

Nebraska Tobacco Settlement  
Biomedical Research  
Development Fund

Fiscal Year  
2018-2019

**Progress Report**

University of Nebraska Medical Center  
University of Nebraska–Lincoln  
Creighton University  
Boys Town National Research Hospital

Nebraska Tobacco Settlement  
Biomedical Research  
Development Fund

Fiscal Year 2018-2019

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University of Nebraska–Lincoln  
Creighton University  
Boys Town National Research Hospital

Nebraska Tobacco Settlement  
Biomedical Research  
Development Fund

**Section I**

**Fund Allocation to Each Institution**

University of Nebraska Medical Center

University of Nebraska–Lincoln

Creighton University

Boys Town National Research Hospital

**University of Nebraska Medical Center  
Nebraska Tobacco Settlement Biomedical Research Development Fund  
FY2019 Allocation**

<b>Strategic Faculty Recruitment and Retention</b>	<b>FY 2018-2019 Allocation</b>
College of Dentistry	\$ 25,186
Ali Nawshad, PhD	
College of Medicine	
Biochemistry/Molecular Biology	\$ 752,958
Surinder Batra, PhD; Rebecca Deegan, PhD*; Punita Dhawan, PhD*	
Ricia Hyde, PhD*; Amar Singh, PhD; Armen Petrosyan, PhD	
Moorthy Palanimuthu Ponnusamy, PhD	
Cellular/Integrative Physiology	\$ 1,303,995
Adam Case, PhD; Merry Lindsey, PhD*; Steve Sansom, PhD	
Genetics, Cell Biology & Anatomy	\$ 238,691
Vimla Band, PhD*; Kishor Bhakat, PhD; Chittibabu Guda, PhD	
Karen Gould, PhD*; Kyle Hewitt, PhD	
Internal Medicine	\$ 240,402
Sarah Holstein, MD, PhD*; James Lawler, MD	
Neurological Sciences	\$ 50,291
Diane Ehlers, PhD	
Obstetrics/Gynecology	\$ 71,189
So Youn Kim, PhD*	
Pathology/Microbiology	\$ 429,936
Kenneth Bayles, PhD; Leah Cook, PhD*; Scot Ouellette, PhD; Kurt Fisher, MD, PhD	
Elizabeth Rucks, PhD*; Joshua Santarpia, PhD; Kaihong Su, PhD*	
Pediatrics	\$ 102,290
Donald Durden, MD	
Surgery	\$ 393,030
B Timothy Baxter, MD; Mark Carlson, MD; Iraklis Pipinos, MD;	
Michael Moulton, MD; Nora Sarvetnick, PhD*	
College of Nursing	\$ 149,101
Alyson Hanish, PhD*; Kristin Dickinson, PhD*; Breanna Hetland, PhD*	
Amy Hoffman, PhD*; Sheri Rowland, PhD*	
College of Pharmacy	\$ 198,884
Martin Conda Sheridan, PhD; Rongshi Li, PhD;	
Aaron Mohs, PhD; Dong Wang, PhD	
College of Public Health	\$ 435,709
Fabio Almeida, PhD; Armando De Alba Rosales, PhD;	
Hongying Dai, PhD*; David Dzewaltowski, PhD; Paul Estabrooks, PhD	
Eppley Institute	\$ 364,872
Dalia ElGamal, PhD*; Michael (Tony) Hollingsworth, PhD;	
Amarnath Natarajan, PhD; Prakash Radhakrishnan, PhD	
Munroe Meyer Institute	\$ 31,231
Karoly Mirnics, MD, PhD	
<b>Subtotal</b>	<b>\$ 4,787,765</b>
<b>Research Program &amp; Infrastructure Development</b>	
Comparative Medicine Animal Facility Support	\$ 442,617
Comparative Medicine Caging & Cabinetry	\$ 63,898
Biosciences Research Training Program (BRTP)	\$ 60,000
IRB & SPAdmin - ITS Svc Level Agreements	\$ 296,134
Research Core Lab Support	\$ 1,348,086
DRC Research Resource Support	\$ 319,009
Institutional Research Resource Support	\$ 417,879
Redox Biology Center Support	\$ 37,988
Mentored Scholars Support	\$ 25,000
Clinical Data Research Network Support	\$ 53,082
Bioinformatics Database Support	\$ 39,446
<b>Subtotal</b>	<b>\$ 3,103,139</b>
<b>Minority Health Research</b>	
Center for Reducing Health Disparities	\$ 356,417
Health Disparities Pilot Projects	\$ 39,383
Wakanweja American Indian Behavioral Health Conference	\$ 5,000
Student Success Engagement	\$ 50,456
<b>Subtotal</b>	<b>\$ 451,256</b>
<b>Joint UNMC-UNL Research Programs</b>	
NSF funded Census Research Data Center	\$ 50,000
NPOD Pilot Project "Molecular Characterization of Human miRISC Complex..."	\$ 100,000
<b>Subtotal</b>	<b>\$ 150,000</b>
<b>Total FY 2018-19 Allocation</b>	<b>\$ 8,492,160</b>

**University of Nebraska-Lincoln**  
**Nebraska Tobacco Settlement Biomedical Research Development Fund**  
**FY 2018-2019 Allocation**

<b><u>Strategic Faculty Recruitment and Retention</u></b>	<b><u>Allocation</u></b>
Nicolas Hubbard, Ph.D., Psychology	283,238
Ken Wakabayashi, Ph.D., Psychology	264,000
Hyun-Seob Song Ph.D., Biological Systems Engineering and NE Food for Health Center	128,333
Yanbin Yin Ph.D., Food Science and Technology and NE Food for Health Center	112,000
Katie Edwards, Ph.D., Education Psychology and Nebraska Center for Research on Children, Youth, Families and Schools	103,332
Maital Neta, Ph.D., Psychology and Center for Brain, Biology and Behavior	101,216
Naomi Rodgers, Ph.D., Special Education and Communication Disorders	25,000
<b>Subtotal</b>	<b>\$ 1,017,119</b>

**Research Program and Infrastructure Development**

Center for Brain, Biology and Behavior Neuroimaging and Salivary Bioscience Research, Cary Savage, Ph.D.	257,298
Rural Drug Addiction Research Center (RDAR), Kirk Dombrowski, Ph.D.	430,335
Upgrade of 600 MHz NMR located in the Molecular and Analytical Characterization Facility, Catherine Eichhorn	332,668
Micro-CT Scanner: Quantum GX2, Kelly Heath, DVM	168,535
Interdisciplinary Therapeutics Research, David Berkowitz, Ph.D.	100,000
Faculty Development in Biomedical Sciences	50,000
Nebraska Center for Virology, Charles Wood, Ph.D.	46,000
CytoFLEX LX Flow Cytometer, Daniel Schachtman, Ph.D.	33,814
Development of Individual Specific Finite Element Model of the Optic Nerve Head for Non-Invasive Intracranial Pressure Measurement, Linxia Gu, Ph.D.	25,000
Redox Biology Center, Don Becker, Ph.D.	18,909
<b>Subtotal</b>	<b>\$ 1,462,559</b>

**Minority Health Research Grants**

Minority Health Disparities Initiative, Kirk Dombrowski, Ph.D.	148,000
Minority Health Data, Jolene Smyth Ph.D.	26,091
Minority Health Disparities Initiative, Dan Hoyt, Ph.D.	20,079
<b>Subtotal</b>	<b>\$ 194,170</b>

**Joint UNL-UNMC Research Programs**

Developing executive control, obesity risk, and behavioral health problems: A pilot fMRI study, Timothy Nelson, Ph.D.	50,000
Brain Connectivity for Prediction of Lesion Site in Sports-Related Concussion, Maital Neta, Ph.D.	50,000
<b>Subtotal</b>	<b>\$ 100,000</b>

**Total FY 2018-2019 Allocation** **\$ 2,773,848**

**Creighton University**  
**Nebraska Tobacco Settlement Biomedical Research Development Fund**  
**FY2018-2019 Allocation**

<b><u>Strategic Faculty Recruitment and Retention</u></b>	<b><u>Allocation</u></b>
Identifying Genetic Drivers of Complex Human Disease, Holly Stessman, PhD	\$ 235,355
Development of Small Chemical Molecules of Novel TREM-1 Antagonists, Gopal Jadhav, PhD	101,892
Microbial Composition of Cartoid Plaque and Associations with Clinical Outcomes and A Study of Trem-1 and Dendritic Cells in the Pathogenesis of Severe Asthma, Halvor McGee, PhD	137,692
Epigenetic Regulations in Cardiovascular Diseases, Chandra Boosani, PhD	27,867
Analysis of the Budding Yeast Microtubule Organizing Center, Ann Cavanaugh, PhD	13,313
Metabolic Regulation of Salmonella Virulence, Travis Bourret, PhD	25,057
Molecular Mechanisms on Genome Stability, Anna Selmecki, PhD	149,157
Drug Development for Hearing Disorders, Tal Teitz, PhD	274,238
Neurodegeneration, Function, Regeneration and Protection of Sensory Hair Cells in the Inner Ear, Jian Zuo, PhD	104,738
Mechanism, and Clinical Risk, of Drug-Induced Hearing Loss, Peter Steyger, PhD	119,848
Role of Protein Homeostasis Factors in Regulating the Interrelationship Between Aging and Cancer, Brian North, PhD	200,000
Profiling of Altered Genes Examining Their Role in Neurodegeneration, Jee-Yeon Hwang, PhD	133,333
<b>Subtotal</b>	<b>\$ 1,522,490</b>
<b><u>Research Program and Infrastructure Development</u></b>	
Neuropharmacology Postdoctoral Support, Thomas Murray, PhD	\$ 41,861
Prion Disease Research Support, Jason Bartz, PhD	160,365
Finances First: A Health Intervention for Low-Income Single-Mother Households, Katie Packard, PhD	76,598
Defining Shoulder Injury by Matrisome Disorganization & TREM-Meditated Inflammation, Matthew Dilisio, MD	32,392
Drug Discovery Research, Peter Abel, PhD	117,799
NMDA Receptors in Astrocytes and Role in Addiction, Shashank Dravid, PhD	75,000
Combined Antiretroviral Drug and Monoclonal Antibody Nanoparticle for HIV-1 Prevention, Chris Destache, PharmD	32,356
Research Compliance Regulatory Service Support, Joseph Knezetic, PhD	228,494
School of Medicine Research Faculty Bridge Funding, Robert Dunlay, MD	227,954
Elsevier Pure Master Software Subscription, Beth Herr, MPA	79,730
Research Technician Support, Holly Stessman, PhD	1,119
Grant Writing Seminar, Thomas Murray, PhD	18,582
Molecular Biology Summer Workshop, Thomas Murray, PhD	20,830
Scanning Electron Microscope for Undergraduate Research, Joel Destino, PhD	107,925
Mass Spectrometer to Promote Eisner/Zuo Research, Jian Zuo, PhD	399,843
High Throughput Multi-User Biacore Surface Plasmon Resonance System, Shashank Dravid, PhD	179,257
New Initiative Program Grant Reviewers, Thomas Murray, PhD	6,000
<b>Subtotal</b>	<b>\$ 1,806,105</b>
<b><u>Minority Health Research Grants</u></b>	
Center for Promoting Health and Health Equality, Sade Kosoko-Lasaki, MD	160,620
<b>Subtotal</b>	<b>\$ 160,620</b>
<b>Total FY 2018-2019 Allocation</b>	<b>\$ 3,489,215</b>

