

Coulter Translational Partnership at the University of Virginia

Fact Sheet

Background:

The University of Virginia, Department of Biomedical Engineering is among a select group of ten bioengineering departments to receive a Wallace H. Coulter Foundation Translational Partners Award. The award provides \$4.5 million for five years, and will support multiple translational research projects involving biomedical engineering faculty and clinical co-investigators in the School of Medicine.

In addition to mobilizing resources in biomedical and clinical research, the award allows U.Va. to unite its Health System, School of Engineering and Applied Science, Darden Graduate School of Business Administration and Patent Foundation to more quickly bring lifesaving technologies to the marketplace. At the end of the five-year period, partner institutions that demonstrate success may be considered for a 10 million dollar endowment award to sustain the program.

Our faculty have a 50% of disclosures are in the process of licensing to date; exceeds internal average of 30% and national average of 15%. During the past several years the BME department has lead the university in disclosure activity.

94% of BME faculty has been involved in the Coulter TR process through project submissions and funding

Educating the next Generation of Translational Researchers

Sophomore year BME students introduced to Translational Research design and execution in BIOM 200

Junior Year BME students exposed to Translational Research in Advanced Design class. In the first year of the course 2 TR projects each received \$16K of funding from NCIIA to advance their project design.

Senior year BME students are immersed in Translational Research in Capstone Design various industry experts speak regularly in the class on leadership, marketing, FDA, Number of clinicians involved in the Senior Capstone class has tripled in the past three years BioInnovation graduate course composed of interdisciplinary students from Business, BME, Nursing, Medicine, and Architecture to tackle real problems in the health care system.

Translation Research Event Participation:

BIO 2009 Translational Research Track selection Committee
SE BIO

Mid-Atlantic BIO

TransMed Conference 2007 / 2009

Stanford Research Institute (SRI) - Disciplines of Innovation

Virginia Innovation Showcase

UC-Davis Entrepreneurship Academy

BIO Biotechnology Bootcamp

UVA Annual Business Forum

UVA-Darden Healthcare Conference

UVA Entrepreneurship Society

SBIR/STTR Grant writing workshops

FDA Webinars

UVA Technology Commercialization Luncheon Series

BMEplanet – Biomedical Engineering global web site collaboration

UVA Patent Foundation Seminars to educate BME faculty

First Annual UVA Venture Summit

VaBio BioTech After Hours

Darden business competition

UVA. Startup Support

Programs in place that have Darden and McIntire students help with technology/IP diligence for projects

Darden Incubator program that provides monetary support (up to \$13,000) and space for entrepreneurial startups from UVA

T100 program from the VPR office supports startups with \$10,000 of funds and mentoring support from successful UVA alumni

Spinner Technologies provides bench space and SBIR/STTR support for startups

Start-Up Companies:

HemoShear: The researchers' device, HemoShear 2.0, exposes human endothelial and smooth muscle cells (or any other type of cells) to pulsatile features of blood flow in the human body. The device also measures and records data from this exposure. By using the data on the velocity of blood in different arteries as obtained by MRI, they are able to simulate actual flow patterns in atheroprone areas [arteries that are more susceptible to atherosclerosis] and atheroprotective areas [arteries that are less susceptible to atherosclerosis] and observe how the cells respond to these flow patterns.

Brett Blackman, PhD, Biomedical Engineering

Brian Wamhoff, PhD, Cardiology with a secondary appointment in BME

HemoSonics: This start-up is developing novel diagnostic instruments to rapidly quantify blood clotting and bleeding disorders. Unregulated blood clotting and bleeding (i.e., unregulated hemostatic functions) represent the leading cause of mortality in the developed world.

Their instruments utilize a novel technology named sonorheometry (SR), which requires no moving parts and can be implemented with off the shelf electronic components. Sonorheometry is protected by two patents and a pending patent application. Their products will enable diagnosis of increased or decreased clotting potential while informing appropriate dosage of anticoagulant therapies.

