years, and this Center will take advantage and further support this lead in functional genomic and proteomic analysis of bacteria-host interactions. Each of the projects will focus on a major human pathogen, including the pathogens for gonorrhea, Lyme disease, gastrointestinal disease, and food poisoning. Support will be provided for four new or mid-level investigators, with mentoring and administrative support from an additional six faculty.

<http://w3.ouhsc.edu/mi/assets/COBRE.htm.ppt>

*genomics, proteomics, DNA microarray, bacteria, pathogens, Lyme disease, E. coli, enteritis,*

*Campylobacter, anthrax, food poisoning*

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**Center for Molecular, Developmental and Behavioral Neuroscience**  
**University of Puerto Rico Medical Sciences - P20 RR015565**

The research core is in DNA microarray instrumentation, with four scientific projects. The Center will build on existing strengths to develop a competitive research facility in the neurosciences. The research goal is to advance the scientific understanding of the molecular mechanisms underlying neuronal injury, emotional memory, cocaine-seeking behavior, and the expression of maternal behavior. A total of eight people will be supported, including three current junior faculty, and five senior administrators, collaborators, and mentors. A director and three new investigators will be recruited.

<http://cobre-neuro.upr.edu>

*DNA microarray, neuroscience, stroke, ischemia, neuronal injury, molecular biology, schizophrenia, anxiety, memory, genomics, proteomics, drug abuse, endocrinology*

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**Center for Research in Protein Structure, Function, and Dynamics**  
**University of Puerto Rico, Mayaguez - P20 RR16439**

The research core is in instrumentation, and includes two research projects. This research is aimed at fundamental protein chemistry, proteomics, and genomics, using x-ray diffraction, NMR spectroscopy, and computation techniques. The projects are on the biophysics of an unusual hemoglobin type, the correlation between biophysical structure of an enzyme and its function, and the characterization of protein function after encapsulation as a means of drug delivery. There are plans to recruit three new investigators and a prominent scientist to lead the program. Funding will support six junior or mid-level researchers and two program administrators.

<http://cobre2.uprm.edu/>

*proteomics, genomics, protein chemistry, protein structure, protein function, enzymology, NMR spectroscopy, x-ray diffraction, biophysics, drug delivery*

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**Center for Genetics and Genomics**  
**Brown University - P20 RR015578**

Research cores are a transgenic and knockout mouse facility, flow cytometry, and confocal imaging. There are five scientific projects in genetics and genomics. These projects include a characterization of immune system events regulating the balance between infection and resistance, a study of genetic models of human dementia, an analysis of the molecular genetics of ion channels, an examination of biochemical signaling mechanisms in cell regulation, and a study of the mechanisms involved in cell injury and cell transformation. Each project has multiple mini-projects led by different junior investigators working in close collaboration with each other and with a senior mentor. This Center will become part of a master plan to establish a center for contemporary molecular genetics research, using a multidisciplinary approach that will combine laboratory research with clinical and human genetics at affiliated hospitals. The cores will provide access to major new technologies and equipment currently unavailable in this state. Support will be provided for 18 junior faculty and six senior faculty.

[http://www.brown.edu/Research/Genetics\\_Genomics/](http://www.brown.edu/Research/Genetics_Genomics/)

*transgenic animals, knockout mouse, flow cytometry, imaging, genetics, genomics, immunology, infection, molecular biology, virus, hepatitis, neuropathology, Alzheimer's disease, microvascular disease, addiction, epilepsy, stroke, signaling, liver disease*

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**South Carolina COBRE for Cardiovascular Disease**  
**Medical University of South Carolina - P20 RR16434**

The research cores are in transgenic mice, imaging, DNA microarray, and proteomics, with five research projects. South Carolinians have the highest rate of cardiovascular disease in the U.S. This project joins two medical schools to study mechanisms of cardiovascular disease, including cell proliferation and remodeling, apoptosis, cellular transdifferentiation, and vasculogenesis. Five newly recruited junior faculty members from five different departments will be paired with senior mentors. A total of 20 other faculty members are involved in administrative, mentoring or collaborative roles.

<http://www.musc.edu/pr/cardiovascular.htm>

*cardiovascular disease, proteomics, genomics, apoptosis, cell biology, DNA microarray*

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**Neural Mechanisms of Adaptive Behavior**  
**University of South Dakota - P20 RR015567**

The research core will support a facility for a confocal laser scanning microscope, and host five scientific projects. The main aim of the research is to understand how structural reorganization in neural pathways results in adaptive behavioral responses to novel sensorimotor experiences. Functional reorganization of neural circuits is fundamental to processes that occur during learning and memory, development, and in neurological responses to stress or injury. Approaches to these problems will be multidisciplinary, employing physiological, pharmacological, anatomical, molecular, and behavioral experimental approaches. The neuroscience faculty is well-represented at this institution. Funds will support three junior and five senior faculty members; recruitment of four junior faculty members is planned.