**Boys Town National Research Hospital**  
**Nebraska Tobacco Settlement Biomedical Research Development Fund**

	<b>Jul 1 2018 - May 31, 2019</b>	<b>June 1, 2019- June 30, 2019</b>	<b>Cumulative Jul 1 2018 - June 30, 2019</b>
<b>FY 2017-2018 Allocation for period:</b>	<b>Allocation</b>	<b>Allocation</b>	<b>Allocation</b>
<b><u>Strategic Faculty Recruitment and Retention</u></b>			
Sophie Ambrose, PhD, Center for Childhood Deafness	\$ 33,129.17	\$ -	\$ 33,129.17
Lori Leibold, Ph.D., Center for Hearing Research	\$ 6,980.62	\$ -	\$ 6,980.62
Douglas Keefe, Ph.D., Center for Hearing Research	\$ -	\$ -	\$ -
Barbara Morley, PhD, Center for Hearing Research	\$ 19,594.53	\$ 1,362.97	\$ 20,957.50
Soyoun Cho, Ph.D., Center for Sensory Neuroscience	\$ 9,623.30	\$ -	\$ 9,623.30
Yunxia Lundberg, PhD, Center for Sensory Neuroscience	\$ 99,792.57	\$ 4,764.30	\$ 104,556.87
Marisa Zallocchi, PhD, Center for Sensory Neuroscience	\$ 106,715.29	\$ -	\$ 106,715.29
Adam Bosen, PhD, Center for Hearing Research	\$ 48,075.97	\$ 7.56	\$ 48,083.53
Karla McGregor, PhD, Center for Childhood Deafness	\$ 3,073.98	\$ 1,120.46	\$ 4,194.44
Kaylah Lalonde, PhD, Center for Hearing Research	\$ 38,631.48	\$ -	\$ 38,631.48
Katie Gordon, PhD, Center for Childhood Deafness	\$ 28,328.58	\$ 6,013.90	\$ 34,342.48
Angela AuBuchon, PhD, Center for Hearing Research	\$ 44,552.25	\$ -	\$ 44,552.25
Gabrielle Merchant, PhD, Center for Hearing Research	\$ 88,392.13	\$ 1,924.16	\$ 90,316.29
Christopher Conway, PhD, Center for Hearing Research	\$ 447,587.46	\$ 6,180.38	\$ 453,767.84
<b>Subtotal</b>	<b>\$ 974,477.33</b>	<b>\$ 21,373.73</b>	<b>\$ 995,851.06</b>
<b><u>Development</u></b>			
Animal Care Facility Core, Barbara Morley, PhD	\$ 100,726.32	\$ 5,176.64	\$ 105,902.96
Electron Microscopy Core, Ryan McCreery, PhD	\$ 1,329.70	\$ 5,270.00	\$ 6,599.70
Center for Sensory Neuroscience Core Support, Dominic Cosgrove	\$ 27,108.53	\$ 1,551.32	\$ 28,659.85
Hearing Research Center Core Support, Lori Leibold, PhD	\$ 13,409.89	\$ 2,066.88	\$ 15,476.77
Childhood Deafness Center Core Support, Karla McGregor, PhD	\$ -	\$ -	\$ -
New Projects Fund, Lori Leibold, PhD	\$ -	\$ -	\$ -
Recruitment Fund, Ryan McCreery, PhD	\$ 8,700.27	\$ 2,458.38	\$ 11,158.65
Postdoctoral Training, Douglas Keefe, PhD	\$ 8,371.00	\$ 2,000.00	\$ 10,371.00
<b>Subtotal</b>	<b>\$ 159,645.71</b>	<b>\$ 18,523.22</b>	<b>\$ 178,168.93</b>
<b><u>Minority Health Research Grants</u></b>			
Minority Recruitment, Karla McGregor, PhD	\$ 42,203.92	\$ 3,941.17	\$ 46,145.09
Spanish-English Bilinguals, Lori Leibold, PhD	\$ 21,795.28	\$ 2,699.64	\$ 24,494.92
<b>Subtotal</b>	<b>\$ 63,999.20</b>	<b>\$ 6,640.81</b>	<b>\$ 70,640.01</b>
<b>Total FY 2018-2019 Allocation</b>	<b>\$ 1,198,122.24</b>	<b>\$ 46,537.76</b>	<b>\$ 1,244,660.00</b>

Nebraska Tobacco Settlement  
Biomedical Research  
Development Fund

**Section II**

**Project Progress Descriptions**

University of Nebraska Medical Center  
University of Nebraska–Lincoln  
Creighton University  
Boys Town National Research Hospital



**UNIVERSITY OF NEBRASKA MEDICAL CENTER**  
**Nebraska Tobacco Settlement Biomedical**  
**Research Development Fund (NTSBRDF)**

Year 18: July 1, 2018-June 30, 2019  
Progress Report

**Executive Summary**

UNMC invests NTSBRDF dollars in three areas:

- Recruitment and retention of excellent scientists
- Research infrastructure and program development
- Research and education programs focused on improving health and reducing health disparities

During 2018-19, UNMC received \$8,492,160 in Nebraska Tobacco Settlement Funds invested as follows:

- \$4,787,765 in strategic recruitment of new research faculty or retention of meritorious researchers, including \$2,377,293 for the recruitment or retention of women or under-represented minorities.
- \$3,103,139 in program and other infrastructure development, such as capital equipment, new core development, and Centers.
- \$2,828,549 in research focused on reducing health care disparities and the mentorship and development of trainees and faculty from under-represented minorities or other disadvantaged backgrounds.

Overall, 33.3% of the total 2018-2019 award focused on health disparities research or on the recruitment/retention of under-represented minorities.

Since the activation of the NTSBRDF program at the beginning of fiscal year 2001-02, these funds have been critical to the recruitment and retention of many world-class scientists who contribute to a growing research funding portfolio. Last year UNMC research funding totaled \$138.1 M, which was an increase of 2.2% in research awards from the previous year, and is the highest level of extramural research funding in the history of UNMC.

Overall, UNMC's total extramural support for research has increased 239% since the availability of the NTSBRDF. The growth of extramural research has a direct and positive impact on the economy of the State of Nebraska because these grants support salaries for faculty and staff and indirectly by providing funds to support purchases.

A recent impact study compiled by Tripp Umbach found that UNMC's Tobacco Settlement Trust Fund investments has resulted in a cumulative expansion of the state's economy of \$2.8 billion, returning \$23.38 to the state's economy for every dollar of Tobacco Settlement dollars received. (findings presented to Nebraska Legislature "*committee hearing name*" September 20, 2019)

Since 2001, when NTSBRDF support began, UNMC has invested approximately \$73.9M in the strategic recruitment or retention of 223 researchers, which, in turn, have attracted a total of over \$1.08B in extramural research support after they received NTSBRDF funding. To date, this calculates to a return on investment of approximately 14.6 to 1.

## Strategic Faculty Recruitment & Retention

In 2018-2019, UNMC invested the majority of its NTSBRDF, \$4,787,765 (56.4%), in strategic recruitment and retention of faculty. These NTSBRDF dollars were well invested as the researchers who received them have a combined extramurally funded research portfolio valued at \$103.1M. The funding of these investigators came predominantly from the National Institutes of Health (NIH), including: National Cancer Institute (NCI), National Heart, Lung, Blood Institute (NHLBI), National Institute on Aging (NIA), National Institute of Alcohol Abuse and Alcoholism (NIAAA), National Institute of Allergy & Infectious Diseases (NIAID), National Institute of Biomedical Imaging and Bioengineering (NIBIB), Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), National Institute of General Medical Sciences (NIGMS), National Institute of Mental Health (NIMH), and the National Institute of Nursing Research (NINR). Other federal funding sources included the United States Army (US Army), the National Science Foundation (NSF), and The U.S. Department of Veterans Affairs (VA).