William Walker, PhD, Biomedical Engineering

Francesco Viola, PhD, Biomedical Engineering

Michael Lawrence, PhD, Biomedical Engineering

Three additional start-ups are currently in development

Licensed Technologies:

Siemens – Craig Meyer (BME)

Nasco – Ear Tube Insertion device – Shayn Peirce-Cottler (BME)

Johnson & Johnson Ortho Diagnostics – Klaus Ley (BME)

Collaborations:

Johnson & Johnson – Corporate Office of Science and Technology & Ortho Division
AstraZeneca
COVX/Pfizer
SciGro Inc.
ForeSight Science and Technology - Niche Analysis
Foley and Lardner– IP Diligence
Cato Research – regulatory strategy
Morrison and Forester
Secretary of Technology – Commonwealth of Virginia

Collaborations:

StarFish Medical – Device Prototyping and Development
Tall Oaks Capital, InterSouth Partners, Harbert Management Corporation
Kauffman Foundation
Charles Hamner Institutes for Health Sciences
VA BIO
I-Bridge Network
Juvenile Diabetes Research Foundation
UVA School of Nursing Health Care Product Evaluation Center
Medical Device Consultants, Inc.
Duke University
Boston University
University of Michigan
Drexel University
Stanford University
University of Washington
Chesapeake Crescent

UVA Clinical Collaboration:

Cancer Center
Diabetes Center
Department of Cardiology
Department of Medicine
Department of Neonatology
Department of Neurology
Department of Ophthalmology
Department of Otolaryngology
Department of Pathology
Department of Pediatrics
Department of Plastic Surgery
Department of Radiology
Department of Radiation Oncology
Department of Surgery

Visits / Lab Tours to Biomedical Engineering Department:

Secretary of Commerce – Commonwealth of Virginia
Canadian Embassy
University of Franche-Comte – Biomedical Director Jean Marie Crolet
VP of Cardiovascular Franchise at Merck – Andy Plump
VP of Research at Novartis -Rich Ferrari
AstraZeneca- Cardiovascular Division
Medtronic – Science & Technology /Cardiovascular/Therapy R&D Ventures/Neurology
St. Jude Medical
Focused-UltraSound Foundation
Boston Scientific- former CSO
Aldagen
ABC2 – Accelerated Brain Cancer Cure

Venture Capitalists/Angel Investors:

Kathy Carr – Tall Oaks Capital

John Uhrin / Ben Carney – Harbert Management Corporation

Troy Knauss – Piedmont Active Angels

Beth Roireau – Vencore Capital

Ron Ginor / Karen Becker - Becker Venture Group

Barry Myers – Pappas Ventures

Leticia Green – Virginia Active Angel Network

David Pierson - InterSouth

Morrie Ruffin – Adjuvant

Andrea Alms – Spinner Technologies/Jefferson Corner Group

Garheng Kong - InterSouth

Translational Research Projects

Projects funded by The Wallace H. Coulter Foundation

Adipose stem cells for the healing of chronic wounds

Shayn Peirce-Cottler, PhD, Biomedical Engineering
Adam Katz, MD, Plastic and Reconstructive Surgery

Quantitative unbiased immunohistochemical signaling pathway analysis (QUISPA): Development and application of therapy-directed classification of malignant gliomas

Jason Papin, PhD, Biomedical Engineering
James Mandell, MD, PhD, Pathology
David Schiff, MD, Neurology

Real-time cardiac stress testing using MRI

Craig Meyer, PhD, Department of Biomedical Engineering
Chris Kramer, MD, Radiology/Non-Invasive Cardiology

Ear tube insertion device

Shayn Peirce-Cottler, PhD, Biomedical Engineering
Bradley Kesser, MD, Otolaryngology

Novel treatment regimens for the prevention and reversal of heart failure

Brent French, PhD, Department of Biomedical Engineering
Chris Kramer, MD, Radiology

Heart rate monitoring enabling closed-loop control in people with type 1 diabetes

