

Ivy Biomedical Innovation Fund Projects

(Updated March 2023)

2022

Blockade of the Sphingosine 1-phosphate (S1P) Pathway for Chronic Kidney Disease Therapy

Kevin Lynch, PhD, Pharmacology
Mark Okusa, MD, Nephrology
Webster Santos, PhD, Chemistry, Virginia Tech

Development and evaluation of StrainNET 2.0 for long-axis analysis and generalization to echocardiography

Fred Epstein, PhD, Biomedical Engineering
Amit R. Patel, MD, Cardiovascular Medicine and Radiology

RENEWAL: Targeting AVIL in Rhabdomyosarcoma

Hui Li, PhD, Pathology
Michael Hilinski, PhD, Chemistry
Benjamin Purow, MD, Neurology

RENEWAL: Human translational validation of an immunotherapy for Pulmonary Fibrosis

Tom Barker, PhD, Biomedical Engineering
Imre Noth, MD, Pulmonary Medicine

RENEWAL: Next Chapter on Lead Candidate Antimicrobial Peptides

Molly Hughes, MD, Infectious Disease & International Health
Matthew Crawford, PhD, Infectious Disease & International Health
Lawrence Lum, MD DSc, Hematology & Oncology
Rachel Letteri, PhD, Chemical Engineering

2021

RENEWAL: Targeting AVIL in Glioblastoma

Hui Li, PhD, Pathology
Michael Hilinski, PhD, Chemistry
Benjamin Purow, MD, Neurology

Interictal dynamic FDG-PET in focal epilepsy

Mark Quigg, MD, Neurology
Bijoy Kundu, PhD, Radiology

Development of Novel Nano Romidepsin Therapeutic for the Treatment of Cancer

Mark Kester, PhD, Pharmacology
Tom Loughran, MD, Medicine

Human translational validation of an immunotherapy for Pulmonary Fibrosis

Tom Barker, PhD, Biomedical Engineering
Imre Noth, MD, Pulmonary Medicine

RENEWAL: Squid Beak-Inspired Implant for Total Wrist Replacement

Ji Ma, PhD, Material Science
Brent DeGeorge, MD, Plastic Surgery

2020

RENEWAL: Development of Visual fields Rapid Assessment Device (VRAD)

Nina J. Solenski, MD, Neurology
Karen S. Rheuban, MD, Center for Telehealth
Arjun Dirghangi, MD, Ophthalmology
Jeffrey Ashe Allende, Project Manager, Telehealth Operations

RENEWAL: Development of Positive Sperm Test Kit for Clinicians

Jeffrey Lysiak, PhD, Urology
Kodi Ravichandran, PhD, Microbiology Immunology
Claudia Rival, PhD, Urology
Ryan Smith, MD, Urology

Scott Purcell, MD, Reproductive Medicine and Surgery Center of Virginia
George Prpich, PhD, Chemical Engineering

Squid Beak-Inspired Implant for Total Wrist Replacement

Ji Ma, PhD, Material Science
Brent DeGeorge, MD, Plastic Surgery

Improved cardiac MRI feature tracking by learning from displacement-encoded imaging

Fred Epstein, PhD, Biomedical Engineering
Christopher Kramer, MD, Cardiovascular Medicine and Radiology
Michael Salerno, MD, Cardiovascular Medicine and Radiology

(Pilot) NanoPlatyx: a Non-invasive Management of Peripheral Arterial Disease (PAD) and Post Intervention Failure

Bowen Wang, Department of Surgery,
K. Craig Kent, Department of Surgery, CEO UVA Health & Executive VP for Health Affairs
Lian-Wang Guo, Molecular Physiology and Biological Physics

2019

RENEWAL: Combating Multidrug Resistant Bacteria Using Chemokine-Derived Antimicrobial Peptide

Molly Hughes, MD, Infectious Disease & International Health
Matthew Crawford, PhD, Infectious Disease & International Health
Lawrence Lum, MD DSc, Hematology & Oncology
Rachel Letteri, PhD, Chemical Engineering

RENEWAL: Targeting AVIL in Glioblastoma

Hui Li, PhD, Pathology
Michael Hilinski, PhD, Chemistry
Benjamin Purow, MD, Neurology

