

Life Sciences

DISCOVERY FUND

The Life Sciences Discovery Fund supports innovative research and development in Washington state to promote life sciences competitiveness, enhance economic vitality, and improve health and health care. The following are awarded grants in the Fund's portfolio of investments to benefit Washington and its citizens. For more details on these grants, visit www.lsdfa.org.

Commercialization, PreCede, and Proof of Concept Grant Awards support small-scale, highly targeted studies that move technologies along the pathway to the marketplace and enhance the competitiveness of early-stage companies for private equity investment.

2009

Philip Fleckman, University of Washington

Award Amount: \$150,000

Cutaneous Healing into Porous Biomaterials Impedes Infection

FOCUS: To test the ability of a percutaneous catheter to resist infection

ANTICIPATED IMPACT: Reduced morbidity and mortality in patients with skin-penetrating devices and commercialization of the novel device by a Washington-based company

Cecilia Giachelli, University of Washington

Award Amount: \$150,000

Bioengineered Osteopontin to Treat Vascular Calcification or "Hardening of the Arteries"

FOCUS: To test the ability of an optimized osteopontin molecule to inhibit or reverse calcium deposition in blood vessels

ANTICIPATED IMPACT: Commercialization of a new drug to extend survival in individuals with heart disease

Kenneth Schenkman, University of Washington

Award Amount: \$150,000

Noninvasive Clinical Monitor for Early Detection of Shock

FOCUS: To test a new instrument for the diagnosis and monitoring of shock

ANTICIPATED IMPACT: Improved outcomes in trauma patients and formation of a new start-up company to commercialize the shock monitor

2010

Julie Brown, Seattle Children's Hospital

Award Amount: \$150,000

A Randomized Clinical Trial of Pediatric Lumbar Puncture Success using The Compass, a Compact Quantitative Pressure Transducer

FOCUS: To test if a pressure transducing device increases the success of lumbar puncture

ANTICIPATED IMPACT: Greater success in lumbar punctures

Jane Burns, Seattle Children's Hospital

Award Amount: \$150,000

Non-invasive Detection of *Pseudomonas aeruginosa* in the Exhaled Breath of Individuals with Cystic Fibrosis

FOCUS: To adapt a novel air sampling device to collect exhaled breath for non-invasive detection of lung infections

ANTICIPATED IMPACT: Enhanced ability to detect poorly diagnosed lung infections (particularly in children who cannot produce sputum)

Rodney Ho, University of Washington

Award Amount: \$149,999

Supplement Amount: \$150,000

Gadolinium-Lipid Nanoparticles for More Effective and Safe Medical Diagnosis with MRI

FOCUS: To test the safety and pharmacology of a novel magnetic resonance imaging (MRI) contrast agent

ANTICIPATED IMPACT: A safer MRI contrast agent with improved imaging characteristics

Barry Lutz, University of Washington

Award Amount: \$149,461

An Auto-regulated Externalized Cerebrospinal Fluid Drainage System for Improved Control, Safety, and Patient Mobility in Neurosurgery Patients

FOCUS: To develop a prototype of an improved externalized cerebrospinal fluid drainage system and test it under simulated patient conditions

ANTICIPATED IMPACT: The new drainage system promises greater patient mobility and improved safety, and requires less staff time to manage

Harlan Robins, Fred Hutchinson Cancer Research Center

Award Amount: \$150,000

High-Throughput Sequencing of T-Cell Receptors

FOCUS: To scale up a high-throughput T-cell receptor gene sequencing service to expand access and enable better diagnostics and treatments for immune system conditions

ANTICIPATED IMPACT: Enhanced competitiveness of the collaborating in-state company and the immunology research community, which may improve the diagnosis and treatment of immune-related conditions

Eric Seibel, University of Washington

Award Amount: \$150,000

Laser Imaging for Early Caries Detection and Cost-Effective Oral Health

FOCUS: To develop a low-cost imaging system for early detection of tooth decay

ANTICIPATED IMPACT: An early-warning system for tooth decay that will enable more cost-effective management and improved dental health

Patrick Stayton, University of Washington

Award Amount: \$150,000

Next Generation High Speed Immunoassay

FOCUS: To improve the speed and sensitivity of immunoassays using environmentally sensitive (smart) polymer technology

ANTICIPATED IMPACT: Improved clinical decision-making resulting from faster and more sensitive immunoassays

Gregory Terman, University of Washington

Award Amount: \$149,976

Olfactory Delivery of Centrally-Acting Analgesics

FOCUS: To conduct clinical testing of a novel device that can deliver drugs directly to the central nervous system

ANTICIPATED IMPACT: Effective treatment of pain or other neurological conditions while avoiding accidental overdoses and side effects

2011

Diane Cook, Washington State University

Award Amount: \$149,312

Supplement Amount: \$15,000

CASAS-Care: Pilot Study of a Smart Home in a Box

FOCUS: To test user-installed technology that monitors older adults at home and provides reminders to perform key tasks

ANTICIPATED IMPACT: Cost savings for rehabilitation and nursing care services, and improved quality of life for the elderly

Darrell Fisher, Battelle, Pacific Northwest Division

Award Amount: \$144,927

Injectable Radiogels for High-dose Therapy of Non-resectable Solid Tumors

FOCUS: To test a novel technology for delivering high-dose raw to solid cancers that cannot be removed surgically

ANTICIPATED IMPACT: Safer, more effective treatment of radiation-resistant solid cancers

