BU Clinical & Translational Science Institute

We received a total of 48 applications and awarded 20 for a combined total of $768,705. Funding was provided by the BU CTSI and funding partners including the Department of Medicine, Henry M. Goldman School of Dental Medicine, and Boston Medical Center. We congratulate all of these outstanding researchers for their efforts in developing novel solutions focused on clinical and translational research.

Funded by BMC

Charlene J. Ong, MD, MPHS

David Greer, MD

Pilot Implementation of an Automated and Personalized Risk Prediction Tool of Life Threatening Mass Effect After Middle Cerebral Artery Stroke

This proposed project builds on existing personalized clinical risk models by examining features that would enable an effective intervention to support clinical decision-making and potentially improve patient care. Such foundational work is instrumental to bridge the gap between model development and successful implementation.

Robyn T. Cohen, MD

Caitlin Neri, MD

Elizabeth S. Klings, MD

SNAP: Supportive Noninvasive Ventilation for Acute Chest Syndrome Prevention for Hospitalized Children with Sickle Cell Disease

The study will conduct a multicenter Hybrid Effectiveness/Implementation trial to test the hypothesis that the use of noninvasive, bi-level positive airway pressure (BiPAP) ventilation as supportive care for hospitalized pediatric patients with sickle cell disease is 1) effective at preventing the development and progression of acute chest syndrome (ACS), and 2) feasible to implement across a broad range of institutions. (Award co-funded with the BU CTSI)

Myriam Abdennadher, MD

Ning Hua, PhD

Toward Noninvasive Imaging Biomarkers of Drug-resistant Epilepsy

The aim is to investigate a novel noninvasive imaging method for the evaluation of blood-brain barrier permeability. Such findings would improve our knowledge about mechanisms of treatment resistance and the care of people with epilepsy.
(Award co-funded with the BU CTSI)

Funded by DOM

Kari R. Gillmeyer, MD

Renda Soylemez Wiener, MD, MPH

A. Rani Elwy, PhD

Elizabeth S. Klings, MD

Seppo T. Rinne, MD, PhD

Characterizing Care Coordination in Pulmonary Hypertension: A Qualitative Study

In this qualitative study of providers and patients, we will identify local contextual factors that enable or impede care coordination at the patient, provider, and health system level. When integrated with quantitative social network science results (to be conducted in parallel), these findings will lay the groundwork for the next stage of our research, in which we will develop and test an evidence-informed intervention to improve PH care coordination among multidisciplinary teams and across healthcare systems.

Shinobu Matsuura, DVM, PhD

Katya Ravid, DSc

Exploring Integrin-Targeting Biologics For Primary Myelofibrosis

This CTSI pilot grant, building on recent preliminary findings of activated receptors on hematopoietic stem cells affected by the JAK2V617F mutation, focuses on novel therapeutic approaches to reducing the burden of the malignant clone in primary myelofibrosis.

Paul J. Maglione, MD, PhD

Evan W. Johnson, PhD

Impact of IgA and IgM upon Nasal Microbiota in Common Variable Immunodeficiency

This project aims to establish cutting-edge approaches to study pulmonary biology in CVID and apply novel bioinformatics strategies in these patients to study complex interactions among microbes and host cells directly in the respiratory tract. This will include evaluating several ways to sample gene expression in the respiratory tract and apply cutting-edge computational approaches to analyzing the complex data derived from these approaches.

Steven Craig Borkan, MD

Novel Urinary Acute Kidney Injury (AKI) Diagnostic for Cardiothoracic Surgery Patients

In collaboration with Dr. Niloo M. Edwards, they will assess the sensitivity and specificity of urinary nucleophosmin (NPM) and phosphorylated-NPM (p-NPM) as non-invasive markers of renal damage in BMC patients undergoing cardiac surgery at high risk for acute kidney injury (AKI).

Funded by GSDM

Yoshiyuki Mochida, DDS, PhD

Evaluation of Genotype and Phenotype in a New Hypomaturation Type of Human Rare Dental Disease, Amelogenesis Imperfecta

This pilot, an exploratory, patient-oriented research project, will allow correlation of the phenotype-genotype of the AI, thereby allowing improved diagnoses and understanding of this difficult-to-restore/treat and devastating disease, as well as provide new knowledge of enamel formation critical for efforts directed at improving the traditional dental treatment. (Award co-funded with the BU CTSI)

Funded by CTSI

Karin Schon, PhD

Allostatic Load and Physical Activity as Modulators of Racial Disparities in Neurocognitive Aging in the Framingham Heart Study Cohort

The goal of the CTSI pilot grant award is to examine whether racial disparities in allostatic load, the physiological 'wear and tear' of the body in response to chronic stress, can account for racial disparities in neurocognitive aging between Black and White older adults and whether physical activity can attenuate these neurocognitive disparities by lowering allostatic load.

Mei A. Elansary, MD, MPhil

Ruth Paris, PhD

A Prospective Mixed Methods Study of Maternal and Child Well-being and Risk of Relapse in the First Year Postpartum

Longitudinal supports and interventions tailored to women and children in the first year postpartum are needed to address high rates of relapse and to promote dyadic well- being. The overarching goal of the First Year Study is to track the experiences of mothers in recovery and their young children in order to identify short- and long-term risk and resiliency factors for further longitudinal study and intervention development.