RENEWAL: Preclinical Testing of Nav1.6 Selective Sodium (Na) Channel Antagonists for the Suppression of Epileptic Seizures and the Prevention of SUDEP

Manoj K. Patel, PhD, Anesthesiology
Howard Goodkin, MD, Pediatric Neurology

Development of Visual fields Rapid Assessment Device (VRAD)

Nina J. Solenski, MD, Neurology
Karen S. Rheuban, MD, Center for Telehealth
Arjun Dirghangi, MD, Ophthalmology
Jeffrey Ashe Allende, Project Manager, Telehealth Operations

Development of Positive Sperm Test Kit for Clinicians

Jeffrey Lysiak, PhD, Urology
Kodi Ravichandran, PhD, Microbiology Immunology
Claudia Rival, PhD, Urology
Ryan Smith, MD, Urology
Scott Purcell, MD, Reproductive Medicine and Surgery Center of Virginia
George Prpich, PhD, Chemical Engineering

2018

Development of an inhibitor of myeloperoxidase (MPO) for the treatment of delayed after aneurysmal subarachnoid hemorrhage

Jose Javier Provencio, MD, Neurology
Danny Theodore, PhD, Neurology
Aminata Coulibaly, PhD, Neurology

RENEWAL: Targeting AVIL in Glioblastoma

Hui Li, PhD, Pathology
Michael Hilinski, PhD, Chemistry
Benjamin Purow, MD, Neurology

RENEWAL: Cady Ventilator Vest

Tricia Cady, RN, Neonatal Intensive Care Unit
Jonathan Swanson, MD, Pediatrics, Medical Director-Neonatal Intensive Care Unit
Rachael Nauman, RN, Neonatal Intensive Care Unit

Timothy Hicks, RRT, Neonatal Intensive Care Unit

Improving End Stage Renal Disease outcomes through a predictive calcimimetic dosing algorithm

Brendan Bowman, MD, Medicine-Nephrology
Donald Brown, PhD, Systems & Information Engineering
Benjamin Lobo, PhD, Systems & Information Engineering

RENEWAL: Combating Multidrug Resistant Bacteria Using Chemokine-Derived Antimicrobial Peptide

Molly Hughes, MD, Infectious Disease & International Health
Matthew Crawford, PhD, Infectious Disease & International Health
Lawrence Lum, MD DSc, Hematology & Oncology
Rachel Letteri, PhD, Chemical Engineering

Therapeutic Ultrasound for the Treatment of Degenerative Mitral Stenosis

Austin Robinson MD, Cardiovascular Medicine
John Hossack, PhD, Biomedical Engineering
Chris Kramer, MD, Radiology and Cardiovascular Medicine

2017

Combating Multidrug Resistant Bacteria Using Chemokine-Derived Antimicrobial Peptide

Molly Hughes, MD, Infectious Disease & International Health
Borna Mehrad, PhD, University of Florida School of Medicine

VADStent

J Hunter Mehaffey, MD, Surgery
Mark Roeser, MD, Surgery
Gorav Ailawadi, MD, Surgery
Irving L Kron, MD, Surgery
David Chen, MBA, Biomedical Engineering
Jeffery Holmes, PhD, Biomedical Engineering
John A Kern, MD, Surgery

CADY Ventilator Vest

Tricia Cady, RN, Neonatal Intensive Care Unit
Jonathan Swanson, MD, Pediatrics, Medical Director-Neonatal Intensive Care Unit
Rachael Nauman, RN, Neonatal Intensive Care Unit
Timothy Hicks, RRT, Neonatal Intensive Care Unit

RENEWAL: Preclinical Testing of Nav1.6 Selective Sodium (Na) Channel Antagonists for the Suppression of Epileptic Seizures and the Prevention of SUDEP

Manoj K. Patel, PhD, Anesthesiology
Howard Goodkin, MD, Pediatric Neurology

A Radiation Therapy Decision Support System

Tyler Watkins, PhD, Radiological Physics
Timothy Showalter, MD, Radiation Oncology
Jeffrey Siebers, PhD, Radiological Physics