Philip Fleckman, University of Washington

Award Amount: \$139,230

Porous Biomaterials to Resist Percutaneous Infection

FOCUS: To test the ability of a catheter to prevent short-term infection

ANTICIPATED IMPACT: Reduced infection in short- and long-term catheter placements

www.lsdfa.org info@lsdfa.org

1551 Eastlake Ave East, Suite 325, Seattle WA 98102 PH: 206-456-9577

David Linker, University of Washington

Award Amount: \$150,000

Screening for Atrial Fibrillation, a Cause of Preventable Strokes

FOCUS: To conduct human subjects testing of a small, comfortable, inexpensive, and highly accurate monitor capable of screening for atrial fibrillation

ANTICIPATED IMPACT: Lowered risk of stroke through treatment of atrial fibrillation

Pierre Mourad, University of Washington

Award Amount: \$150,000

Definitive Human Testing of Pain Localization and Quantification Based on Transcutaneous Acoustic Palpitation (TAP)

FOCUS: To conduct clinical testing of an ultrasound device that allows providers to identify the sources and extent of deep pain

ANTICIPATED IMPACT: Confirmation, localization, and quantification of pain in limbs remaining after amputation, and validation of a surgical technique to lessen neuroma-triggered pain

Timothy Rose, Seattle Children's Research Institute

Award Amount: \$148,910

Unique Point-of-Care Diagnostic for Detection of Respiratory Viruses

FOCUS: To develop a point-of-care diagnostic test for the influenza and paramyxovirus families

ANTICIPATED IMPACT: An inexpensive test for common respiratory viruses that can be performed in 30 minutes in a primary care environment

Kenneth Schenkman, University of Washington

Award Amount: \$150,000

Muscle Oxygenation for Noninvasive Stratification of Shock Severity

FOCUS: To improve the team's prototype device for early detection of medical shock and collect clinical data using the enhanced prototype

ANTICIPATED IMPACT: Improved outcomes in shock patients and formation of a start-up company to commercialize the new shock monitor

2012

Michael Ballas, Epoch Medical Innovations

Award Amount: \$249,887

Adaptive Compression System for Lower Limb Prosthetics

FOCUS: To develop a system that improves fit and comfort of prosthetic legs by automatically adjusting to volume changes in the residual limb

ANTICIPATED IMPACT: Improved fit of prosthetic lower limbs, resulting in greater comfort, fewer abrasion injuries, and therefore greater mobility for amputees

Gerard Cangelosi, University of Washington

Award Amount: \$250,000

Improved Diagnosis of Healthcare-Associated Infections

FOCUS: To develop and evaluate a rapid test to detect infections that are commonly contracted in hospitals

ANTICIPATED IMPACT: Improved speed and accuracy of diagnosis of bacterial infections, resulting in better patient outcomes and lower medical costs

Bob Clements, Crux Medical Innovations

Award Amount: \$250,000

Crux Multiple Core Biopsy Device

FOCUS: To create a prototype device to enhance quality, yield, and speed of gastrointestinal biopsy collection

ANTICIPATED IMPACT: Improved diagnosis of gastrointestinal disorders

Thomas Schulte, Nexgenia, Inc.

Award Amount: \$150,000

The Scale-Up and Optimization of Smart Magnetic Nanoparticle Synthesis

FOCUS: To improve the manufacturing process for novel clinical assay reagents

ANTICIPATED IMPACT: Improved speed and sensitivity of clinical assays for diagnosing various medical conditions

Nathan Sniadecki, University of Washington

Award Amount: \$250,000

Platelet-Dx: An Innovative, Point-of-Care Product for Detecting Trauma-Induced Coagulation Problems and Improving Emergency Medicine

FOCUS: To develop a prototype device to assess risk of internal bleeding in trauma patients

ANTICIPATED IMPACT: More rapid and appropriate treatment of trauma patients subject to hemorrhaging, and cost savings from reductions in unnecessary treatment

Robert Wilcox, Viket Medical Corp.

Award Amount: \$149,000

Supplement Amount: \$23,000

MITT – Minimally Invasive Transcranial Thrombectomy

FOCUS: To test a catheter that removes intracranial blood clots from stroke patients

ANTICIPATED IMPACT: Reduced 30-day mortality rates, intensive care unit (ICU) days, and long-term care intensity in patients suffering from hemorrhagic stroke

2013

Amit Bandyopadhyay, Washington State University

Award Amount: \$250,000

Next Generation Articulating Surfaces for Load-Bearing Implants

FOCUS: To test a safer artificial joint material

ANTICIPATED IMPACT: Artificial joints that will be safer and still durable

Shailender Bhatia, University of Washington

Award Amount: \$249,828

Supplement Amount: \$5,700

A Proof-of-Concept Clinical Trial of Intratumoral Injection of Glucopyranosyl Lipid A (GLA), a Toll-like Receptor 4 (TLR4) Agonist, in Patients with Merkel Cell Carcinoma

FOCUS: To conduct a clinical trial of GLA therapy in Merkel cell carcinoma patients

ANTICIPATED IMPACT: A safe, effective treatment for Merkel cell carcinoma that is potentially effective against other cancers

Vincenzo Cirulli, University of Washington

Award Amount: \$250,000

Development of an In Vitro Teratoma Assay

FOCUS: To optimize an in vitro assay for screening stem cells and stem cell-derived therapies for tumor-forming potential

ANTICIPATED IMPACT: Safer stem cell-based therapies and reduced animal use during therapeutic development

Tom Clement, Aqueduct Neurosciences, Inc.

