2017 Clinical and Translational Research Funding Program Awardees

Funding Source	Principal Investigator	Dept/Division	Project Period	Proposal Title	Description
FBJH	Michael Avidan, MD	Anesthesiology	6/1/17-5/31/18	Anesthesiology Control Tower: Feasibility Assessment to Support Translation	We are developing an Anesthesiology Control Tower (ACT), modeled on an air traffic control tower for a busy airport, which will monitor patients undergoing surgery and provide support to their anesthesiologists. This study will identify possible barriers to the creation of this ACT and will ensure that the ACT is useful to the clinicians in our hospital. We anticipate that the ACT will enhance the care of patients and improve their outcomes.
ICTS	Dennis Barbour, MD, PhD	Biomedical Engineering	7/1/17-6/30/18	Smart Hearing Diagnostics	The most common test of hearing has been conducted the same way for decades. We are harnessing the power of modern machine learning in order to provide clinicians with more information about a patient's hearing in less time. This new smart test will not only directly benefit patients having their hearing tested, but will also serve as the foundation for more sophisticated future diagnostic tests not yet conceived.
FBJH	William Chapman, MD	Surgery: General	6/1/17-5/31/18	Prognostic Indicators of Liver Transplant Outcomes	Liver transplant is the only effective treatment for chronic liver diseases, but not enough organs are available. Currently, the decision to use and organ is based on clinical judgements, without the aid of proven tests. The goal of our project is to develop better tests to tell us how well an organ is likely to function after the transplantation. We expect that this will help surgeons utilize more livers and select better organs for transplantation.
FBJH	Camryn Chrisman Robbins, MD, MPH	Obstetrics & Gynecology	6/1/17-5/31/18	Novel Approach to Improving Lactation Support with Mobile Health Technology	This is a randomized trial of use of a mobile health tool (EpxBreastfeeding) aimed at improving breastfeeding adherence and duration among recent mothers who self identify as motivated to breastfeed. As a result of text communication and expedited coaching through common breastfeeding challenges, we expect more mothers in our study arm will continue breastfeeding through the first 6 months after giving birth.
FBJH	Gregory Day, MD, MSc	Neurology	6/1/17-5/31/18	Improving Diagnosis Of Atypical Alzheimer Disease Using Tau-PET Imaging	Alzheimer disease (AD) may present with visual problems (progressive posterior cortical dysfunction), language difficulties (logopenic variant), or forgetfulness (amnestic AD). This study will use PET-imaging technology to measure AD brain changes in patients with different AD presentations. These findings will inform how AD brain changes cause specific symptoms, and will be used to improve the diagnosis of patients with early symptoms due to AD.
ICTS	Brian DeBosch, MD, PhD	Pediatrics: Gastroenterology	7/1/17-6/30/18	Hepatic Starvation Responses Induced by Trehalose in Mitigating Hepatic Steatosis	Non-alcoholic fatty liver disease (NAFLD) is the most common chronic liver disease, and a leading cause of cirrhosis. We defined the liver's fasting response as a target process to treat NAFLD, and we identified a drug, trehalose, that activates this response to reverse NAFLD. Our proposal defines the safety and mechanisms whereby trehalose exerts these effects in mice and human hepatocytes as a prelude to using trehalose in patients with NAFLD.
ICTS	Christopher Dy, MD, MPH	Orthopaedic Surgery	7/1/17-6/30/18	A Two State Comparison of Orthopedic Utilization Following Medicaid Expansion	Some states expanded their Medicaid programs under the Affordable Care Act. It is currently unknown whether this increase in people having Medicaid insurance actually resulted in easier and increased access to care. In order to answer this question, we will compare utilization of common orthopedic procedures before and after Medicaid expansion in Illinois, using Missouri as a comparison state since it did not expand its Medicaid program.
ICTS	Melanie Fields, MD, MSCI	Pediatrics: Hematology/Oncology	7/1/17-6/30/18	Cerebral Oxygen Metabolism and Functional Connectivity in Sickle Cell Disease	Children with sickle cell disease face progressive cognitive decline. We will obtain MRI data and cognitive testing to understand differences in the networks of brain activity between children with sickle cell disease and healthy children, if an increase in metabolic stress in the brain affects networks of brain activity, and lastly if there is a relationship between metabolic stress in the brain, networks of brain activity and cognition.