Targeting AVIL in Glioblastoma

Hui Li, PhD, Pathology
Michael Hilinski, PhD, Chemistry
Benjamin Purow, PhD, Neurology

2016

RENEWAL: Small molecule inhibitors of CBF β -SMMHC for the treatment of inv(16) leukemia

John Bushweller, PhD, Molecular Phys. and Biological Physics

**Suppressing the Coupling Water Bath for Improved Guidance in Focused Ultrasound Surgery
Preclinical validation and clinical planning studies for self-expanding hydrogel for pelvic brachytherapy**

Craig Meyer and Steven Allen, PhD, Biomedical Engineering
Jeff Elias, MD, Neurosurgery

RENEWAL: Preclinical testing of Nav1.6 selective Sodium Channel Antagonists for the Suppression of Epileptic Seizures and the Epileptic Seizures Prevention of SUDEP

Manoj Patel, PhD, Anesthesiology

Howard Goodkin, MD, Pediatric Neurology

RENEWAL: Small molecule inhibitors of CBF β /RUNX for the treatment of basal-like (triple negative) breast cancer

John Bushweller, PhD, Molecular Physiology and Biological Physics

RENEWAL: Development of a small molecule PTP4A3 inhibitor for the treatment for ovarian cancer

John Lazo, PhD, Pharmacology & Chemistry

Elizabeth Sharlow, PhD, Pharmacology

Charles Landen, Jr, MD, Oncology

Peter Wipf, PhD, Chemistry University of Pittsburgh

Preclinical validation and clinical planning studies for self-expanding hydrogel for pelvic brachytherapy: a novel method for vaginal packing and customized radiation therapy

Tim Showalter, MD, MPH, Radiation Oncology

Bruce Libby, PhD, Medical Physicist, Radiation Oncology

2015

Development of a small molecule PTP4A3 inhibitor for the treatment for ovarian cancer

John Lazo, PhD, Pharmacology & Chemistry

Elizabeth Sharlow, PhD, Pharmacology

Charles Landen, Jr, MD, Oncology

Peter Wipf, PhD, Chemistry University of Pittsburgh

Exploring the utility of ⁶⁴Cu-mannose coated liposomes as a positron emission tomography (PET) diagnostic imaging agent for traumatic brain injury

James Stone, MD, PhD, Radiology and Medical Imaging

Stuart Berr, PhD, Radiology and Medical Imaging

Jiang He, PhD, Radiology and Medical Imaging

Small molecule inhibitors of CBF β /RUNX for the treatment of basal-like (triple negative) breast cancer

John Bushweller, PhD, Molecular Physiology and Biological Physics

Kevin Janes, PhD, Biomedical Engineering

Kristen Atkins, MD, Pathology

RENEWAL: Small molecule inhibitors of CBF β -SMMHC for the treatment of inv (16) leukemia

John Bushweller, PhD, Molecular Physiology and Biological Physics

Recombinant Bacterial HIV Membrane-Proximal External Region Vaccine

Steven Zeichner, MD, PhD, Pediatrics and Microbiology, Immunology, and Cancer Biology

Wen Yuan, PhD, Infectious Diseases and International Health

Preclinical testing of Nav1.6 selective Sodium Channel Antagonists for the Suppression of Epileptic Seizures and the Prevention of SUDEP

Manoj Patel, PhD, Anesthesiology

RENEWAL: Targeting the hemoglobin α /eNOS complex for novel anti-hypertensive

Brant Isakson, PhD, Molecular Physiology and Biological Physics

Linda Columbus, PhD Chemistry

2014

Small molecule inhibitors of CBF β -SMMHC for the treatment of inv (16) leukemia

John Bushweller, PhD, Molecular Physiology and Biological Physics

Evaluating the prognostic and therapeutic potential of growth-differentiation factor 11 for basal-like breast cancer

Kevin Janes, PhD, Biomedical Engineering

Kristen Atkins, MD, Pathology

Development of an anti-oxidized phospholipid neutralizing antibody as an atheroprotective therapeutic agent

Olga Cherepanova, PhD, Cardiovascular Research Center
Gary Owens, PhD, Molecular Physiology and Biological Physics

RENEWAL: Polarized Nuclear Diagnostics: A new modality for molecular imaging and spectroscopy