David Bishop, PhD

Biomagnetic Measurements of Animal Hearts with Novel Magnetic Sensors

Dr. Bishop and Dr. Javor were awarded the Pilot Grant from Boston University's Clinical and Translational Science Institute (CTSI) to detect the magnetic fields from animal hearts. If successful, their work may lead to the development of a non-

contact, radiation-free cardiac diagnostic imaging tool that can increase the confidence of cardiologists during diagnosis and in the safe discharge of patients experiencing chest pain.

Diana M. Ceballos, PhD, MS, CIH

Jennifer Greif Green, PhD

Noah Buncher, MD

Developing Tools for Early Detection and Prevention of Lead Take Home

Lead poisoning in children remains a public health issue nationwide, especially within low- /medium-wage racial/ethnic minority families in construction and environmental justice communities. This pilot study proposes to 1) validate an accessible (easy to self- collect/store/analyze), non-invasive biomonitoring method such as XRF analysis of toenail clippings, and 2) validate a 1-page risk assessment screening to predict the potential for lead exposure in the home considering lead take-home.

Arturo Vegas, PhD

Felicia Chen, MD

Development and In Vivo Efficacy of Small-Molecule IL-4 inhibitors

The compound, called Nico-52, displayed single-digit micromolar affinity and exhibited functional disruption of type II IL-4 binding in cells. This molecule serves as a starting point to develop treatments for IL-4-mediated immunological disorders like asthma where disruption of IL-4 signaling can be clinically beneficial. Here, we propose preliminary structural optimization and in vivo evaluation of our lead compound and our improved analogs in models of allergic inflammation in mice.

Maureen Dubreuil, MD, MSc

S. Reza Jafarzadeh, DVM, MPVM, PhD

Disparities in Time to Diagnosis of Ankylosing Spondylitis

The team will use analytic tools developed by Observational Health Data Sciences and Informatics (OHDSI) to study the time to diagnosis among people with ankylosing spondylitis, a condition that is often associated with 6-8 years from the onset of back/joint pain to diagnosis.

Lindsey Locks, MPH, ScD

Peter C. Rockers, ScD

Jacqueline M. Lauer, PhD

Gut Health, Micronutrient Status, and Linear Growth Among Infants in Lusaka, Zambia

Undernutrition during the critical window from conception until 2 years increases the risk of mortality. This study will analyze biospecimens collected during the baseline assessment from a randomized controlled trial (RCT) that will assess the impact of lipid nutrient supplements (LNS) on stunting in Zambia.

Wendy Kuohung, MD

Nader Rahimi, PhD

Impact of APOL1 Renal Risk Variants on Placental Function and Racial Disparities in Preeclampsia Risk

The goal of this proposal is to elucidate the effects of APOL1 variants on placental invasion and function by 1) defining the expression patterns of APOL1 in placental compartments over gestation, and 2) assessing the effect of APOL1 variants on trophoblast function through gene overexpression studies in trophoblast cell lines.

Hyunjoo Lee, MD, PhD

Ji Yi, PhD

Inverse Spectroscopic Optical Coherence Tomography for the Detection of Corneal Ultra-Structural Changes in keratoconus and Quantification of Corneal Cross-linking

This project aims to use ultra-sensitive imaging with visible light spectrum optical coherence tomography to detect even subtle changes that may help to detect corneas a most risk of keratoconus progression, as well as to measure the changes that occur after treatment of keratoconus with corneal cross-linking. We hope this research will lead to improvements in a clinician's ability to select candidates for cross-linking, and to improve cross-linking outcomes.

Arthur Marvin, PhD

Modeling Developmental Alterations Linked to Congenital Hydrocephalus Using Zebrafish

The proposal is to generate a collection of zebrafish mutant lines carrying mutations in genes linked to congenital hydrocephalus to define the developmental defects in the brain ventricular system associated with the disease. Zebrafish embryos are optically clear; it allows the direct visualization of the entire development of the brain ventricular system, which is not possible in other vertebrate organisms. This study will serve as a valuable resource to define the biology underlying congenital hydrocephalus and find new cures.

Deepa M. Gopal, MD, MS

Jessica L. Fetterman, PhD

Multiomic Phenotyping in Cardiac and Skeletal Muscle in Heart Failure with Preserved Ejection Fraction

This BU CTSI proposal is aimed at utilizing multiomics of cardiac and skeletal muscle tissue in human HFpEF to evaluate the relations of the molecular interactome across tissues and to identify novel therapeutic targets and interventions. This application leverages existing multidisciplinary collaborations to fund preliminary data to strengthen a multi-PI R01 grant submission.

Sheila Russo, PhD

Ehab Billatos, MD

Soft Micro Robotic Needle Steering Mechanisms for Interventional Bronchoscopy

Robotic platforms for interventional bronchoscopy, currently available on the market, lack distal dexterity and the capability to achieve sharp turns. This pilot grant will focus on novel robotic actuation mechanisms to steer the tip of biopsy tools and enable tissue sampling in difficult to reach areas of the lung.

For information about our awardees and their Integrated Pilot Grant Award Projects

Visit Our Website

Boston University – Clinical and Translational Science Institute