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ICTS	Jane Garbutt, MBCHB, MHS	Pediatrics: Allergy, Immunology and Pulmonary Medicine	7/1/17-6/30/18	Development of an Examroom-To-Newsroom Strategy to Enhance Firearm Safety	The risk of fatal and non-fatal firearm-related injuries and suicide for children and adolescents increases in homes where firearms are accessible. In this project we will develop messages about firearm safety and safe firearm storage that are acceptable to parents and healthcare providers. Future research will test if providers will use these messages and if parents respond by ensuring that firearms their child may access are safely stored.
FBJH	Cynthia Herrick, MD	Department of Medicine: Endocrinology, Metabolism and Lipid Research	6/1/17-5/31/18	Post-Partum Diabetes Screening Among Low Income Women with Gestational Diabetes	High blood sugar first discovered during pregnancy (gestational diabetes) substantially increases risk for type 2 diabetes later in life. We will use interviews and focus groups to 1) understand unique challenges that low income women face in getting screened for diabetes after pregnancy and 2) assess patient acceptance of proposed intervention(s) to improve screening for diabetes after pregnancy in this high risk population.
FBJH	Stacey House, MD, PhD	Department of Medicine: Emergency Medicine	6/1/17-5/31/18	Improving Heart Attack Diagnosis with Electrical Imaging	Every 43 seconds, an American suffers a heart attack. Unfortunately, 70% of heart attacks cannot be diagnosed immediately, leading to a delay in treatment. This project tests a novel method of diagnosing heart attacks by generating high-resolution, patient-specific electrical maps. We anticipate that this technique will permit more rapid heart attack diagnosis, more timely treatment and thus reduce morbidity and mortality.
ICTS and MU	Trupti Joshi, PhD	MU-Health Mgmt & Informatics	7/1/17-6/30/18	Multi-Omics Informatics Methodologies for Biomarker Discovery in Endometriosis	Endometriosis is a common disorder encountered by many women, which is associated with chronic pain. This project aims at understanding the causes of endomtriosis by studying genomic samples from various groups on women with different disease stages and history. Informatics approaches to combine gene expression and methylation information will provide a better identification of biomarkers for early diagnosis and treatments.
FBJH	Shannon Lenze, PhD	Psychiatry	6/1/17-5/31/18	Improving Perinatal Depression Outcomes With Mobile Technology	Over half of women with pre- and postnatal depression go unrecognized and untreated. Mobile health technology can overcome barriers to screening and clinical management; however, there is little evidence to guide implementation. This project examines the feasibility and acceptability of mobile health technology for improving screening and management of prenatal depression in a low-income population at high risk for adverse health outcomes.
FBJH	Julie Margenthaler, MD	Surgery: General	6/1/17-5/31/18	Shave Margins In Breast Conservation Therapy (SMART)	Positive surgical margins after breast-conserving surgery for breast cancer significantly increase the risk of local recurrence. This pilot study will evaluate the feasibility of a randomized trial investigating the impact of cavity shave margins on the rate of positive margins, aesthetic outcomes, and quality of life. A novel goggle system using nearinfrared fluorescence will be implemented in all patients to assess margins intraoperatively.
FBJH	Scott Micek, PharmD	STLCOP: Pharmacy Practice	6/1/17-5/31/18	Antidiabetes Medication Utilization and Outcomes Following Bariatric Surgery	Careful adjustment of antidiabetes medications (ADM) after bariatric surgery is necessary to prevent adverse drug events that may occur with restoration of normal physiologic processes. This project seeks to identify ADM prescribing patterns after surgery and predictors for ADM cessation. This information will be used to determine how medication management following bariatric surgery influences the risk of drug-induced hypoglycemia.
ICTS	Muhammad Farooq Rai, DVM, MSCI, PhD	Orthopaedic Surgery	7/1/17-6/30/18	Novel Microgel Delivery Device for Sustained Release of PRP To Treat OA	Osteoarthritis is a debilitating joint disease that impacts 5.6 million people in the U.S. Available treatments focus mostly on pain alleviation. Our goal is to develop an injectable treatment of microspheres loaded with bioactive molecules called platelet rich plasma. We hypothesize that the sustained release of these molecules will modify inflammatory response, stop degeneration and initiate regeneration of cartilage, and restore joint health.