Award Amount: \$249,500

Supplement Amount: \$70,799

Smart External CSF Drain

FOCUS: To set up pilot production and test a smart external drain system in preparation for commercialization

ANTICIPATED IMPACT: Safer management of cerebrospinal fluid volume and intracranial pressure and reduced clinical staff burden

Warren Dinges, HeatFlow Technologies

Award Amount: \$150,000

HF-PCR™ Point of Care HIV Viral Load Assay Development

FOCUS: To validate the performance of a new system for measuring HIV-1 levels in blood

ANTICIPATED IMPACT: Simpler and more cost-effective diagnosis and clinical management of HIV-1/AIDS, as well as other diseases as the system's functionality is enhanced

Joseph Harding, Washington State University

Award Amount: \$250,000

Evaluation of a Small Molecule HGF Mimetic as an ALS Therapeutic

FOCUS: To test the efficacy of a novel neuro-regenerative/neuroprotective compound in a small animal model of amyotrophic lateral sclerosis (ALS)

ANTICIPATED IMPACT: A potential treatment for a devastating, fatal disease

Eric Horne, Stella Therapeutics

Award Amount: \$250,000

Supplement Amount: \$73,000

ST Drugs that Treat Glioblastoma Multiforme through a Novel Mechanism

FOCUS: To conduct preclinical testing of a novel small-molecule treatment for glioblastoma multiforme, a typically fatal brain cancer, and for colorectal cancer

ANTICIPATED IMPACT: An inexpensive, effective treatment for brain, colorectal, and other cancers

Stefan Kappe, Center for Infectious Disease Research

Award Amount: \$249,336

In vitro Production of Plasmodium falciparum Sporozoites

FOCUS: To manufacture genetically altered malaria sporozoites at large scale for immunization

ANTICIPATED IMPACT: A safe malaria vaccine for travelers, military, and residents of endemic areas

Deok-Ho Kim, University of Washington

Award Amount: \$250,000

Integrated Multielectrode-Array Nanodevice for Cardiotoxicity Screening

FOCUS: To create an assay for drug developers to use to identify therapies that may harm the heart, before those therapies are used in humans

ANTICIPATED IMPACT: Enable development of safer drugs for multiple health conditions

Mark Kraus, OtoNexus Medical Technologies

Award Amount: \$249,610

Acoustical Characterization of OtoStat Speculum

FOCUS: To construct and test a prototype ultrasound medical device for rapid, accurate diagnosis of middle ear infections

ANTICIPATED IMPACT: Improved diagnosis of middle ear infections in primary care settings, leading to better care and outcomes at a lower overall cost

Beatrice Langton-Webster, Cancer Targeted Technology

Award Amount: \$250,000

Development of a Novel PET Imaging Agent for Prostate Cancer

FOCUS: To produce a GMP-quality, novel metastatic prostate cancer targeted imaging agent product for use in a toxicology study to prepare for FDA review

ANTICIPATED IMPACT: Significantly improved detection of metastatic prostate cancer

Lawrence Loeb, University of Washington

Award Amount: \$250,000

Detection of Rare Mutations by Duplex DNA Sequencing

FOCUS: To further develop a method of double-stranded genomic DNA sequencing to capture specific cancer-associated genes, which promises 10,000-fold more accuracy than the best current technology

ANTICIPATED IMPACT: A significantly better method for early detection of cancer, monitoring patients for tumor recurrence, and optimizing selection of targeted and personalized therapy

Stephen McCraith, RJS Biologics, LLC

Award Amount: \$250,000

"Tethered-Addressed" Drugs for the Treatment of Cancer

FOCUS: To optimize and test targeted small-molecule therapeutics for cancer

ANTICIPATED IMPACT: Safer and more effective cancer treatments

David Putnam, Photonic BioSystems, Inc.

Award Amount: \$248,501

Rapid Field Test Identifying Fecal-Contaminated Waters for Pollution Source Detection

FOCUS: To construct and test a portable device for rapid detection of water contamination by disease-causing bacteria

ANTICIPATED IMPACT: Faster remediation of microbial water pollution and reduction in associated illnesses

Edwin Rubel, University of Washington

Award Amount: \$249,991

Supplement Amount: \$55,990

Development of Therapeutic Drugs to Prevent Hearing Loss

FOCUS: To develop drugs to protect hearing when particular antibiotics are used

ANTICIPATED IMPACT: Reduced hearing loss during antibiotic therapy, promoting increased use of an otherwise underutilized antibiotic

Mehmet Sarikaya, University of Washington

Award Amount: \$250,000

Healing Tooth: Engineered Peptides for Transformative Dental Care

FOCUS: To further develop a product that can safely and easily treat, and possibly reverse, early tooth decay

ANTICIPATED IMPACT: Better treatment of early tooth decay, preventing progression to cavities, with resulting cost savings and a better patient experience

Ilya Shmulevich, Institute for Systems Biology

Award Amount: \$249,924

Development of Interactive Exploration and Analysis Apps for Cancer Genomics

FOCUS: To develop web-based tools (apps) for analysis of cancer genomic data

ANTICIPATED IMPACT: Advanced understanding of tumor biology, new scientific discoveries, and, in the long term, improved personalized treatment of cancer