Milton Adams, PhD, Department of Biomedical Engineering
Boris Kovatchev, PhD, Psychiatric Medicine
Eugene Barrett, MD, PhD, Diabetes Center

Primary evaluation of cardiovascular biomarkers in patients with abdominal aortic aneurysm

Klaus Ley, MD, Department of Biomedical Engineering
Nancy Harthun, MD, Surgery

Enhanced radiation therapy using quantum dot photosensitizer conjugates

Brian Helmke, PhD, Department of Biomedical Engineering
Paul Read, MD, PhD, Radiation Oncology

Bioengineering a novel delivery method for dry eye

Ed Botchwey, PhD, Department of Biomedical Engineering
Gordon Laurie, PhD, Cell Biology
Roy Ogle, PhD, Medicine
Brian Conway, MD, Ophthalmology

Therapeutic Modification of Myocardial Infarct Anisotropy

Jeff Holmes, MD, Ph.D, Biomedical Engineering
Gorav Ailawadi, MD, Surgery

Enhanced Targeting of Adipose Stem Cells to Ischemic Injury

Shayn Peirce-Cottler, Ph.D, Biomedical Engineering
Ellen Keeley, M.D. Cardiovascular Medicine

Projects funded by The Wallace H. Coulter Foundation

Cytokines as Diagnostic Markers for Prediction of Neonatal Sepsis (

Jeff Saucerman, PhD, Biomedical Engineering
Karen Fairchild, MD, Neonatology
Randal Moorman, MD, Cardiology

Determination of the Need for Blood Platelet Transfusion During Cardiopulmonary Bypass Surgery with an Ultrasound –Based Technique for Real-time Blood Viscosity Estimation

Michael Lawrence, PhD, Biomedical Engineering
Gorav Ailawadi, MD, Surgery

CardioSolutions: Technologies for Treating In-Stent Restenosis

John Hossack, PhD, Biomedical Engineering
Brian Wamhoff, PhD, Cardiology
Alexander Klivanov, PhD, Internal Medicine
Michael Ragosta, MD, Cardiology

Self illuminated handheld fundus lens for examination of the retina

Shayn Peirce-Cottler, PhD, Biomedical Engineering
Paul Yates, MD, Ophthalmology

MRI-based Muscle Impairment Diagnostic Tool applied to the treatment of Cerebral Palsy

Craig Meyer PhD, Biomedical Engineering
Silvia Blemker PhD, Mechanical & Biomedical Engineering
Mark Abel MD, Orthopedic Surgery -Pediatric

The development of a new cancer bioassay system using the Soft-Plate 96 Technology

Brett Blackman, PhD, Biomedical Engineering
J. Thomas Parsons, PhD. Department of Microbiology
Todd Bauer, MD, Department of Surgery

Projects Funded by Johnson & Johnson COSAT

Targeted Molecular Imaging of Vulnerable Atherosclerotic Plaque

Craig Meyer, PhD, Biomedical Engineering
David Glover, PhD, Cardiology
George Beller, MD, Cardiology

Subxyphoid Access System for Use With the Epicardial Tool Kit

George Gillies, PhD, Mechanical/Aerospace Engineering with a secondary appointment in BME
Srijoy Mahapatra, MD, Cardiology

Comparison of Molecular Imaging Using a Double-Sided Gamma Camera and Contrast Enhanced MRI for Breast Cancer Detection and Characterization

Mark Williams, PhD, Radiology with a secondary appointment in BME
Brandi Nicholson, MD, Surgery

Development of a plectin-1-based molecular imaging technique for early detection of pancreatic cancer

Kimberly Kelly, PhD, Biomedical Engineering
Todd Bauer, MD, Department of Surgery

Projects Funded by the Ivy Fund

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 Slingsluff, MD, Surgery

Mark Williams, PhD, Radiology with a secondary appointment in BME

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

Paul Yates, MD, Ophthalmology with a secondary appointment in BME

For additional information please contact:

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