### Investigators with first time NTSBRDF support during 2018-2019

**Investigator:** Hongying (Daisy) Dai, PhD

**Position Title & Department:** Associate Professor, COPH, Biostatistics

**Expertise:** Advanced Statistical Methodology, Tobacco Policy Research

**External Funding:**

Current Funding Total: \$275,476

Funding sources: DHHS/NIH/NCI , Robert Wood Johnson Foundation

**Investigator:** Kristin Dickinson, PhD

**Position Title & Department:** Assistant Professor, CON, Omaha Division

**Expertise:** Causation and Alleviation of Fatigue in Cancer Patients

**External Funding:**

Current Funding Total: \$745,801

Funding sources: DHHS/NIH/NINR

**Investigator:** Dalia ElGamal, PhD

**Position Title & Department:** Assistant Professor, Fred & Pamela Buffett Cancer Center

**Expertise:** Targeted Therapies in Leukemias

**External Funding:**

Current Funding Total: \$758,142

Funding sources: DHHS/NIH/NCI

**Investigator:** Kurt Fisher, MD, PhD

**Position Title & Department:** Assistant Professor, COM, Pathology/Microbiology

**Expertise:** GI and Lung Cancers

**External Funding:**

Current Funding Total: \$1,187,910

Funding sources: DHHS/NIH/NCI

**Investigator:** Kyle Hewitt, PhD

**Position Title & Department:** Assistant Professor, COM, Genetics, Cell Biology & Anatomy

**Expertise:** Regenerative Medicine, Skin/Tissue Generation

**External Funding:**

Current Funding Total: \$110,000

Funding sources: NE DHHS-LB606

**Investigator:** Amy Hoffman, PhD

**Position Title & Department:** Professor, CON, Omaha Division

**Expertise:** Physical Activity to Manage Fatigue in Cancer Patients

**External Funding:**

Current Funding Total: \$2,823,157  
Funding sources: DHHS/NIH/NCI

**Investigator:** So-Youn Kim, PhD  
**Position Title & Department:** Assistant Professor, COM, Obstetrics/Gynecology  
**Expertise:** Fertility Preservation in Anticancer Therapies  
**External Funding:**  
Current Funding Total: \$1,620,315  
Funding sources: DHHS/NIH/NICHD

**Investigator:** Merry Linsey, PhD  
**Position Title & Department:** Chairperson & Professor, COM, Cellular & Integrative Physiology  
**Expertise:** Cardiovascular Disease  
**External Funding:**  
Current Funding Total: \$2,471,159  
Funding sources: DHHS/NIH/NHLBI, V.A. Medical Center - Omaha

**Investigator:** Prakash Radhakrishnan, PhD  
**Position Title & Department:** Assistant Professor, Fred & Pamela Buffett Cancer Center  
**Expertise:** Pancreatic Cancer, Development of Chemotherapies for use in Cancer  
**External Funding:**  
Current Funding Total: \$1,721,396  
Funding sources: DHHS/NIH/NCI, Quest Pharma Tech

**Investigator:** Joshua Santarpia, PhD  
**Position Title & Department:** Associate Professor, COM, Pathology/Microbiology  
**Expertise:** Microbial Communities, Bacteriophage for Therapeutic & Industrial Uses  
**External Funding:**  
Current Funding Total: \$305,738  
Funding sources: National Strategic Research Institute

**Investigator:** Dong Wang, PhD  
**Position Title & Department:** Professor, COP, Pharmaceutical Science  
**Expertise:** Nanomedicine, Drug Discovery, Musculoskeletal Diseases  
**External Funding:**  
Current Funding Total: \$3,141,249  
Funding sources: DHHS/NIH/NIAID, Shannon Pharmaceuticals

## **Mentored Faculty, New Recruits, and Bridge Funding**

**Investigator:** Fabio Almeida, PhD  
**Position Title & Department:** Associate Professor, COPH, Health Promotion  
**Expertise:** Health Disparities within Chronic Disease, Health Equity, and Improved Health Outcomes

**Investigator:** Leah Cook, PhD  
**Position Title & Department:** Assistant Professor, COM, Pathology/Microbiology  
**Expertise:** Bone Metastasis, Tumor Immunology and Innate Immunology

**Investigator:** Armando De Alba Rosales, MD, MPH  
**Position Title & Department:** Assistant Professor, COPH, Health Promotion  
**Expertise:** Disease Control and Prevention, Healthcare Disparities - Policies and Interventions

**Investigator:** Donald Durden, MD  
**Position Title & Department:** Professor, COM, Pediatrics Computation Chemistry  
**Expertise:** Targeted Therapies in Pediatric Cancers

**Investigator:** Diane Ehlers, PhD  
**Position Title & Department:** Assistant Professor, COM, Neurological Sciences

**Expertise:** Exercise Psychology in Breast and Hematological Cancers

**Investigator:** Karen Gould, PhD

**Position Title & Department:** Associate Professor, COM, Genetics, Cell Biology & Anatomy

**Expertise:** Role of Estrogen in Lupus and Tumorigenesis

**Investigator:** James Lawler, MD

**Position Title & Department:** Associate Professor, COM, Internal Medicine Infectious Diseases

**Expertise:** Infectious Disease, Biocontainment & Medical Evacuation Training

**Investigator:** Rongshi Li, PhD

**Position Title & Department:** Professor, COP, Pharmaceutical Science

**Expertise:** Drug Discovery, Design, and Development in Anticancer and Antibiotic Therapeutics

**Investigator:** Michael Moulton, MD

**Position Title & Department:** Professor & Section Chief, COM, Surgery-Cardiothoracic Surgery

**Expertise:** Surgical Interventions in Cardiovascular Disease, Atrial Fibrillation, Left Ventricular Assist Devices

**Investigator:** Ali Nawshad, PhD

**Position Title & Department:** Associate Professor, COD, Oral Biology

**Expertise:** Cellular Signaling During Palate Development

**Investigator:** Sheri Rowland, PhD, MSN, APRN-BC, FNP

**Position Title & Department:** Assistant Professor, CON, Lincoln Division

**Expertise:** Physical Activity Behavior, Cardiovascular Risk, and Social and Occupational Influences on Health Behaviors

**Investigator:** Steven C Sansom, PhD

**Position Title & Department:** Professor, COM, Cellular & Integrative Physiology

**Expertise:** Diabetes and Hypertension

**Investigator:** Kaihong Su, PhD

**Position Title & Department:** Associate Professor, COM, Pathology/Microbiology

**Expertise:** Autoimmune Diseases, Lupus

## **Investments in Critical Infrastructure Faculty or Strategic Pilot Grants to Incentivize New Research Collaborations**

**Investigator:** Chittibabu Guda, PhD

**Position Title & Department:** Professor, COM, Genetics, Cell Biology & Anatomy, Chief Bioinformatics & Research Computing Officer

**Expertise:** Bioinformatics

## **Investigators receiving continuing NTSBRDF support during 2018-2019**

**Investigator:** Vimla Band, PhD

**Position Title & Department:** Chairperson & Professor, COM, Genetics, Cell Biology & Anatomy

**Expertise:** Cancer, Diagnostic/Prognostic Markers for Breast Cancer

**External Funding:**

Current Funding Total: \$379,200

Funding sources: DHHS/NIH/NCI

**Investigator:** Surinder Batra, PhD

**Position Title & Department:** Chairperson & Professor, COM, Biochemistry & Molecular Biology

**Expertise:** Pancreatic Cancer, Development of Diagnostic/Prognostic Markers for Cancer

**External Funding:**

Current Funding Total: \$13,845,761

Funding sources: DHHS/NIH/NCI, University of Pittsburgh, U.S. Army

**Investigator:** B Timothy Baxter, MD

**Position Title & Department:** Professor, COM, General Surgery

**Expertise:** Aortic Aneurysms, Causes and Treatments for Aneurysms; Surgical Interventions

**External Funding:**

Current Funding Total: \$39,118

Funding sources: CryoLife

**Investigator:** Ken Bayles, PhD

**Position Title & Department:** Associate Vice Chancellor for Basic Science & Professor, COM, Pathology/Microbiology

**Expertise:** Antibiotic Development for Resistant Staphylococcal Disease

**External Funding:**

Current Funding Total: \$13,597,869

Funding sources: DHHS/NIH/NIAID

**Investigator:** Kishor Bhakat, PhD

**Position Title & Department:** Associate Professor, COM, Genetics, Cell Biology & Anatomy

**Expertise:** Epigenetic Diagnostic/Prognostic Biomarkers for Cancer

**External Funding:**

Current Funding Total: \$160,710

Funding sources: DHHS/NIH/NCI

**Investigator:** Mark A Carlson, MD

**Position Title & Department:** Professor, COM, General Surgery

**Expertise:** Surgical Devices and Advanced Surgical Technology, Remote Trauma Care

**External Funding:**

Current Funding Total: \$1,759,130

Funding sources: DHHS/NIH/NCI, Otis Glebe Medical Research Foundation - NU Foundation

**Investigator:** Adam Case, PhD

**Position Title & Department:** Assistant Professor, COM, Cellular & Integrative Physiology

**Expertise:** Role of Redox Signaling and Immune Function in Hypertension

**External Funding:**

Current Funding Total: \$764,997

Funding sources: DHHS/NIH/NHLBI

**Investigator:** Martin Conda Sheridan, PhD

**Position Title & Department:** Assistant Professor, COP, Pharmaceutical Science

**Expertise:** Design and Delivery of Nanodrugs for the Treatment of Cancer and Infectious Diseases

**External Funding:**

Current Funding Total: \$307,000

Funding sources: U.S. Army

**Investigator:** Rebecca Deegan, PhD

**Position Title & Department:** Assistant Professor, COM, Biochemistry and Molecular Biology

**Expertise:** Antioxidant & Free Radical Protection during Radiation Therapy

**External Funding:**

Current Funding Total: \$1,593,280

Funding sources: DHHS/NIH/NCI

**Investigator:** Punita Dhwan, PhD

**Position Title & Department:** Associate Professor, COM, Biochemistry & Molecular Biology

**Expertise:** Cell-Cell Adhesion in Colorectal Cancer Progression and Metastasis

**External Funding:**

Current Funding Total: \$502,256

Funding sources: DHHS/NIH/NCI, V.A. Medical Center - Omaha

**Investigator:** David Dzewaltowski, PhD  
**Position Title & Department:** Professor, COPH, Health Promotion  
**Expertise:** Improving Physical Activity & Nutrition of Children, Evidence-based Health Promotion Programs

**External Funding:**  
Current Funding Total: \$2,997,129  
Funding sources: DHHS/NIH/NCI, Iowa State University

**Investigator:** Paul Estabrooks, PhD  
**Position Title & Department:** Professor, COPH, Health Promotion  
**Expertise:** Health Promotion Programs, Policies, and Practice Interventions

**External Funding:**  
Current Funding Total: \$2,333,554  
Funding sources: University of Virginia, Omada Health, Patient-Centered Outcomes Research Institute (PCORI)

**Investigator:** Alyson Hanish, PhD  
**Position Title & Department:** Assistant Professor, CON, Omaha Division  
**Expertise:** Neurobiology of Sleep and Sleep/Wake Disturbances in Vulnerable Pediatric Populations

**External Funding:**  
Current Funding Total: \$268,839  
Funding sources: DHHS/NIH/NINR

**Investigator:** Breanna Hetland, PhD  
**Position Title & Department:** Assistant Professor, CON, Omaha Division  
**Expertise:** Integrative Therapies for the Self-Management of Distressing Symptoms in the Intensive Care Unit