Jennifer Smith, Institute for Systems Biology

Award Amount: \$249,219

Development of an Indicator Cell Assay for Early Detection of Alzheimer's Disease from Blood Samples

FOCUS: To develop a low-cost, blood-based assay for pre-symptomatic Alzheimer's disease

ANTICIPATED IMPACT: Early detection of Alzheimer's disease to improve management of the condition and support clinical testing of new therapies

Paul Song, BenchMarket Medical

Award Amount: \$250,000

Better Healthcare through Better Data

FOCUS: To link surgical supply use data with quality of care information to help hospitals reduce costs while maintaining patient safety

ANTICIPATED IMPACT: Health-care cost savings with equivalent or superior patient outcomes

2014

Karol Bomszyk, University of Washington

Award Amount: \$250,000

PIXUL-ChIP: Platform for High Throughput Epigenetic Chromatin Immunoprecipitation (ChIP) Assays

FOCUS: To develop a tool for rapid sample preparation for chromatin immunoprecipitation (ChIP) assays

ANTICIPATED IMPACT: Improved efficiency and reliability of ChIP assays, and enhanced understanding of the biology of major diseases

Edward Clark, University of Washington

Award Amount: \$250,000

Therapeutic Vaccine of Hepatitis B Virus Infection and Disease

FOCUS: To construct and test a single-shot vaccine for treating chronic hepatitis B infection

ANTICIPATED IMPACT: Improved treatment of hepatitis B and prevention of liver damage and cancer

Raimondo D'Ambrosio, University of Washington

Award Amount: \$250,000

Prosthesis for the Treatment of Focal Epilepsy

FOCUS: To conduct a human safety trial for a new focal epilepsy therapy

ANTICIPATED IMPACT: A novel and safe therapy for focal epilepsy patients who have no satisfactory alternative

Iain Duncan, NeuMedics, Inc.

Award Amount: \$215,000

Evaluation of NM108 on Prevention of Visual Acuity Loss and Retinal Inflammation and in a Rat Model of Diabetes

FOCUS: To assess the effects of a novel drug on vision and inflammation in a model of diabetic macular edema (DME)

ANTICIPATED IMPACT: More effective and less costly treatment for DME

Keith Elkon, University of Washington

Award Amount: \$250,000

Targeted Therapy to Inhibit cGAS Stimulated Type I IFN Production

FOCUS: To synthesize and test new drugs for systemic lupus erythematosus (SLE)

ANTICIPATED IMPACT: Improved treatment of lupus and better quality of life for affected individuals

Darrell Fisher, Washington State University

Award Amount: \$250,000

Optimized Injectable Radiogels for High-dose Therapy of Non-resectable Solid Tumors

FOCUS: To test a novel technology for delivering high-dose radiation to solid cancers that cannot be removed surgically

ANTICIPATED IMPACT: Safer, more effective treatment of radiation-resistant solid cancers

Leen Kawas, M3 Biotechnology, Inc.

Award Amount: \$250,000

Assessment of a Small Molecule Hepatocyte Growth Factor Mimetic for the Treatment of Parkinson's Disease

FOCUS: To validate the effectiveness and safety of a novel treatment for Parkinson's disease in preparation for clinical testing

ANTICIPATED IMPACT: Prevention and cure of a devastating neurological disease

Jo Masterson, 2Morrow, Inc.

Award Amount: \$250,000

Convert Acceptance & Commitment Therapy (ACT) Study App into a Full Mobile Delivered Smoking Cessation Program

FOCUS: To refine and optimize a smartphone-based program to help individuals quit smoking

ANTICIPATED IMPACT: An inexpensive, highly effective smoking cessation intervention

Ron Myers, Nexgenia, Inc.

Award Amount: \$249,900

Development of Conjugate-able Temperature-Responsive Magnetic Nanoparticles

FOCUS: To develop and validate technology for increasing the speed and efficiency of cell separations

ANTICIPATED IMPACT: Efficient and cost-effective isolation of patients' cells for cancer immunotherapy and other medical applications

Shwetak Patel, University of Washington

Award Amount: \$250,000

SPIROSMART: Novel smart-phone ambulatory spirometry

FOCUS: To conduct a clinical trial of a smart-phone-based spirometry platform for chronic obstructive pulmonary disease (COPD)

ANTICIPATED IMPACT: Earlier recognition and better management of reduced lung function, to improve outcomes and contain costs

George Sellhorn, Zwitter Technology

Award Amount: \$249,725

Preclinical Evaluation of a Long-circulating and Non-immunogenic Drug for the Treatment of Acute Lymphoblastic Leukemia

FOCUS: To perform the chemical synthesis, characterization, and preclinical studies on an improved drug for treating acute lymphoblastic leukemia (ALL)

ANTICIPATED IMPACT: Provide treatment options for ALL patients for whom current drugs lack efficacy

Barbara Tarasevich, Pacific Northwest National Laboratory

Award Amount: \$250,000

Injectable, Thermoreversible Polymers for the Localization of Non-palpable Breast Cancers

FOCUS: To assess safety and performance of a novel technology for localizing non-palpable breast tumors during surgery

ANTICIPATED IMPACT: More complete excision of breast cancer tissue during surgery and reduced need for additional surgery

Clark Tedford, LumiThera, Inc.