Gordon Cates, PhD, Radiology
Wilson Miller, PhD, Physics

Design of New Generation of Reagents for the Detection and Strain-Typing of the EBOLA virus

Zygmunt Derewenda, PhD, Molecular Physiology and Biological Physics
Daniel Engel, PhD, Microbiology, Immunology, Cancer Biology

Targeting the hemoglobin α /eNOS complex for novel anti- hypertensive

Brant Isakson, PhD, Molecular Physiology and Biological Physics
Linda Columbus, PhD, Chemistry

High-throughput screen for small-molecule inhibitors of autophagosome-lysosome fusion with therapeutic potential for treating cancer

Christopher Stroupe, PhD, Molecular Physiology and Biological Physics

2013

A Natural metabolite, 2-hydroxyestradiol as a lead compound for broad-spectrum, safe and effective chemotherapy agent development

Hui Li, PhD, Pathology
Lin Pu, PhD, Chemistry
Sanford Feldman, PhD, Comparative Medicine

In Vivo Performance Testing of a Previously Developed NIRS Device to Monitor the Mitochondrial Redox and Tissue Oxygen State of Surgical Anastomotic Sites and Mucosal Tissue

Robert Thiele, MD, Anesthesiology/BME
James Isbell, MD, Surgery

Improving the Efficacy and Safety of Ischemic Stroke Therapy using Optimally Matched Ultrasound and Microbubbles to Catalyze tPA-based Clot Erosion

John Hossack, PhD, Biomedical Engineering
Sasha Klibanov, PhD, Cardiovascular Division
Michael Lawrence, PhD, Biomedical Engineering
Kevin Lee, PhD, Neuroscience
Max Wintermark, MD, Neuroradiology

Development of a gene-signature-based prognostic test for pancreatic cancer

Todd Bauer, MD, Surgery
Thomas Parsons, PhD., Microbiology
Jae Lee, PhD, Biostatistics
Jason Papin, PhD, Biomedical Engineering

Ultrasound treatment for the prevention of acute kidney injury

Mark Okusa, MD, Medicine
Joey Gigliotti, PhD, Medicine
John Hossack, PhD, Biomedical Engineering
Diane Rosin, PhD, Pharmacology

Imaging nuclear tracers without a gamma camera: a new modality for molecular imaging

Gordon Cates, PhD, Physics and Radiology
Wilson Miller, PhD, Radiology and Biomedical Engineering

IND-enabling studies for Lacipep, a topical first-in-class treatment of dry eye that addresses cause

Gordon Laurie, PhD, Cell Biology

Novel lipid nanoparticle-based fluorescence detection for a new generation of high-sensitivity immunoassays

Leon Farhi, PhD, Endocrinology and Metabolism
Bruce Gaylann, PhD, Endocrinology and Metabolism
Sasha Klibanov, PhD, Cardiology

Development of a disposable microfluidic chip platform driven by a handheld CD player for rapid WBC counting and protein measurement direct from whole blood.

James Landers, PhD, Chemistry
D.M. Haverstick, PhD, Pathology
Gavin Garner, PhD, Mechanical Engineering

Design of an interactive virtual patient and provider platform for interprofessional teamwork objective structured clinical examinations.

Valentina Brashers, MD, Nursing
Laura Barnes, PhD, Systems and Information Engineering

2012

Developing a Micavibrio Aeruginosavorous as a Living Antibiotic. An antibiotic therapy against a highly drug-resistant bacterium that frequently causes pneumonia in cystic fibrosis patients

Martin Wu, PhD, Biology
Ian Glomski, PhD, Microbiology
F. Heath Damron, PhD, Microbiology

Augmenting Erythropoiesis. A therapeutic for stimulating red blood cell production in patients living with anemia

Thomas Braciale, PhD, Pathology and Microbiology
Taeg Kim, PhD, Pathology and Microbiology

A Method to Assay and Block Transfer RNA Fragments. A test for identifying transfer RNA fragments associated with blood, lung, and potentially other cancers

Anindya Dutta, PhD, Biochemistry and Molecular Genetics
John Chan, MD, Pathology, University of Nebraska
Peter Mouritzen, PhD, Vice President of Research, Exiqon