**External Funding:**  
Current Funding Total: \$49,412  
Funding sources: American Association of Critical-Care Nurses

**Investigator:** Michael (Tony) Hollingsworth, PhD  
**Position Title & Department:** Professor, Fred & Pamela Buffett Cancer Center  
**Expertise:** Pancreatic Cancer

**External Funding:**  
Current Funding Total: \$20,613,237  
Funding sources: DHHS/NIH/NCI

**Investigator:** Sarah Holstein, MD, PhD  
**Position Title & Department:** Associate Professor, COM, Internal Medicine Oncology/Hematology  
**Expertise:** Novel Therapeutic Agents for the Treatment of Multiple Myeloma

**External Funding:**  
Current Funding Total: \$1,419,604  
Funding sources: Celgene Corporation, Janssen R&D, NE DHHS - LB506, AbbVie, American Society of Hematology, Oncopeptides

**Investigator:** Ricia K Hyde, PhD  
**Position Title & Department:** Assistant Professor, COM, Biochemistry & Molecular Biology  
**Expertise:** Regulation of Gene Expression in Leukemia and Normal Hematopoiesis

**External Funding:**  
Current Funding Total: \$122,166  
Funding sources: NE DHHS-LB506

**Investigator:** Karoly Mirnics, MD, PhD  
**Position Title & Department:** Director & Professor, MMI, Psychiatry  
**Expertise:** Molecular Neurobiology of Brain Diseases

**External Funding:**

Current Funding Total: \$3,861,007  
Funding sources: DHHS/NIH/NIMH

**Investigator:** Aaron Mohs, PhD

**Position Title & Department:** Associate Professor, COP, Pharmaceutical Science

**Expertise:** Development of Fluorescent Imaging Contrast Agents to Guide Surgical Removal of Tumors, Drug Delivery Systems that Target Tumor Metabolism, and Pathogen Biosensing

**External Funding:**

Current Funding Total: \$2,241,574

Funding sources: DHHS/NIH/NIBIB, DHHS/NIH/NCI, Manzanita Pharmaceuticals

**Investigator:** Amarnath Natarajan, PhD

**Position Title & Department:** Professor, Fred & Pamela Buffett Cancer Center

**Expertise:** Small Molecule Probes, Cancer Therapeutics

**External Funding:**

Current Funding Total: \$1,736,698

Funding sources: DHHS/NIH/NCI, NE. Bankers Assoc. Equipment Grants

**Investigator:** Scot Ouellette, PhD

**Position Title & Department:** Associate Professor, COM, Pathology/Microbiology

**Expertise:** Bacterial Cell Division, Gene Regulation and Host-Pathogen Interactions

**External Funding:**

Current Funding Total: \$2,265,875

Funding sources: DHHS/NIH/NIGMS, NSF, DHHS/NIH/NIAID

**Investigator:** Moorthy Palanimuthu Ponnusamy, PhD

**Position Title & Department:** Assistant Professor, COM, Biochemistry & Molecular Biology

**Expertise:** Biochemical & Molecular Studies of MUC4 in Ovarian Cancer

**External Funding:**

Current Funding Total: \$1,905,256

Funding sources: DHHS/NIH/NCI

**Investigator:** Armen Petrosyan, PhD

**Position Title & Department:** Assistant Professor, COM, Biochemistry and Molecular Biology

**Expertise:** Prostate Cancer

**External Funding:**

Current Funding Total: \$1,715,625

Funding sources: DHHS/NIH/NIAAA

**Investigator:** Iraklis Pipinos, MD

**Position Title & Department:** Professor, COM, General Surgery

**Expertise:** Regenerative Medicine, Peripheral Arterial Disease, Repair of Skeletal Muscle Tissue in the Extremities

**External Funding:**

Current Funding Total: \$7,809,886

Funding sources: DHHS/NIH/NIA, University of Pittsburgh

**Investigator:** Elizabeth Rucks, PhD

**Position Title & Department:** Associate Professor, COM, Pathology/Microbiology

**Expertise:** Growth & Development of Chlamydia

**External Funding:**

Current Funding Total: \$2,259,086

Funding sources: DHHS/NIH/NIAID

**Investigator:** Nora Sarvetnick, PhD

**Position Title & Department:** Director, Nebraska Regenerative Medicine Project & Professor, COM, General Surgery

**Expertise:** Regenerative Medicine, Regulation of the Immune Response, Immunological Implications of Diabetes, Immunology of Autoimmune Diseases

**External Funding:**

Current Funding Total: \$3,310,047

Funding sources: University of Nebraska Foundation, Juvenile Diabetes Research Foundation International, DHHS/NIH/NIAID

**Investigator:** Amar Singh, PhD

**Position Title & Department:** Associate Professor, COM, Biochemistry and Molecular Biology

**Expertise:** Molecular Mechanisms of Inflammatory Bowel Disease and Colon Cancer, Renal Pathobiology

**External Funding:**

Current Funding Total: \$67,790

Funding sources: V.A. Medical Center - Omaha

## **Research Program and Infrastructure Development**

A total of \$3,103,139 (36.5%) was invested in research program and infrastructure development in 2018-2019. Additionally, \$150,000 was spent on pilot grants to spur joint research programs between University of Nebraska Lincoln and University of Nebraska Medical Center faculty. Infrastructure support included the general areas of animal facilities support, research core laboratories, grant management, and educational/training & compliance programs for NIH-funded scientists. Research infrastructure is critical to attract and retain nationally recognized scientists. These investments in research infrastructure have direct benefit to investigators with research awards that totaled over \$138.1M in fiscal year 2019.

Examples of infrastructure supported by these funds include support of the Comparative Medicine department (which was awarded \$506,515 or 16.3% of the infrastructure total) for animal facility equipment and program development that benefits many researchers. Additional investments were made for translational core facilities such as the development of a Bioimaging Core that provides cutting edge imaging technology critical to the study of traumatic brain injuries and neurodegenerative diseases such as Parkinson's and Alzheimer's. These cores are essential for the success of our NIH funded Centers such as the Nebraska Center for Nanomedicine, the Center for Neurodegenerative Disorders, and the Center for Integrative & Translational Neuroscience. They also provide services to investigators across the region.

NTSBRDF supports new software development and implementation to facilitate access of our scientists to management, informatics, educational, and other software applications to increase research efficiency and decrease the risk of non-compliance.

Joint programs between UNL and UNMC included funding for the following projects; "Census Research Data Center" and "Molecular Characterization of Human miRISC Complexes Following Treatment with Cow Milk Exosomes".

## **Minority Health and Health Disparities Research and Mentor Programs**

In 2018-19, UNMC invested \$451,256 in health disparities by supporting UNMC's Center for Reducing Health Disparities (CRHD), investing in pilot projects for health disparities research, supporting the Wakanweja American Indian Behavioral Health Conference, mentoring through student success engagement and the recruitment of diversity students for the Summer Undergraduate Research Program (SURP) from disadvantaged backgrounds.



The Center for Reducing Health Disparities (CRHD) at the UNMC College of Public Health is focused on maintaining close partnerships with underserved communities, especially low-income, minority communities, and other stakeholders throughout Nebraska to identify, prioritize and then develop and implement evidence-based health promotion programs and to conduct health disparities research. NTSBRDF supported in part faculty and staff at the center who received 7 new grants and contracts, completed 18 research projects, and published 44 peer-reviewed publications and 2 community health reports. They also gave 27 presentations at federal or regional conferences, offered three courses to students at the university, and advised 310 students on community engagement, advocacy, and the provision of health services to promote health equity through the “Step Up” Immersion Program. It is estimated that during 2018 the CRHD team served about 65,000 local residents through hosting or organizing 23 health promotion programs, 4 health fairs, and 1 radio program. The CRHD Annual Report gives more details about the research and activities of the Center: <https://www.unmc.edu/publichealth/crhd/about/annualreport/2108-Annual-Report.pdf>. An investment of \$356,417 was made in the Center for Reducing Health Disparities.

Health disparities research Pilot Project(s) funded this year focused on Rural Primary Care

**Project Title:** Rural Primary Care Clinic to Increase Early Detection and Treatment of Behavioral Health Problems  
**Principal Investigator:** Shinobu Watanabe-Galloway, PhD, Professor, College of Public Health

**Project Title:** Feasibility, Acceptability, and Preliminary Impact of an mHealth Intervention on Cardiorespiratory Fitness in a rural Hispanic Adult Population  
**Principal Investigator:** Sherrie Rowland, PhD, RN Associate Professor, College of Nursing

An investment of \$39,383 was made in health disparities research Pilot Projects.

Student success engage focuses on four areas: 1) student exchanges to identify and encourage undergraduate students interested in health professions or health research graduate education to pursue their goal and consider attending programs at UNMC; 2) faculty exchanges; 3) faculty research collaborations; and 4) institutional collaborations to pursue new funding opportunities. Participating students conduct research with mentors for two summers. Faculty exchanges include collaborative research, seminars and presentations. Virginia HBCUs attract a majority of underrepresented minority students and provide a pipeline to graduate training programs as they are largely focused on undergraduate education. UNMC, in turn, views the relationship with HBCUs as an opportunity to attract more diverse students into its health professions and graduate education programs. Students become members of actively funded UNMC research teams for 10 weeks each summer during which they develop technical laboratory skills, expand their scientific knowledge base, analyze data, document results, participate in team meetings, attend research weekly seminars, and then present their work at the end of summer research poster session with all the other summer undergraduate students. They learn about career paths, interviewing skills, balancing the stresses of graduate training and personal life, and visit with successful role models. This year there were 524 applicants for the Summer Undergraduate Research Program (SURP) for Students from Disadvantaged Backgrounds. Of the fourteen students accepted into the program, five of these were students from Virginia or an HBCUs. A total of \$50,456 was invested in this program.