Award Amount: \$250,000

The Use of LLLT to Treat Dry Age-Related Macular Degeneration

FOCUS: To build and test a device that may delay progression of the dry form of age-related macular degeneration

ANTICIPATED IMPACT: An easily administered treatment that will slow progression of vision loss in patients with age-related macular degeneration, resulting in improved quality of life and independence

2015

Deborah Fuller, University of Washington

Award Amount: \$249,960

Pre-clinical Development of a Mucosally-Delivered Flu Antiviral

FOCUS: To conduct preclinical testing of a novel biologic that prevents and treats influenza

ANTICIPATED IMPACT: A highly effective preventive and therapeutic agent for existing and novel flu strains

Jill Johnsen, Bloodworks Northwest

Award Amount: \$250,000

Integrated Chip-Scale Blood Testing for Transfusion Medicine

FOCUS: To validate a rapid blood-typing diagnostic device

ANTICIPATED IMPACT: Rapid and inexpensive blood typing, with the potential for other blood-based analyses

Benjamin Merrifield, EndoGear

Award Amount: \$210,000

Zip Clip Endoscopic Hemostasis Device

FOCUS: To develop and test an advanced prototype of an endoscopic clip to stop gastrointestinal (GI) bleeding

ANTICIPATED IMPACT: Faster and more effective treatment of GI bleeding

Martin Schiavenato, Washington State University

Award Amount: \$235,002

Developing a Multidimensional Pain Detection Device for Infants

FOCUS: To develop a device that detects, measures, and continuously reports pain levels in infants in neonatal intensive care units

ANTICIPATED IMPACT: Better pain management for preterm babies

Matching Grant Awards require strategic co-investment (cash matching) by external funders. Awards support studies to advance promising health-related technologies along the commercialization pathway (projects) and large-scale life sciences commercialization-related initiatives (programs).

2014

Ingrid Pultz, University of Washington

Award Amount: \$250,000

In Vivo Assessment of an Oral Therapeutic for Celiac Disease

FOCUS: To conduct preclinical testing and development of a gluten-digesting oral therapy for celiac disease

ANTICIPATED IMPACT: Protection of celiac disease patients from accidental ingestion of gluten

Thomas Rea, University of Washington

Award Amount: \$350,000

Transforming the Paradigm of Sudden Cardiac Arrest Resuscitation: Patient-Specific Treatment Through Innovative Technology

FOCUS: To improve the rate of resuscitation following sudden cardiac arrest with individualized, patient-specific resuscitation guidance

ANTICIPATED IMPACT: More effective resuscitation following sudden cardiac arrest, leading to fewer deaths and decreased disability

2015

Richard Daifuku, Epigenetics Pharma

Award Amount: \$490,700

A Novel DNA Methyl Transferase Inhibitor for the Treatment of Cancer

FOCUS: To validate the efficacy and safety of a novel cancer drug as a precursor to clinical trials

ANTICIPATED IMPACT: Safer and more effective cancer treatments

Rodney Ho, Nova TheraNostics LLC

Award Amount: \$500,000

Development of Nanobrite for Ultra High Definition MRI

FOCUS: To further develop a magnetic resonance imaging agent with significantly enhanced imaging ability

ANTICIPATED IMPACT: Dramatically improved diagnosis of diseases characterized by reduced blood flow, and improved patient safety

Ari Karchin, Stasys Medical Corporation

Award Amount: \$499,962

Stasys Medical: Rapid Point-of-Care Trauma-Induced Coagulopathy Device

FOCUS: To construct a pre-production reader for blood coagulation effectiveness

ANTICIPATED IMPACT: Quick and accurate analysis of defects in blood coagulation, allowing administration of appropriate blood products and therapy

Leen Kawas, M3 Biotechnology, Inc.

Award Amount: \$500,000

IND Enabling Studies for an Orally Bioavailable Parkinson's Disease Modifying Molecule

FOCUS: To scale up production of a new Parkinson's disease drug, assess toxicity, and prepare for clinical trials

ANTICIPATED IMPACT: More effective treatment for Parkinson's disease

Tanya Parish, Infectious Disease Research Institute

Award Amount: \$250,000

Establishing a Host/Pathogen Interaction Facility for the Discovery and Development of Novel Anti-Infectives

FOCUS: To establish a high-throughput analysis facility to discover new infectious disease therapies

ANTICIPATED IMPACT: New treatments for infectious disease, discovered by researchers across the Pacific Northwest

Clark Tedford, LumiThera, Inc.

Award Amount: \$500,000

Commercialization of Photobiomodulation for Vision Impairment in Dry Age-Related Macular Degeneration Patients

FOCUS: To conduct a clinical trial of a dry age-related macular degeneration therapy

ANTICIPATED IMPACT: The first effective treatment for dry age-related macular degeneration, which will be safe, inexpensive, and easily tolerated

Program Grant Awards support the launch of new collaborative research initiatives that address major problems within a field of study and position organizations for future competitiveness and leadership.