<http://www.usd.edu/neurogroup/research/cobre.html>

*microscopy, conditioning, learning, memory, neurogenesis, stress, seizures, steroids, physiology, pharmacology, anatomy, behavior, molecular biology*

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**Center for Neuroscience Excellence**  
**University of Vermont - P20 RR16435**

The research cores are in imaging and physiology, cellular/molecular biology, and translational neuroscience. There are five research projects: chloride homeostasis in olfactory neurons, molecular and genetic analysis of learned fear reduction in mice, kinase and cytoskeletal regulation of potassium channels, biochemical modulation of signaling in neurogenesis, and mechanisms of vasospasm in cerebral hemorrhage. The five junior faculty members who are leading the projects are matched with senior mentors. A total of 18 other people are involved in the program as advisors, administrators, or collaborators.

<http://www.uvm.edu/neuroscience/>

*neuroscience, cell biology, molecular biology, learning, signaling, brain, vascular biology*

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**Translational Research in Lung Biology and Disease**  
**University of Vermont & State Agricultural College - P20 RR015557**

Research cores are in transgenic animals and in biomedical engineering, with five pilot projects that are complementary and collaborative. Lung disease is unique in the U.S. by virtue of being the only disease that is continuing to increase in age-adjusted mortality. These research projects will translate basic laboratory research into clinical applications to fight lung disease, while creating a stimulating research environment for promising new investigators. A transgenic animal facility and strengthened biomedical engineering research program are integral to the Center. Funds will support five junior investigators and nine senior faculty as mentors and directors, with an advisory committee made up of members of other departments at this institution.

<http://www.med.uvm.edu/vlc/default.htm>

*physiology, lungs, asthma, biomedical engineering, transgenic animals, signaling, inflammation*

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**COBRE for Signal Transduction and Cancer**  
**West Virginia University - P20 RR 16440**

The research cores are in flow cytometry and mass spectrometry. Funding will provide for five projects in angiogenesis, neutrophil activation, DNA repair enzymes, cytochrome isoforms, and micro-sampling techniques for proteomics. The research goal is to identify molecular changes in cell signaling proteins that occur in cancer. Researchers will be studying the relationship between cancer cell growth, metastasis and signal transduction, using proteomics. This information is needed to tailor cancer treatment strategies to target specific signaling pathways. The five projects will each be led by junior faculty, with recruitment of a new junior member, and mentoring by a core of five senior scientists.

[http://www.hsc.wvu.edu/mbrcc/about/cobre\\_grant/Cobre1.htm](http://www.hsc.wvu.edu/mbrcc/about/cobre_grant/Cobre1.htm)

*cell biology, molecular biology, proteomics, cancer, signaling, angiogenesis*

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**COBRE in Sensory Neuroscience**  
**West Virginia University - P20 RR015574**

This program will develop a multidisciplinary center for research in neuroscience, with five interactive and coordinated research projects focused on the topics of development and plasticity. The two medical schools within the state will be collaborating in this effort, in a redesigned and completely renovated laboratory space. Investigators will combine their collective expertise to solve basic scientific problems that bear on development of treatments for human neurological diseases, using both animal and human subjects. Techniques will range from genetic to functional brain imaging analysis of congenital and developmental sensory disorders. Combined anatomical, physiological, and molecular analyses of neurons developing *in vitro* are also proposed. Funds will provide support for three junior and two senior faculty, with plans to recruit six new investigators.

<http://www.hsc.wvu.edu/snrc/>

*neuroscience, neurons, genetics, imaging, sensory disorders, Usher's syndrome, hearing, balance, amblyopia, signaling*

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**Biology of Spatiotemporal Nitric Oxide Gradients**  
**University of Wyoming - P20 RR015553**

This program contains five research projects with a central theme of elucidating the role of nitrous oxide (NO) concentrations and gradients as signals and as protective or damaging factors in the progression of human disease. The first project will develop probes for NO. The role of NO in physiological signaling of events in various disease states will be studied in animal or bacterial models in four of the projects. This program will cement collaborative ties between a group of scientists at this institution. Investigators will also collaborate in the recruitment of promising graduate students. Funds will support four current junior faculty, two current senior faculty, two visiting senior investigators, and the later recruitment of a junior faculty member.

<http://uwadmnweb.uwyo.edu/nocobre>

*signaling, nitrous oxide, pathology, bacteria, retrovirus, neurobiology, cell imaging, molecular biology, electrophysiology*

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**Cellular Responses to Stressors of Cardiovascular Health**  
**University of Wyoming - P20 RR015640**

Research cores are in protein production, a DNA microarray facility, and imaging. There will be four scientific projects on a theme of cellular responses to stressors that result in cardiovascular disease. The principal objectives are to identify genes that are expressed in response to hypoxia and reoxygenation, and to construct a gene expression database for this model. This database will then be studied to develop testable hypotheses as the basis for subsequent research projects. The projects include biochemical signaling in the control of salt intake and blood pressure in hypertension; DNA damage as a contributing factor in heart disease; the role of heat shock proteins as cellular protectants following ischemic injury; and comparative mechanisms of hypoxia sensing from bacteria to humans. Support will be provided for four junior to mid-level researchers, and two senior directors.

<http://uwadmnweb.uwyo.edu/cardio-cobre>

*DNA microarray, cardiovascular disease, cell biology, molecular biology, myocardial infarction, genetics, confocal microscopy, proteomics, cardiac arrhythmia, hypertension, neuronal injury, ischemia-reperfusion injury, signaling, cancer, apoptosis, myocardial*

*hypertrophy*

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