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FBJH	Alex Ramsey, PhD	Psychiatry	6/1/17-5/31/18	Reducing Disparities in Hospital Prescribing of Smoking Cessation Pharmacotherapy	Despite knowledge of effective medications for smoking cessation treatment, fewer than 1 in 4 hospitalized patients who smoke are prescribed these medications. Our data also highlight potential racial disparities in prescribing smoking cessation medications, which motivates our stakeholder-driven approach to model and pilot test sustainable solutions to facilitate the implementation of smoking cessation treatment for all patients who smoke.
FBJH	Marilyn Schallom, PhD, RN	BJH-Patient Care Services	6/1/17-5/31/18	Measuring Bladder Volumes with Ultrasound and Bladder Scanning in the ICU	A urinary tract infection from a urinary catheter is a leading cause of healthcare-associated infection. An accurate measurement of bladder volumes in ICU patients is needed to remove urinary catheters sooner. The purpose of this study is to compare the accuracy of two non-invasive ways to measure bladder volumes.
ICTS *and* MU	Kamlendra Singh, PhD	MU-Molecular Microbiology and Immunology	7/1/17-6/30/18	Development of Extremely Potent Cross-Clade HIV-1 Reverse Transcriptase Inhibitor	More than 85% of HIV patients live in low- and middle-income countries (LMICs). Many patients in these countries cannot afford medication on a regular basis. Also, the medication has different effectiveness depending on HIV subtype. Hence, potent, broad-spectrum, long-lasting drugs are needed. EFdA has shown promise of fulfilling this need in early clinical trials. We will evaluate the effect of EFdA on HIV subtypes that are in LMICs.
ICTS	Christopher Sturgeon, PhD	Department of Medicine: Hematology	7/1/17-6/30/18	Characterization of Antitumor NK Cells Using Human Pluripotent Stem Cells	Natural killer (NK) cell infusion can cure some, but not all cancers. To understand why some patients respond to NK cells and others don't, we need a better understanding of NK cell biology. We propose to use human pluripotent stem cells as a unique source of NK cells to help us understand what renders some better or worse at destroying cancerous cells. We can then use this understanding in anticancer treatment strategies.
ICTS	Chad Sylvester, MD, PhD	Psychiatry	7/1/17-6/30/18	A Novel Mechanism-Based Treatment for Pediatric Anxiety Disorders.	Anxiety disorders are a common, impairing problem for many children. Unfortunately, even the best available treatments often do not work. This study tests a new treatment for anxiety disorders in children: a computer game that children play for 15 minutes at a time, twice per week, for 4 weeks. The computer game is designed to teach children to stay focused on their own goals and not be distracted by extraneous information.
ICTS *and* MU	Steven Van Doren, PhD	MU-Agriculture Biochemistry	7/1/17-6/30/18	Launching Diagnosis of Asthma In Children Using NMR Metabolomics	Asthma is very difficult to diagnose in young kids where it develops. A promising way to diagnose asthma will be evaluated first in adults, then in children, and finally in children at high risk of asthma. The promising approach relies on finding diagnostic patterns in a metabolic snapshot measureable in breath or blood.
ICTS	Qin Yang, MD, PhD	Radiation Oncology	7/1/17-6/30/18	Developing a Novel Reprogramming Strategy for Brain Tumor Treatment	Glioblastoma multiforme (GBM) is the most common malignant brain tumor and the outcome for patients is poor. We found mTOR and ROCK kinase inhibitors are sufficient to convert GBMs into neurons. Currently these inhibitors are used as anti-tumor drugs in patients and this method is easily to move to clinical trials. In this proposal, we will use these inhibitors to convert GBM cells into neurons in mice and develop a novel strategy to treat GBM.
ICTS	Melanie Yarbrough, PhD	Pathology and Immunology	7/1/17-6/30/18	Characterizing the Urobiome of MSM Using Enhanced Culture-Based Methods	Microbial communities protect humans from invading pathogens, such as those that cause UTI. The proposed research will identify novel pathogens responsible for UTI and characterize the role of the urinary microbiota in the protection against or predisposition to urogenital infections in MSM. These findings may increase our understanding of the development of urologic disease and improve diagnostic methods for the detection of uropathogens.