2007

Martin Cheever, Fred Hutchinson Cancer Research Center

Award Amount: \$2,237,265

Fred Hutchinson/University of Washington Cancer Consortium Phase 1 Clinical Trials Program

FOCUS: To develop a Phase 1 Cancer Clinical Trials Program for accelerating the development of new cancer-fighting drugs

ANTICIPATED IMPACT: Cancer patient access to Washington-based, early-stage drug trials and development

Gail Jarvik, University of Washington

Award Amount: \$5,339,742

Institute for Genetic Medicine

FOCUS: To build a new infrastructure that will enable clinical investigation of medical genetics using rapid analysis of genomic data

ANTICIPATED IMPACT: Improved personalized medical care and disease prevention

Patricia Kuhl, University of Washington

Award Amount: \$4,033,304

Early Learning and Brain Development: MEG Brain Imaging Center for Infants and Children

FOCUS: To establish a regional child brain imaging center to utilize the latest in brain imaging technology to measure the young brain in action and to explore the basic mechanisms that underlie early learning and lay the foundation for lifelong learning

ANTICIPATED IMPACT: Improved understanding of early childhood behaviors, syndromes, and disabilities

Gerald Nepom, Benaroya Research Institute at Virginia Mason

Award Amount: \$5,575,200

Program for Autoimmune Disease Intervention (PADI)

FOCUS: To apply genetic and immunologic discoveries to benefit people with autoimmune diseases such as type 1 diabetes, multiple sclerosis, and lupus

ANTICIPATED IMPACT: Improved diagnosis and treatment of autoimmune diseases

Richard Smith, Battelle, Pacific Northwest Division

Award Amount: \$4,830,000

Next Generation Clinical Proteomics to Target Human Health Challenges

FOCUS: To develop a new proteomics technology for the large-scale study of proteins and to apply this technology in search of biomarkers for liver disease

ANTICIPATED IMPACT: Earlier, less invasive diagnosis and management of chronic diseases

Thomas Rea, Seattle & King County Department of Public Health

Award Amount: \$2,653,031

Program to Integrate Technology and Cardiac Arrest Resuscitation

FOCUS: To improve cardiac resuscitation technology and resuscitation outcomes

ANTICIPATED IMPACT: Statewide training and implementation of improved cardiac resuscitation methods and enhanced survival following sudden cardiac arrest

John Roll, Washington State University

Award Amount: \$4,048,617

Program of Excellence in Rural Mental Health and Substance Abuse Treatment

FOCUS: To improve the delivery of mental health and substance abuse services in rural, underserved communities

ANTICIPATED IMPACT: Improved management of substance abuse and mental illness in rural areas through testing and implementation of appropriate evidence-based treatments

Patrick Stayton, University of Washington

Award Amount: \$7,163,794

Center for Intracellular Delivery of Biologics

FOCUS: To better deliver drugs to their site of action within cells

ANTICIPATED IMPACT: Enhanced treatment of cancer, pulmonary trauma, and other major disorders with fewer side effects

2008

Lawrence Corey, Fred Hutchinson Cancer Research Center

Award Amount: \$4,727,296

Washington Vaccine Alliance

FOCUS: To develop an integrated, multi-institutional program to stimulate discovery and development of vaccines for widespread use

ANTICIPATED IMPACT: New vaccines to prevent or treat herpes simplex virus-2, syphilis, and *E. coli* contamination

2009

Stephen Friend, Sage Bionetworks

Award Amount: \$4,999,996

Sage Integrative Bionetwork Community: Scalable Resource for the State of Washington

FOCUS: To more accurately and comprehensively model biological systems through their network of interactions

ANTICIPATED IMPACT: Identification of molecular pathways that can be targeted to develop better drugs and diagnostic tests

Thomas Matula, University of Washington

Award Amount: \$4,999,999

Molecular Imaging and Therapy Using Ultrasound

FOCUS: To develop, translate and commercialize new ultrasound techniques for molecular imaging and therapy

ANTICIPATED IMPACT: New ultrasound-based molecular approaches for the diagnosis and treatment of cancer and other major diseases

Peggy Porter, Fred Hutchinson Cancer Research Center

Award Amount: \$4,959,711

Consortium Biospecimen Program

FOCUS: To develop a comprehensive biological specimen collection and distribution system to facilitate cancer research across Washington

ANTICIPATED IMPACT: More effective cancer therapies and improved tests for early diagnosis and prediction of treatment responses

2010

Vincenzo Cirulli, University of Washington

Award Amount: \$3,994,222

A Program for Cell-Based Diabetes Therapy

FOCUS: To develop stem cells to restore insulin secretion function in patients with type 1 diabetes

ANTICIPATED IMPACT: Improved and potentially curative treatment for type 1 diabetes

David Flum, University of Washington

Award Amount: \$2,264,714

Supplement Amount: \$285,204

SCOAP Comparative Effectiveness Research Translation Network

FOCUS: To expand and leverage datasets on quality of surgical care and collect patient outcomes, which will allow the health-care system to dynamically "learn" from patient care

ANTICIPATED IMPACT: Increased use of health-care best practices, resulting in improved patient outcomes and reduced health-care expenditures

John Slattery, University of Washington

Award Amount: \$1,750,000

Supplement Amount: \$36,000

Washington Phenotyped Biospecimen Resource

FOCUS: To develop a resource to provide high-quality, information-rich biological samples to researchers and startup companies statewide

ANTICIPATED IMPACT: Improved diagnostics and treatments for major health conditions

Project Grant Awards support focused investigator-initiated research studies.