# UNIVERSITY OF NEBRASKA-LINCOLN Nebraska Tobacco Settlement Biomedical Research Development Fund (NTSBRDF)

Year 18: July 1, 2018–June 30, 2019  
Progress Report

## Executive Summary

UNL's goal for the NTSBRDF program is to leverage this investment to increase our biomedical research capacity in terms of human resources, cutting-edge research equipment and external research funding. In the 18 years of NTSBRDF funding, UNL's biomedical research capacity has grown continually to address the needs of the state of Nebraska and the nation. This has enabled UNL researchers to contribute knowledge and technical advancements required to prevent, diagnose and treat disease. This ultimately leads to the improved health of Nebraskans and stimulates economic development and employment opportunities in the state.

UNL has invested the NTSBRDF funds in four main areas:

- **Strategic Faculty Recruitment and Retention:** UNL has selected a group of faculty whose research aligns closely with our strategic priorities in health prevention and treatment. These faculty either transfer strong externally funded research programs to UNL or have a high potential for achieving rapid research success as evidenced by the acquisition of new funding. This investment in human resources is a highly effective means of increasing our biomedical research capacity and often provides the most immediate return.
- **Research Program and Infrastructure Development:** UNL has employed the NTSBRDF funds to strengthen existing research programs to increase their competitiveness for external awards that support major interdisciplinary research programs aligned with UNL's research priorities in biomedicine.
- **Minority Health Research Grants:** These research investments specifically address issues of importance to the health of Nebraska's minority populations.
- **Joint UNL-UNMC Research Programs:** These programs bring UNL and University of Nebraska Medical Center faculty together to collaboratively address biomedical research problems to which each institutional partner contributes unique expertise, addressing complex research problems in ways that would not be otherwise possible.

**In 2018-2019, UNL invested a total of \$2,773,848** from the NTSBRDF, including an allocation of \$1,017,119 for six new faculty hires and one faculty retention; \$1,462,559 to support research programs and infrastructure development; \$194,170 (7 percent total) for grants to researchers addressing minority health disparities in Nebraska; and \$100,000 for two joint UNL/UNMC research projects.

As has been the case in previous years, this investment has made a great impact on UNL's research climate and productivity. These investments resulted in a total of \$54,154,713 in external funding in 2018-2019. This is an impressive return on investment and speaks to the value of the investment UNL has made in building biomedical research excellence.

## Strategic Faculty Recruitment and Retention

**Introduction:** In 2018-2019, UNL invested \$1,017,119 of NTSBRDF funds to expand faculty expertise into new areas of biomedical research that have a strong likelihood of increasing our base of externally funded research programs of interest to the National Institutes of Health and other federal agencies (e.g., Centers for Disease Control and National Science Foundation) and private agencies (e.g., American Heart Association and American Cancer Society). These funds also made it possible to hire six new faculty members. These individuals range from a full professor who will lead the School of Biological Sciences to assistant professors with novel expertise in the gut microbiome; computational biology; psychology; the psycho-social aspects of stuttering; and racial and ethnic health disparities. The investments in new faculty hires and retentions has resulted in the transfer or acquisition of new research awards received in 2018-2019 totaling \$26,347,158.

**Investigator:** Nicolas Hubbard, Ph.D.

**Position Title & Department:** Assistant Professor, Department of Psychology

**Expertise:** Cognitive control, memory, prefrontal networks, advanced and multimodal neuroimaging, connectomics and energetics of disease and development

**External Funding:** No external funding active or pending at this time

**Investigator:** Ken Wakabayashi, Ph.D.

**Position Title & Department:** Assistant Professor, Department of Psychology

**Expertise:** *In vivo* monitoring, calcium imaging, genetic targeting of neural circuits, chemogenetics, optogenetics, neural substrates of reward and addiction.

**External Funding:** No external funding active or pending at this time

**Investigator:** Hyun-Seob Song, Ph.D.

**Position Title & Department:** Associate Professor, Departments of Biological Systems Engineering and Food Science and Technology

**Expertise:** Microbiome modeling and engineering (soil microbiomes, human microbiota, and synthetic consortia); metabolic network modeling; biological network inference; agent-based modeling; AI-based modeling: cybernetic approach and machine learning

**External Funding:**

**Active:** \$35,000

**Proposals Pending:** \$139,989

**Funding Sources:** Battelle-Pacific NW National Laboratory

**Investigator:** Yanbin Yin, Ph.D.

**Position Title & Department:** Associate Professor, Department of Food Science and Technology

**Expertise:** Developing new computational tools (software, databases and web servers) to facilitate genomics research. Characterizing important genetic elements in genomes and metagenomes to enhance their biotechnological and biomedical applications and understand genome biology/evolution. Specific genes of interest include, orphan genes, horizontally transferred genes, anti-CRISPR genes, and CAZymes (carbohydrate active enzymes) in bacteria, archaea, fungi, algae, plants, and viruses.

**External Funding:**

**Active:** \$411,791

**Proposals Pending:** \$156,514

**Funding Sources:** NIH, NSF, U.S. Department of Agriculture

**Investigator:** Katie Edwards, Ph.D.

**Position Title & Department:** Associate Professor, Department of Educational Psychology

**Expertise:** Understanding the causes and consequences of interpersonal violence, primarily intimate partner violence (IPV) and sexual assault (SA) among adolescents and emerging adults.

**External Funding:**

**Active:** \$1,236,921

**Proposals Pending:** \$3,049,360

**Funding Sources:** NIH, NSF, American Psychological Foundation, Dept. of Justice, Dept. of Defense

**Investigator:** Maital Neta, Ph.D.

**Position Title & Department:** Associate Professor, Department of Psychology and Center for Brain, Biology and Behavior

**Expertise:** Understanding individual differences in response to emotional ambiguity and the functional networks in the human brain that support decision-making processes, specifically relating to task control.

**External Funding:**

**Active:** \$1,443,190

**Proposals Pending:** \$310,158

**Funding Sources:** NIH, NSF

**Investigator:** Naomi Rodgers, Ph.D.

**Position Title & Department:** Assistant Professor, Department of Special Education and Communication Disorders

**Expertise:** Understanding the psycho-social aspects of stuttering

**External Funding:** No external funding active or pending at this time

## Research Program and Infrastructure Development

**Introduction:** In 2018-2019, a total of \$1,462,559 was invested in research program and infrastructure development to support UNL faculty in their competitiveness for external funding for biomedical research. These investments have leveraged \$38,670,292 in new external funding in 2018-2019. Areas of investment include the development and support of novel research programs with the potential to improve human health and enhance UNL infrastructure to conduct biomedical research. The projects are broadly focused on cellular biology, chemistry and biochemistry; neuroscience, brain biology and behavior, and cognition; tissue engineering; wound healing; virology, microbiology and immunology; discovery and development of new bioactive agents for the prevention, treatment and diagnosis of disease, injury or ailment; nutrition and metabolism in children; connecting biomedical scientists to science educators in the public school system; and the equipment required to conduct this research. Some projects are collaborations with investigators at other NU system institutions and provide evidence of our commitment to leverage the human and other Nebraska resources to conduct cutting-edge biomedical research that requires highly skilled interdisciplinary teams.

**Project Title:** Center for Brain, Biology and Behavior Neuroimaging and Salivary Bioscience Research

**Principal Investigator:** Cary Savage, Ph.D.

**Description:** The Center for Brain, Biology and Behavior (CB3) is an interdisciplinary research center established to investigate the social, biological, behavioral, engineering and neurological issues related to human performance and development. Investments were made to support center leadership to further research in these areas.

**Project Title:** Rural Drug Addiction Research Center (RDAR)

**Principal Investigator:** Kirk Dombrowski, Ph.D.

**Description:** The Rural Drug Addiction Research Center is a multidisciplinary research center that conducts research to understand the extent and nature of rural addiction. The Center also develops evidence-based treatment methods and supports outreach and policy efforts to help reduce addiction and overdoses. Investments were made to support center leadership and infrastructure to advance research in these areas.

**Project Title:** Upgrade of 600 MHz NMR located in the Molecular and Analytical Characterization Facility

**Principal Investigator:** Catherine Eichhorn, Ph.D.

**Description:** A Bruker NEO console will be purchased for the Bruker Avance 600 MHz NMR to upgrade the electronics and probes to enhance sensitivity and increase the range of experiments available to academic and industry scientists. The TCI (H&F) cryoprobe will allow greater access to  $^{19}\text{F}$ , which is incorporated in many pharmaceuticals, and can also be used to track environmental perfluorinated hydrocarbon contaminants. The NEO console will update both the solids and liquids capacity of the old console to allow for 50-80% faster collection of multiple data sets simultaneously using SuperCycle pulse programs. These capabilities will enable RNA structural analysis, including RNA-protein complexes involved in cell signaling. The solid-state NMR probe will also be upgraded to a CP-MAS HX probe to allow samples

to be spun at higher rotor rates, which will narrow lines and increase the signal-to-noise over the older 8000 Hz HX probe of the older Avance system.

**Project Title:** Micro-CT Scanner: Quantum GX2

**Principal Investigator:** Kelly Heath, DVM

**Description:** The IVIS CT Quantum GX2 was purchased to enable simultaneous molecular and anatomical longitudinal studies through sensitive detection of bioluminescence, multispectral fluorescence and spectral unmixing, Cerenkov imaging, and low dose microcomputed tomography (micro CT). Bioluminescence imaging provides capabilities such as monitoring tumor growth, visualizing viral and bacterial infections, and assessing gene delivery vehicles. Multispectral imaging capabilities offers enhanced signal detection of a plethora of fluorochromes through spectral unmixing. The micro CT capability provides accurate signal localization through 3D reconstruction, longitudinal studies and co-localization between imaging modalities such as MRI and histological analyses.

**Project Title:** Interdisciplinary Therapeutics Research

**Principal Investigator:** David Berkowitz, Ph.D.

**Description:** Funding will support the promotion of therapeutic discovery and research and development opportunities for faculty across UNL. Specific efforts are directed toward developing new bioactive agents for the prevention, treatment and diagnosis of disease, injury or ailment (e.g., pharmaceuticals, vaccines, prophylaxes and therapeutics).

**Project Title:** Faculty Development in Biomedical Sciences

**Description:** As a result of this program, the university hosts faculty workshops led by nationally recognized grant writing consultants, enhancing the university's competitiveness for federal funding.

**Project Title:** Nebraska Center for Virology

**Principal Investigator:** Charles Wood, Ph.D.

**Description:** The Nebraska Center for Virology (NCV) conducts innovative interdisciplinary research addressing fundamental questions about infectious agents and the host responses that may lead to pathological changes. Investments were made to support research investigating fundamental processes that will enable the design of novel vaccines and therapeutic strategies to block disease.