Pre-Animal Development of a Near Infrared Spectroscopy Device. A device for determining the health of mucosal tissue during major operations and critical illness

Robert H. Thiele, MD, Anesthesiology/Biomedical Engineering
James Isbell, MD, Surgery

2011

Commercialization of a Low-Cost “Point-and-Shoot” Camera for Screening Retinal Photography. An inexpensive camera for use in primary care clinics to screen the retinas of diabetics

Paul Yates, MD, Ophthalmology

Inductively Coupled Implants for Direct Spinal Cord Stimulation. A treatment for medication-resistant chronic pain

Marcel Utz, PhD, Mechanical and Aerospace Engineering and Chemistry
George Gillies, PhD, Mechanical and Aerospace Engineering, Biomedical Engineering, Physics
Matthew Howard III, MD, Neurosurgery

Novel microRNA-184 Targeting MFTAI in CD4 T-Cell Product for cGVHD Therapy. A stem-cell therapy for complications arising from bone-marrow transplants

Mary Laughlin, MD, Hematology and Oncology
Yimin Wu, MD, Hematology and Oncology

Gallbladder Extraction Retractor. A retraction device for gallbladder removal during laparoscopic surgery

Craig Slingluff, MD, Surgery
William Guilford, PhD, Biomedical Engineering
Joshua Judge, MD, Surgery

Percutaneous Endoscopic Gastrostomy Safety Break Device. A device to reduce occurrences of accidental dislodgement of feeding tubes

Laura Rosenberger, MD, Surgery
Brian Williams, MD, Neurosurgery
Phillip Brudnicki, PhD, Materials Science
Robert Sawyer, MD, Surgery

Preclinical Testing of a Novel EDO-66 Formulation by Nebulization for Pulmonary Emphysema Therapy

Yun Michael Shim, MD, Pulmonary and Critical Care
Mikell Paige, PhD, Covenant Therapeutics LLC

2010

Subxyphoid Access System for Use with the Epicardial Tool Kit

George Gillies, PhD, Mechanical and Aerospace Engineering, Biomedical Engineering
Srijoy Mahapatra, MD, Cardiology
Peter Pollak, MD, Cardiovascular Medicine

A Biomarker of B Lymphocyte Atheroprotection in Diabetes

Coleen McNamara, MD, Cardiovascular Medicine
Angela Taylor, MD, Cardiovascular Medicine
Patrick Concannon, PhD, Biochemistry and Molecular Genetics

Sphingosine Kinase Inhibitors

Kevin Lynch, PhD, Pharmacology
Tim Macdonald, PhD, Chemistry

Non-dilating retina camera to screen for retinopathy in diabetic patients

Paul Yates, MD, Ophthalmology, Biomedical Engineering

Microfluidic Flow Meters for In-vivo Monitoring of Cerebrospinal Fluid Shunts

Marcel Utz, PhD., Mechanical and Aerospace Engineering and Chemistry
John Jane, MD, Neurosurgery

Non-invasive microfluidic flow meter to monitor shunt malfunctions in patients with hydrocephalus

John Lach, Ph.D, Electrical and Computer Engineering
Maite Brandt-Pearce, PhD, Electrical and Computer Engineering
Jeffrey Barth, PhD, Donna Broshek, PhD, Jason Freeman, PhD, Psychiatry & Neurobehavioral Sciences

2009

Development of radiological imaging tools for early diagnosis of Alzheimer's disease

David Geldmacher, MD, Neurology
Mario Geysen, PhD, Chemistry
George Bloom, PhD, Biology

Activation of red blood cell formation under iron-restricted conditions with isocitrate

Andy Goldfarb, MD, Pathology
Jason Chroma, PhD, Chemistry

Treatment of epilepsy with deep brain stimulation using high-speed adaptive feedback

Jack Hudson, PhD, Chemical Engineering
Jaideep Kapur, MD, Neurology

Novel system for dual modality surgical guidance

Craig Slingluff, MD, Surgery
Mark Williams, PhD, Radiology

Design of an inexpensive portable retina camera for retinopathy of prematurity screening

Paul Yates, MD, Ophthalmology