2007

Daniel Chiu, University of Washington

Award Amount: \$763,454

Monitoring Breast Cancer Metastasis and Treatment Efficacy

FOCUS: To develop an effective yet low-cost blood test capable of detecting signs of breast cancer recurrence early to improve survival

ANTICIPATED IMPACT: More effective and targeted treatment for individuals with metastatic breast cancer

David Flum, University of Washington

Award Amount: \$1,334,726

The Surgical Care and Outcomes Assessment Program (SCOAP)

FOCUS: To define, measure and improve the quality of surgical care practices

ANTICIPATED IMPACT: Widespread adoption of best surgical practices to prevent unnecessary procedures and mistakes

William Hagopian, Pacific Northwest Diabetes Research Institute

Award Amount: \$918,828

Diabetes Evaluation in Washington Study

FOCUS: To determine the feasibility of establishing universal newborn type 1 diabetes susceptibility screening for Washington state

ANTICIPATED IMPACT: Reduction in costs and crises for individuals and families living with type 1 diabetes

Jeffrey Hummel, Qualis Health

Award Amount: \$398,049

Applying Health Information Technology to Improve Medication Management

FOCUS: To define the business case for using technology to improve medication reconciliation in the ambulatory care workflow

ANTICIPATED IMPACT: Changing the patient culture on the importance of knowing their medications

Cornelius Ivory, Washington State University

Award Amount: \$750,000

Rapid Fingerprinting of Cardiac Biomarkers

FOCUS: To design a miniaturized blood test for both point-of-care and emergency diagnosis of cardiovascular disease based on the mass distribution of a family of cardiac biomarkers

ANTICIPATED IMPACT: Improved allocation of health-care resources through more efficient patient triage

David Newell, Swedish Neuroscience Institute

Award Amount: \$169,532

Intracranial and Intraventricular Hemorrhage with Ultrasound-Enhanced Thrombolysis

FOCUS: To demonstrate that ultrasound can accelerate the delivery of drugs to improve stroke treatment

ANTICIPATED IMPACT: Improved outcomes for stroke patients

2008

Clifford Berkman, Washington State University

Award Amount: \$679,964

Chemoaffinity Agents for the Detection of Prostate Cancer

FOCUS: To demonstrate a new approach to imaging prostate tumors

ANTICIPATED IMPACT: Earlier prostate cancer diagnosis and improved targeted treatment therapies

Diane Cook, Washington State University

Award Amount: \$790,906

Smart Home-Based Health Platform for Functional Monitoring and Intervention

FOCUS: To create a "smart environment" that enables older adults or individuals experiencing cognitive or physical limitations to function independently and remain in their own home setting

ANTICIPATED IMPACT: Cost savings to rehabilitation and nursing care services

Eberhard Fetz, University of Washington

Award Amount: \$1,068,985

Brain-Computer Interfaces for Functional Recovery from Brain Injury

FOCUS: To increase functional recovery in damaged areas of the brain using implantable electrical stimulators

ANTICIPATED IMPACT: Improved outcomes for stroke and brain injury patients

Cecilia Giachelli, University of Washington
Award Amount: \$1,469,606
Engineering Monocytes to Treat Ectopic Calcification

FOCUS: To develop technologies for local human cell therapies that can treat or prevent tissue calcification
ANTICIPATED IMPACT: Improved health outcomes and quality of life for individuals with calcific diseases

Pierre Mourad, University of Washington
Award Amount: \$224,958
Transcutaneous Acoustic Palpation (TAP) for Localizing Painful Pathology

FOCUS: To demonstrate the use of intense-focused ultrasound in identifying the source of deep pain
ANTICIPATED IMPACT: Improved diagnosis of painful medical conditions

Patrick Stayton, University of Washington
Award Amount: \$968,915
Self-Powered Smart Cards for Diagnostic Screening

FOCUS: To develop a rapid, low-cost, self-powered, easy-to-use device to detect infectious agents in blood
ANTICIPATED IMPACT: Less costly, easily accessible diagnostic services

2009
Norman Karin, Battelle, Pacific Northwest Division
Award Amount: \$1,022,867
A Cost-Effective Hydrogel-Growth Factor Complex to Improve Bone Healing
FOCUS: To develop safe, effective, and inexpensive implants to promote bone regeneration
ANTICIPATED IMPACT: New cost-effective technologies for stimulating bone healing

Daniel Leotta, University of Washington
Award Amount: \$509,051
Imaging Oximetry of Peripheral Ischemia for Identification of Amputation Level
FOCUS: To develop an easy-to-use, low-cost, noninvasive portable device that can measure local tissue oxygenation and help guide surgeons in performing lower limb amputations
ANTICIPATED IMPACT: Improved outcomes following limb amputation and prediction and monitoring of healing of diabetic foot and pressure ulcers

Andre Lieber, University of Washington
Award Amount: \$202,759
Peptides that Increase the Efficacy of Monoclonal Antibody Therapy of Cancer
FOCUS: To validate the preclinical effectiveness and safety of a novel molecule that enhances the anti-tumor actions of a chemotherapeutic agent
ANTICIPATED IMPACT: Improved outcomes in cancer patients following treatment with monoclonal antibodies

Adrian Ozinsky, Institute for Systems Biology
Award Amount: \$700,871
High-Throughput Generation of Monoclonal Anti-Peptide Antibodies for High Sensitivity Targeted MS Analysis of Biomarker Candidates
FOCUS: To develop new technologies for biomarker verification and conduct initial validation of prostate cancer biomarker candidates
ANTICIPATED IMPACT: Accelerated translation of biomarker candidates into commercial assays for the diagnosis and monitoring of prostate cancer and other major diseases

Tomikazu Sasaki, University of Washington
Award Amount: \$1,451,136
Supplement Amount: \$48,084
Development of Artemisinin Compounds for Cancer Treatment
FOCUS: To develop new cancer therapeutics and poultry anti-microbials from a natural product
ANTICIPATED IMPACT: New cost-effective agents for cancer chemotherapy and environmentally safer poultry cultivation

Diter von Wettstein, Washington State University
Award Amount: \$1,099,998
Wheat for Celiac Patients and Improved Disease Prevention
FOCUS: To generate wheat that is safe for individuals with celiac disease
ANTICIPATED IMPACT: Improved health and quality of life for individuals with celiac disease and potential prevention of the disease in others

Opportunity Grant Awards support compelling, time-sensitive initiatives from Washington's life sciences research community.