**Project Title:** CytoFLEX LX Flow Cytometer

**Principal Investigator:** Daniel Schachtman, Ph.D.

**Description:** A Beckman Coulter CytoFLEX LX with four lasers and advanced detection optics capable of analyzing 18 individual parameters was purchased and installed in the Center for Biotechnology for multiple users. The advanced optics on the CytoFLEX provides dramatically increased sensitivity to visualize a variety of particles and cells (down to 200nm in size), including extracellular vesicles and microbiological particles. The system is also designed to allow users to measure absolute counts of cell populations from each sample.

**Project Title:** Development of Individual Specific Finite Element Model of the Optic Nerve Head for Non-Invasive Intracranial Pressure Measurement

**Principal Investigator:** Linxia Gu, Ph.D.

**Description:** The long-term goal of these studies is to develop non-invasive methods for measuring intracranial pressure using ocular biomarkers in human subjects. The first Aim will quantify morphological changes of the optic nerve head in response to acute changes in intracranial pressure. The second Aim will develop an individual, specific, inverse-fitted finite element model to predict intracranial pressure from studies with animal models.

**Project Title:** Redox Biology Center

**Principal Investigator:** Don Becker, Ph.D.

**Description:** Bridge funding was provided to the Redox Biology Center to continue to promote interdisciplinary and multi-institution collaborations that address novel questions in redox biology and impact human health and disease (e.g., pathogenesis and stress response, redox signaling, mitochondrial dysfunction, metal ion homeostasis). Bridge funding will be for technical support for research core facilities in spectroscopy, bioimaging, metabolomics, and proteomics as well as partial support for maintenance/service contracts for instrumentation in these research core facilities. A new MicroScale Thermophoresis instrument was purchased and will provide capabilities to analyze the affinity interactions between biomolecules (proteins and polynucleotides) to understand critical biochemical processes for metabolic engineering to control pathogens or discover new drugs to treat diseases.

## Minority Health Research Grants

**Introduction:** A total of \$194,170, or 7 percent of the total allocation, was invested in three projects to address the health needs of underserved racial and ethnic minorities in Nebraska and across the U.S. Two of the projects support research conducted by the Minority Health Disparities Initiative, which focuses on advancing scientific research, data integration, policy, practice and training related to health issues experienced by minority populations in Nebraska and the nation. The remaining awards address minority health disparities by empowering children and families to make healthy food choices to change the rising epidemic of childhood obesity or investigate mental health issues in immigrant and/or refugee populations, Latino populations or African American populations. Together, these efforts address the goal to identify, and eventually eliminate, race- and ethnicity-based health disparities in Nebraska and throughout the U.S.

**Project Title:** Minority Health Disparities Initiative

**Principal Investigator:** Kirk Dombrowski, Ph.D.

**Description:** The MHDl sponsors functions including visiting speakers (selected and hosted by faculty affiliates), conversation series (led by faculty affiliates), a writing retreat and annual edited volume (works of affiliated faculty), a summer National Science Foundation-funded Research Experiences for Undergraduates program (for research with affiliated faculty), and undergraduate research assistant support for MHDl faculty. It also provides community outreach and project management for research and evaluation projects by MHDl-affiliated faculty. In 2018, faculty have assisted in preparing grant proposals totaling approximately \$20 million.

**Project Title:** Minority Health Data

**Principal Investigator:** Jolene Smyth, Ph.D.

**Description:** Support was provided to collect minority health data on the Nebraska Annual Social Indicators Survey. An omnibus, collaborative effort to collect data on immigrant and minority health issues in Nebraska was conducted. Multiple UNL faculty affiliated with the Minority Health Disparities Initiative submitted questions that could provide pilot data for their respective research projects.

**Project Title:** Minority Health Disparities Initiative

**Principal Investigator:** Dan Hoyt, Ph.D.

**Description:** This funding helps connect faculty with minority health research projects to allow faculty to present their research at Nebraska minority health conferences. It also provides a mechanism to connect UNL with statewide stakeholders through participation in the Nebraska Minority Health Council.

## Joint UNL-UNMC Research Projects

**Introduction:** UNL and UNMC faculty often offer complementary research expertise to address biomedical problems that cannot be solved alone by individual investigators from either institution. To facilitate team building and preliminary data acquisition across the two institutions, a total of \$100,000 in NTSBRDF funds was used to support two projects from teams that include UNL and UNMC researchers.

**Project Title:** Developing executive control, obesity risk, and behavioral health problems: A pilot fMRI study

**Principal Investigator:** Tim Nelson, Ph.D., UNL; Cary Savage, Ph.D., UNL; Maital Neta, Ph.D., UNL; Jennifer Mize Nelson, Ph.D., UNL; Kimberly Andrews Espy, Ph.D., UNL; W. Alex Mason, Ph.D., Boy Town National Research Institute, Tiffany James, M.A., UNL

**Description:** The objective of this pilot study is to demonstrate the feasibility of fMRI paradigms (focusing on neural responses to food, emotion regulation, and brain functional connectivity) and collect data that will allow for substantive preliminary analyses of links with executive control development and clinical outcomes. Specific Aim 1 is to establish the feasibility of fMRI paradigms relevant to obesity and behavioral health with an existing longitudinal sample. Specific Aim 2 is to explore preliminary associations between individual differences in brain function and executive control development, weight status, obesity-relevant behaviors, mental health problems, and substance use with an existing longitudinal sample. Specific Aim 3 is to explore preliminary associations between neural connectivity, executive control and clinical outcomes.

**Project Title:** Brain Connectivity for Prediction of Lesion Site in Sports-Related Concussion

**Principal Investigator:** Maital Neta, Ph.D., UNL; Jennifer Mize Nelson, Ph.D., UNL; Cary Savage, Ph.D., UNL; Matthew Garlinghouse, Ph.D., UNMC

**Description:** The long-term goal of these studies is to determine neuro-cognitive mechanisms underpinning sports-related concussion and its recovery. Doing so will provide insights for clinical approaches to decisions such as return to play. Aim 1 will characterize baseline (pre-season) brain connectivity in student athletes at high risk for sports-related concussion. Aim 2 will identify changes in brain connectivity pre- and post-injury and post-recovery. Aim 3 will identify changes in brain connectivity and cognitive processing in an effort to predict clinical outcome.



**CREIGHTON UNIVERSITY**  
**Nebraska Tobacco Settlement**  
**Biomedical Research Development Fund (NTSBRDF)**  
Year 18: July 1, 2018-June 30, 2019  
**Progress Report**

## **Executive Summary**

The Creighton University investment of the Nebraska Tobacco Settlement Biomedical Research Development Fund dollars is concentrated in three areas:

- Strategic Faculty Recruitment and Retention
- Research Program and Infrastructure Development
- Minority Health Research Grants.

With the support of the NTSBRDF, Creighton University continues to address some of the world's most complex and perplexing health care challenges. Research investigators play a fundamental role in enhancing the quality of life for individuals and in expanding the research community in Nebraska and the region. The primary purpose and use of the NTSBRDF program at Creighton University is to increase funding from federal health agencies and institutes. In 2018-2019, the collective efforts of the research investigators at Creighton University produced significant results. Creighton University received over \$24.8 million in extramural funding. Investigators were awarded federal grants from the Department of Defense, National Institutes of Health, Office of Naval Research, and Health Resources and Services Administration, as well as many other non-federal grants from corporations and foundations. The university and its investigators look forward to continuing to use NTSBRDF funds as a springboard to benefit the citizens of Nebraska and to add to research and health care knowledge everywhere.

## Strategic Faculty Recruitment and Retention

A total of \$1,522,490 was invested in strategic recruitment and retention of faculty at Creighton University. The NTSBRDF provided us the opportunity to expand on existing centers of excellence and develop new avenues of biomedical research. The new faculty have already contributed to the Creighton University research portfolio by transferring active awards or obtaining new extramural awards totaling \$1,427,185 during this reporting period. These new awards are from agencies such as the National Institutes of Health, Department of Defense, the Brain & Behavior Research Foundation and the Simons Foundation.

**Investigator:** Holly Stessman, PhD

**Position Title & Department:** Assistant Professor, School of Medicine,  
Department of Pharmacology

**Project Title:** Identifying Genetic Drivers of Complex Human Disease

**External Funding:**

Current Year Funding Total: \$849,841

Funding Sources: NIH, Simons Foundation, NE-DHHS

**Investigator:** Gopal Jadhav, PhD

**Position Title & Department:** Assistant Professor, School of Medicine,  
Department of Clinical and Translational Sciences

**Project Title:** Development of Small Chemical Molecules of Novel TREM-1  
Antagonists

**External Funding:**

Current Year Funding Total: \$50,000

Funding Sources: NE-DHHS

**Investigator:** Halvor McGee, PhD

**Position Title & Department:** Assistant Professor, School of Medicine,  
Department of Clinical and Translational Sciences

**Project Title:** Microbial Composition of Cartoid Plaque and Associations with  
Clinical Outcomes and A Study of Trem-1 and Dendritic Cells in the  
Pathogenesis of Severe Asthma

**External Funding:**

Current Year Funding Total: \$100,000

Funding Sources: NE-DHHS

**Investigator:** Chandra Boosani, PhD

**Position Title & Department:** Assistant Professor, School of Medicine,  
Department of Clinical and Translational Sciences

**Project Title:** Epigenetic Regulations in Cardiovascular Diseases

**External Funding:**

Current Year Funding Total: \$30,000

Funding Sources: NE-DHHS

**Investigator:** Ann Cavanaugh, PhD

**Position Title & Department:** Assistant Professor, College of Arts & Sciences,  
Department of Biology

**Project Title:** Analysis of the Budding Yeast Microtubule Organizing Center

**External Funding:**

Current Year Funding Total: \$4,000

Funding Sources: NASA

**Investigator:** Travis Bourret, PhD

**Position Title & Department:** Assistant Professor, School of Medicine,  
Department of Microbiology and Immunology

**Project Title:** Metabolic Regulation of Salmonella Virulence

**External Funding:**

Current Year Funding Total: \$5,000

Funding Sources: CURAS Faculty Research Fund

**Investigator:** Anna Selmecki, PhD

**Position Title & Department:** Assistant Professor, School of Medicine,  
Department of Microbiology and Immunology

**Project Title:** Molecular Mechanisms on Genome Stability

**External Funding:**

Current Year Funding Total: \$0

Funding Sources:

**Investigator:** Tal Teitz, PhD

**Position Title & Department:** Assistant Professor, School of Medicine,  
Department of Pharmacology

**Project Title:** Drug Development for Hearing Disorders

**External Funding:**

Current Year Funding Total: \$225,000

Funding Sources: NE-DHHS

**Investigator:** Jian Zuo, PhD

**Position Title & Department:** Professor & Chair, School of Medicine,  
Department of Biomedical Sciences

**Project Title:** Neurodegeneration, Function, Regeneration and Protection of  
Sensory Hair Cells in the Inner Ear

**External Funding:**

Current Year Funding Total: \$1,927,028

Funding Sources: NE-DHHS, NIH, DOD, University of Brighton

**Investigator:** Peter Steyger, PhD

**Position Title & Department:** Clinical Professor and Director, Translational  
Hearing Center, School of Medicine, Department of Biomedical Sciences

**Project Title:** Mechanism and Clinical Risk of Drug-Induced Hearing Loss

**External Funding:**

Current Year Funding Total: \$790,860

Funding Sources: NE-DHHS, NIH

**Investigator:** Brian North, PhD

**Position Title & Department:** Assistant Professor, School of Medicine,  
Department of Biomedical Sciences

**Project Title:** Role of Protein Homeostasis Factors in Regulating the  
Interrelationship Between Aging and Cancer

**External Funding:**

Current Year Funding Total: \$323,903

Funding Sources: NE-DHHS, NIH

**Investigator:** Jee-Yeon Hwang, PhD

**Position Title & Department:** Assistant Professor, School of Medicine,  
Department of Pharmacology

**Project Title:** Profiling of Altered Genes Examining their Role in  
Neurodegeneration

**External Funding:**

Current Year Funding Total: \$206,380

Funding Sources: NE-DHHS, NIH, Brain & Behavior Research Fdn

## **Research Program and Infrastructure Development**

A total of \$1,806,105 was invested in research program and infrastructure development in 2018-2019 in a wide variety of topics, including 1) Prion Disease Research 2) NMDA Receptors in Astrocytes and Role in Addiction, 3) Drug Discovery Research and 4) Defining Shoulder Injury by Matrisome Disorganization & TREM-Meditated Inflammation. Moreover, the Research Program and Infrastructure Development portion of the NTSBRDF supported biomedical research by providing pilot project funding, bridge funding, support for research equipment, and core facility support for research faculty.

**Investigator:** Thomas Murray, PhD

**Position Title & Department:** Provost & Professor, School of Medicine,  
Department of Pharmacology

**Project Title:** Neuropharmacology Postdoctoral Support

**External Funding:**

Current Year Funding Total: \$383,659

Funding Sources: NE-DHHS, NIH

**Investigator:** Jason Bartz, PhD

**Position Title & Department:** Associate Dean for Faculty Affairs & Professor,  
School of Medicine, Department of Microbiology and Immunology

**Project Title:** Prion Disease Research Support

**External Funding:**

Current Year Funding Total: \$1,809,873

Funding Sources: NE-DHHS, NIH

**Investigator:** Katie Packard, PhD

**Position Title & Department:** Professor, School of Pharmacy & Health  
Professions

**Project Title:** Finances First: A Health Intervention for Low-Income Single-Mother Households

**External Funding:**

Current Year Funding Total: \$2,000

Funding Sources: NE-DHHS, CU Teaching & Learning Center

**Investigator:** Matthew Dilisio, MD

**Position Title & Department:** Associate Professor, School of Medicine, Department of Surgery

**Project Title:** Defining Shoulder Injury by Matrisome Disorganization & TREM-Meditated Inflammation

**External Funding:**

Current Year Funding Total: \$50,950

Funding Sources: NE-DHHS

**Investigator:** Peter Abel, PhD

**Position Title & Department:** Professor & Chair, School of Medicine, Department of Pharmacology

**Project Title:** Drug Discovery Research

**External Funding:**

Current Year Funding Total: \$217,799

Funding Sources: NE-DHHS

**Investigator:** Shashank Dravid, PhD

**Position Title & Department:** Associate Professor, School of Medicine, Department of Pharmacology

**Project Title:** NMDA Receptors in Astrocytes and Role in Addiction

**External Funding:**

Current Year Funding Total: \$1,482,840

Funding Sources: NE-DHHS, NIH, NSF-EPSCoR

**Investigator:** Chris Destache, PharmD

**Position Title & Department:** Professor, School of Pharmacy and Health Professions, Department of Pharmacy Practice

**Project Title:** Combined Antiretroviral Drug and Monoclonal Antibody Nanoparticle for HIV-1 Prevention

**External Funding:**

Current Year Funding Total: \$0

Funding Sources:

**Investigator:** Joseph Knezetic, PhD

**Position Title & Department:** Director, Research Compliance

**Project Title:** Research Compliance Regulatory Service Support

**External Funding:**

Current Year Funding Total: \$233,801

Funding Sources: NE-DHHS

**Investigator:** Robert Dunlay, MD  
**Position Title & Department:** Dean, School of Medicine  
**Project Title:** School of Medicine Research Faculty Bridge Funding  
**External Funding:**  
Current Year Funding Total: \$256,595  
Funding Sources: NE-DHHS

**Investigator:** Beth Herr  
**Position Title & Department:** Director, Sponsored Programs Administration  
**Project Title:** Elsevier Pure Master Software  
**External Funding:**  
Current Year Funding Total: \$45,560  
Funding Sources: NE-DHHS

**Investigator:** Holly Stessman, PhD  
**Position Title & Department:** Assistant Professor, School of Medicine,  
Department of Pharmacology  
**Project Title:** Research Technician Support  
**External Funding:**  
Current Year Funding Total: \$949,841  
Funding Sources: NIH, Simons Foundation, NE-DHHS

**Investigator:** Thomas Murray, PhD  
**Position Title & Department:** Provost & Professor, School of Medicine,  
Department of Pharmacology  
**Project Title:** Grant Writing Seminar  
**External Funding:**  
Current Year Funding Total: \$383,659  
Funding Sources: NE-DHHS, NIH

**Investigator:** Thomas Murray, PhD  
**Position Title & Department:** Provost & Professor, School of Medicine,  
Department of Pharmacology  
**Project Title:** Molecular Biology Summer Workshop  
**External Funding:**  
Current Year Funding Total: \$383,659  
Funding Sources: NE-DHHS, NIH

**Investigator:** Joel Destino, PhD  
**Position Title & Department:** Assistant Professor, College of Arts & Sciences,  
Department of Chemistry  
**Project Title:** Scanning Electron Microscope for Undergraduate Research  
**External Funding:**  
Current Year Funding Total: \$246,790  
Funding Sources: NE-DHHS, NASA, NSF-EPSCoR

**Investigator:** Jian Zuo, PhD

**Position Title & Department:** Professor & Chair, School of Medicine,  
Department of Biomedical Sciences

**Project Title:** Mass Spectrometer to Promote Eisner/Zuo Research

**External Funding:**

Current Year Funding Total: \$1,927,028

Funding Sources: NE-DHHS, NIH, DOD, University of Brighton

**Investigator:** Shashank Dravid, PhD

**Position Title & Department:** Associate Professor, School of Medicine,  
Department of Pharmacology

**Project Title:** High Throughput Multi-User Biacore Surface Plasmon Resonance  
System

**External Funding:**

Current Year Funding Total: \$1,482,840

Funding Sources: NE-DHHS, NIH, NSF-EPSCoR

**Investigator:** Thomas Murray, PhD

**Position Title & Department:** Provost & Professor, School of Medicine,  
Department of Pharmacology

**Project Title:** New Initiative Program Grant Reviewers

**External Funding:**

Current Year Funding Total: \$383,659

Funding Sources: NE-DHHS, NIH

## Minority Health Research Grants

**Introduction:** Creighton's core values include the inalienable worth of each individual and appreciation of ethnic and cultural diversity coupled with service to others. As such, continues to support Creighton University's Center for Promoting Health and Health Equality and its commitment to improving the health of racial and ethnic minorities. A total of \$160,620 was awarded in 2018-2019 for minority health research.

**Investigator:** Sade Kosoko-Lasaki, MD

**Position Title & Department:** Associate Vice Provost – Health Science  
Multicultural and Community Affairs

**Expertise:** Center for Promoting Health and Health Equality (CPHHE)

**External Funding:**

Current Year Funding Total: \$805,268

Funding Sources: NE-DHHS, HRSA

**BOYS TOWN NATIONAL RESEARCH HOSPITAL**  
**Nebraska Tobacco Settlement Biomedical**  
**Research Development Fund**

FY 2019 Allocation for period July 1, 2018-June 30, 2019

**Executive Summary**

This report is modeled on the annual reports we have provided for the last eighteen years. Annual reports have divided Development Fund activities into three categories: 1) Strategic Faculty Recruitment & Retention; 2) Research Program & Infrastructure Development; and 3) Minority Health Research Grants. We will continue to use those categories so that these periodic reports tie to the subsequent annual report. We have modified the format for the first category to provide additional information regarding expenditures. The allocation numbers here are cumulative and rounded to the nearest dollar.

**Strategic Faculty Recruitment & Retention**

**Introduction:** Most entries in this category represent multiple-year start-up packages for new investigators. As they obtain external support and become fully independent, they move off the list making way for new investigators. We also support established laboratories to allow them to maintain active research programs and to obtain pilot data for future grant applications.

**Investigator:** Sophie Ambrose, PhD

**Position Title & Department:** Director of the Communication Development Laboratory, Center for Childhood Deafness, Learning and Language.

**Expertise:** Optimizing speech and language outcomes in children who are deaf or hard of hearing through evidence-based intervention programs.

**Allocation:** \$ 33,129

**Description of Goals and Accomplishments:** Dr. Ambrose was recruited for the BTNRH Center for Biomedical Research Excellence (COBRE) grant program. Start-up package funds are being used to support collection of preliminary data for an NIH grant application.