2009
Deborah Nickerson, University of Washington
Award Amount: \$1,999,650
Northwest Genomics Center
FOCUS: To support the launch of the new Northwest Genomics Center with the purchase of four state-of-the-art gene sequencers
ANTICIPATED IMPACT: New personalized, genetic-based approaches to disease prevention, diagnosis, and treatment

2010
Gregory Demopoulos, Omeros Corporation
Award Amount: \$5,000,000
Drug Discovery for Orphan G Protein-Coupled Receptors
FOCUS: To identify compounds that interact with "orphan" G protein-coupled receptors and develop those compounds into new drug candidates
ANTICIPATED IMPACT: New drugs for major medical conditions such as cancer, obesity, and neurological disorders. A new non-profit initiative to advance the life sciences sector and improve health and economic growth in Washington.

2013
David Baker, University of Washington
Award Amount: \$1,400,000
Launch of the Institute for Protein Design for Creating New Therapeutics, Vaccines and Diagnostics
FOCUS: To create an institute that will translate protein design discoveries and projects into commercial products
ANTICIPATED IMPACT: Innovative therapeutic drugs, vaccines, and diagnostics that will tackle existing and emerging challenges in biology

Michael Jensen, Seattle Children's Research Institute
Award Amount: \$1,000,000
Washington State Cancer Immunotherapy Initiative
FOCUS: To conduct studies of T cell therapy (immunotherapy) for cancer, to identify characteristics of the T cells and the tumors that correlate with treatment effectiveness and safety

ANTICIPATED IMPACT: More effective and less toxic cancer treatments, and establishment of Washington as a major hub for cancer immunotherapy treatment and commercialization

Patrick Shelby, University of Washington
Award Amount: \$100,000
A Point-of-Care Device to Rapidly Diagnose Trauma-Induced Coagulopathy
FOCUS: To develop a prototype device to assess risk of internal bleeding in trauma patients
ANTICIPATED IMPACT: More rapid and appropriate treatment of trauma patients and cost savings for unnecessary treatment and blood products

A contract with the **Washington Global Health Alliance** was executed in response to a directive from the Washington State Legislature.

2014

Lisa Cohen, Washington Global Health Alliance

Contract Amount: \$240,000

Washington Global Health Alliance

FOCUS: To provide services, staff, and funds to conduct a global health grant application, review, and award process

ANTICIPATED IMPACT: Development and delivery of global health technologies and products

The **Entrepreneur Mentoring Program Grant Award** supports an initiative to provide mentoring to entrepreneurs within Washington state companies attempting to commercialize products that improve health.

2014

Courtney Law, Washington Biotechnology & Biomedical Association

Award Amount: \$300,000

Washington Innovation Network (WIN) for Life Sciences

FOCUS: To establish a program that matches Washington life sciences entrepreneurs with a trusted group of experienced mentors for guidance and skill development

ANTICIPATED IMPACT: A larger number of successful life sciences companies in Washington and a statewide cadre of well-trained entrepreneurs

Grant Award Supplements provide additional funding to current grantees to pursue significant research findings.

2010

David Flum, University of Washington

Award Amount: \$184,256

Impact of SCOAP on Health-Care Resource Use and Cost

FOCUS: To determine costs saved through increased efficiency of surgical care in Washington

ANTICIPATED IMPACT: A comprehensive analysis to determine health-care cost savings due to implementation of three SCOAP procedures using actual payment data

Daniel Chiu, University of Washington

Award Amount: \$80,000

Isolation of Rare Cells and Circulating Tumor Cells with Low-Expression Biomarkers

FOCUS: To validate novel technology to further increase the sensitivity of an assay, developed through prior LSDF funding, for early detection of cancer recurrence

ANTICIPATED IMPACT: The ability to identify the presumed most aggressive human circulating tumor cells and subsequent appropriate treatment

2012

Martin Cheever, Fred Hutchinson Cancer Research Center

Award Amount: \$150,000

Fred Hutchinson/University of Washington Cancer Consortium Phase 1 Clinical Trials Program Correlative Study: Individualized Therapy for Patients with Acute Myeloid Leukemia

FOCUS: To validate individualized therapy for treatment-resistant acute myeloid leukemia

ANTICIPATED IMPACT: A high-throughput system that will evaluate tumor cells from patients with acute myeloid leukemia who have failed standard therapy for sensitivity to 160 drugs, guiding individualized follow-up treatment

2015

Diter von Wettstein, Washington State University

Award Amount: \$151,964

Wheat for Celiac Patients and Improved Disease Prevention

FOCUS: To generate lysine-enriched wheat that is safe for individuals with celiac disease

ANTICIPATED IMPACT: Improved health and quality of life of individuals with celiac disease and potential prevention of the disease in others