**Investigator:** Lori Leibold, PhD

**Position Title & Department:** Director of the Human Auditory Development Laboratory and of the Center for Hearing Research.

**Expertise:** Measurement of sensory and cognitive function in infants and children.

**Allocation:** \$ 6,981

**Description of Goals and Accomplishments:** Start-up package funds are being used to support purchase of laboratory equipment and transition of her research program from the University of North Carolina to BTNRH.



**Investigator:** Barbara Morley, PhD

**Position Title & Department:** Director of the Auditory Neurochemistry Laboratory, Center for Sensory Neuroscience.

**Expertise:** Use of molecular methods to study the development of neurotransmitters in the auditory brainstem nuclei.

**Allocation:** \$ 20,958

**Description of Goals and Accomplishments:** Funds are being used to support collection of preliminary data for an NIH grant application by a long-term faculty member who has had a lapse in funding.

**Investigator:** Soyoun Cho, PhD

**Position Title & Department:** Director of the Hair cell Biophysics Laboratory, Center for Sensory Neuroscience.

**Expertise:** Measurement of physiological responses within the inner ear.

**Allocation:** \$9,623

**Description of Goals and Accomplishments:** Start-up package funds are being used to support purchase of laboratory equipment and collection of preliminary data for an NIH grant application.

**Investigator:** Yunxia Lundberg, PhD

**Position Title & Department:** Coordinator of the Vestibular Neurogenetics Laboratory, Center for Sensory Neuroscience.

**Expertise:** Expression of genes and characterization of proteins in the vestibular sense organ, genetics of benign paroxysmal positional vertigo (BPPV).

**Allocation:** \$ 104,557

**Description of Goals and Accomplishments:** Funds are being used to supplement support for an NIH grant proposal to develop a research program in human genetics by a long-term faculty member.

**Investigator:** Marisa Zallocchi, PhD

**Position Title & Department:** Director of the Functional Genetics Laboratory, Center for Sensory Neuroscience.

**Expertise:** Biochemical mechanisms of Usher pathobiology in photoreceptors and cochlear hair-cells; use of zebrafish model to study gene expression and function.

**Allocation:** \$ 106,715

**Description of Goals and Accomplishments:** Start-up package funds are being used to support collection of preliminary data for an NIH grant application.

**Investigator:** Adam Bosen, PhD

**Position Title & Department:** Director of the Auditory Perceptual Encoding Laboratory, Center for Hearing Research.

**Expertise:** The effects of perceptual encoding of auditory stimuli on speech recognition in children and adults with cochlear implants.

**Allocation:** \$ 48,084

**Description of Goals and Accomplishments:** Dr. Bosen was recruited for the BTNRH Center for Biomedical Research Excellence (COBRE) grant program. Start-up package funds are being used to support collection of preliminary data for an NIH grant application.

**Investigator:** Karla McGregor, PhD

**Position Title & Department:** Director of the Word Learning Laboratory, Center for Childhood Deafness, Learning and Language.

**Expertise:** Improving outcomes for children and adolescents with developmental language disorders.

**Allocation:** \$ 4,194

**Description of Goals and Accomplishments:** Dr. McGregor was recruited as the next Director for the Center for Childhood Deafness, Learning, and Language. Start-up package funds are being used to support collection of preliminary data for an NIH grant application.

**Investigator:** Kaylah Lalonde, PhD

**Position Title & Department:** Director of the Audiovisual Speech Processing Laboratory, Center for Hearing Research.

**Expertise:** Examining the underlying mechanisms for audiovisual speech recognition for children with normal hearing and children with hearing loss.

**Allocation:** \$ 38,631

**Description of Goals and Accomplishments:** Dr. Lalonde was recruited for the BTNRH Center for Biomedical Research Excellence (COBRE) grant program. Start-up package funds are being used to support collection of preliminary data for an NIH grant application.

**Investigator:** Katherine Gordon, PhD

**Position Title & Department:** Director of the Language and Memory Laboratory, Center for Childhood Deafness, Learning and Language.

**Expertise:** Cognitive and linguistic mechanisms that support the process of word learning and language development in children who are typically-developing.

**Allocation:** \$ 34,342

**Description of Goals and Accomplishments:** Dr. Gordon was recruited for the BTNRH Center for Biomedical Research Excellence (COBRE) grant program. Start-up package funds are being used to support collection of preliminary data for an NIH grant application.

**Investigator:** Angela AuBuchon, PhD

**Position Title & Department:** Director of the Memory and Language Laboratory, Center for Hearing Research.

**Expertise:** The development of working memory in children, including describing the emergence of rehearsal strategies and interactions with language development.

**Allocation:** \$ 44,552

**Description of Goals and Accomplishments:** Dr. AuBuchon was recruited for the BTNRH Center for Biomedical Research Excellence (COBRE) grant program. Start-up package funds are being used to support collection of preliminary data for an NIH grant application.

**Investigator:** Gabrielle Merchant, PhD

**Position Title & Department:** Director of the Translational Auditory Physiology and Perception Laboratory, Center for Hearing Research.

**Expertise:** Modelling of the middle ear and studies of the effects of otitis media on perceptual development in children.

**Allocation:** \$ 90,316

**Description of Goals and Accomplishments:** Dr. Merchant was recruited for the BTNRH Center for Biomedical Research Excellence (COBRE) grant program. Start-up package funds are being used to support collection of preliminary data for an NIH grant application.

**Investigator:** Chris Conway, PhD

**Position Title & Department:** Director of the Brain, Learning, and Language Laboratory, Center for Childhood Deafness, Learning, and Language.

**Expertise:** Statistical learning in children who are deaf and hard of hearing.

**Allocation:** \$ 453,768

**Description of Goals and Accomplishments:** Start-up package funds are being used to support purchase of laboratory equipment and collection of preliminary data for an NIH grant application.

## **Research Program & Infrastructure Development**

**Project Title:** Animal Care Facility Core

**Principal Investigator:** Barbara Morley, PhD

**Amount of Funding:** \$ 105,903

**Description of Goals and Accomplishments:** Core support is necessary to maintain adequate staffing levels and uniform *per diem* charges in the Animal Care Facility in spite of fluctuating levels in the use of the facility.

**Project Title:** Electron Microscopy Core

**Principal Investigator:** Ryan McCreery, PhD

**Amount of Funding:** \$ 6,600

**Description of Goals and Accomplishments:** BTNRH relies on electron microscopy core services provided by UNMC, but rates are significantly higher for non-UNMC users than for those at UNMC. This fund covers the difference in costs, giving BTNRH users the equivalent of in-house UNMC rates. This is far less expensive than developing our own core facilities and will be expanded to cover other core services.

**Project Title:** Sensory Neuroscience Center Core Support

**Principal Investigator:** Dominic Cosgrove, PhD

**Amount of Funding:** \$ 28,660

**Description of Goals and Accomplishments:** Funds were allocated for supplemental support of programs and core functions in the Center for Sensory Neuroscience, including the Vestibular Neurogenetics, Cell Signaling and Gene Marker Laboratories and the Genotyping Core.

**Project Title:** Hearing Research Center Core Support

**Principal Investigator:** Lori Leibold, PhD

**Amount of Funding:** \$ 15,477

**Description of Goals and Accomplishments:** Funds are budgeted for supplemental support of programs and core functions in the Center for Hearing Research, where we will be establishing new laboratories to assure success of a competitive renewal application for the Center for Perception and Communication in Children. The money will be used to fund laboratory facilities such as sound rooms that are not included in start-up packages. In this budget period, we purchased a new sound-treated audiometric test suite for a new laboratory space.

**Project Title:** Recruitment Fund  
**Principal Investigator:** Ryan McCreery, PhD  
**Amount of Funding:** \$ 11,159

**Description of Goals and Accomplishments:** A recruitment fund allows us to separate the costs of advertising, moving and interviewing candidates from the costs of individual recruitment packages. The initial costs of recruitment occur well in advance of the start date for a position. Moving costs vary and are generally handled separately from start-up funds.

**Project Title:** Postdoctoral Training  
**Principal Investigator:** Douglas Keefe, PhD  
**Amount of Funding:** \$ 10,371

**Description of Goals and Accomplishments:** The longest running NIH grant at BTNRH provides support for a postdoctoral training program. The postdoctoral fellows contribute in many ways to the success of the research program as a whole. The grant does not support the cost of recruiting postdoctoral fellows and provides minimal support for travel to national meetings. We supplement stipends to make competitive offers. We have therefore created a fund to support those costs.

## Minority Health Research Grants

**Introduction.** We have two projects related to minority recruitment. The first is key to all of our efforts to expand research in areas related to minority health. The second is a study of the problems associated with testing people in English and Spanish.

**Project Title:** Minority Recruitment  
**Investigator:** Karla McGregor, PhD  
**Amount of Funding:** \$ 46,145

**Description of Goals and Accomplishments:** The Minority Recruitment project has continued to be successful in greatly increasing the representation of minority subjects in our NIH-funded research studies. The funds have been used to provide support for translation of consent forms and other documents, interpreters to aid in the consent process, and consultants in the minority communities. The value of this effort was increased by the presence of an NIH-funded Human Subjects Research Core at BTNRH that facilitates recruitment of subjects for all NIH-funded clinical studies. By attaching the Minority Recruitment effort to the existing core function, we have been able to spread the benefit of a proactive minority recruitment program across many laboratories. Typical minority participation in our research studies is well above the representation of minorities in our community.

**Project Title:** Spanish-English Bilinguals  
**Investigator:** Lori Leibold, PhD  
**Amount of Funding:** \$ 24,495

**Description of Goals and Accomplishments:** The goal of this project has shifted to development of an efficient test of speech perception that will allow audiologists to accurately assess functional auditory skills in children who speak English, Spanish or both languages. Speech perception testing is a critically important tool for assessing children's hearing, determining candidacy for sensory devices and guiding language intervention. Over 15% of children in the US are raised in Spanish-speaking homes, but speech perception testing is typically performed in English or omitted altogether, due to a lack of appropriate test materials and a shortage of Spanish-speaking audiologists. NTSBRDF funds are providing partial support for Manual Vincente, a research assistant who is a Spanish-English bilingual. Mr. Vincente helps to recruit bilingual and monolingual Spanish-speaking participants for research studies.