The Center for Medical Innovation at the Swanson School of Engineering is a collaboration among the University of Pittsburgh’s Clinical and Translational Science Institute (CTSI), the Innovation Institute, and the Coulter Translational Research Partnership II (CTRP). CMI was established in 2011 to promote the application and development of innovative biomedical technologies to clinical problems; to educate the next generation of innovators in cooperation with the schools of Engineering, Health Sciences, Business, and Law; and to facilitate the translation of innovative biomedical technologies into marketable products and services. Over 50 early-stage projects have been supported by CMI with a total investment of over $900,000 since inception.

CMI VISION
The vision of the CMI is to establish an internationally recognized center for developing innovative medical technologies, educating students, and facilitating commercialization.

CMI MISSION
The mission of CMI has three essential components:

- **Research:** To provide an organizational structure to link engineering faculty, clinicians, and students at the University of Pittsburgh, and to fund early-stage development of innovative biomedical technologies.

- **Education:** To educate the next generation of innovators in the design, development, and commercialization of medical technologies through classroom and hands-on experiences in cooperation with the schools of Engineering, Health Sciences, Business, and Law.

- **Development:** To facilitate the translation of innovative biomedical technologies into marketable products, services, and business ventures in collaboration with the University of Pittsburgh Innovation Institute, Clinical Translational Science Institute (CTSI), and the Coulter Translational Research Partnership.

Structure
The CMI promotes collaborations among University of Pittsburgh clinicians and engineers which are likely to result in improvements to healthcare. A multi-disciplinary CMI leadership team is in place to manage the process. Seed money will be available to clinician-engineer teams whose collaborative project proposals are successfully reviewed and approved by CMI.

Educational Program
CMI will offer, through the Swanson School’s Department of Bioengineering, two options for a Professional Masters degree, and a new graduate Certificate in Medical Product Innovation. Additionally, engineering graduate students may participate in courses and innovation projects as part of their dissertation work. Medical students will be able to satisfy School of Medicine research requirements through participation in CMI sponsored projects. Courses in innovation and entrepreneurship already offered through the Swanson School of Engineering, the Katz School of Business, and the School of Law will be available to all students interested in medical innovation. Multi-disciplinary student teams (including graduate students in engineering and business, as well as law and medicine) will work with engineering faculty, clinicians, and industry advisors to develop innovative medical technologies through the prototype stage.

University of Pittsburgh Center for Medical Innovation (CMI)
The University of Pittsburgh’s Center for Medical Innovation (CMI) awarded grants totaling $77,500 to four research groups through its 2016 Round-2 Pilot Funding Program for Early Stage Medical Technology Research and Development. The latest funding proposals include a new technology for treatment of diabetes, a medical device for treating patients requiring emergent intubation, an innovative method for bone regeneration, and a novel approach for implementing vascular bypass grafts.

CMI, a University Center housed in Pitt’s Swanson School of Engineering (SSoE), supports applied technology projects in the early stages of development with “kickstart” funding toward the goal of transitioning the research to clinical adoption. Proposals are evaluated on the basis of scientific merit, technical and clinical relevance, potential health care impact and significance, experience of the investigators, and potential in obtaining further financial investment to translate the particular solution to healthcare.

“This is our fifth year of pilot funding, and our leadership team could not be more excited with the breadth and depth of this round’s awardees,” said Alan D. Hirschman, PhD, CMI Executive Director. “This early-stage interdisciplinary research helps to develop highly specific biomedical technologies through a proven strategy of linking UPMC’s clinicians and surgeons with the Swanson School’s engineering faculty and students.”

2016 ROUND-2 CMI PILOT FUNDING AWARDEES

**AWARD 1**

**George Gittes, MD**  
Department of Surgery  
University of Pittsburgh School of Medicine

**Kathryn Whitehead, PhD**  
Department of Chemical Engineering  
Carnegie Mellon University (Secondary appointment at the McGowan Institute for Regenerative Medicine)

**FOR:** Intrapancreatic Lipid Nanoparticles to Treat Diabetes  
Award for development and testing of use of lipid nanoparticle technology for the treatment of diabetes.

**AWARD 2**

**Philip Carullo, MD**  
Resident, PGY-1  
Department of Anesthesiology  
University of Pittsburgh Medical Center (UPMC)

**Youngjae Chun, PhD**  
Assistant Professor, Department of Industrial Engineering  
University of Pittsburgh

**FOR:** The Esophocclude: Medical Device for temporary occlusion of the esophagus in patients requiring emergent intubation  
Continuation award for further refinement of the Esophocclude Medical Device using human cadaver testing to simulate emergency intubation.

**AWARD 3**

**Shilpa Sant, PhD**  
Assistant Professor, Department of Pharmaceutical Sciences  
Department of Bioengineering  
University of Pittsburgh

**Akhil Patel, MS**  
Graduate Student, Department of Pharmaceutical Sciences  
University of Pittsburgh

**Yadong Wang, PhD**  
Professor, Department of Bioengineering  
University of Pittsburgh

**Sachin Velankar, PhD**  
Associate Professor, Department of Chemical Engineering  
University of Pittsburgh

**Charles Steir, DDS, PhD**  
Associate Professor, Department of Oral Biology  
University of Pittsburgh

**FOR:** RegenMatrix: Collagen-mimetic Bioactive Hydrogels for Bone Regeneration  
Continuation award for fully automating the hydrogel fabrication process, for animal studies and for fine-tuning related innovations.

**AWARD 4**

**Sachin Velankar, PhD**  
Department of Chemical Engineering  
University of Pittsburgh

**Luka Pocivavsek MD PhD**  
Department of Surgery  
University of Pittsburgh Medical Center

**Edith Tzeng, MD**  
Department of Surgery  
University of Pittsburgh Medical Center

**Robert Kormos, MD**  
Department of Cardiothoracic Surgery  
University of Pittsburgh Medical Center

**FOR:** TopoGraft 2.0: Anti-platelet surfaces for bypass grafts and artificial hearts using topo-graphic surface actuation  
Continuation award for in-vivo validating of results and developing a new approach for topographic actuation of the inner lumen of synthetic bypass grafts.

Details of this program and other CMI related information can be found at engineering.pitt.edu/cmi

PREVIOUSLY AWARDED PILOT FUNDING

2016 PILOT FUNDING AWARDS

**Round-1**

**AWARD 1 –** Electro-targeted Vascular Access: A Novel Way to Quickly and Accurately Place Peripheral and Central Venous Catheters

**AWARD 2 –** VASFAS (Ventriculo-Amniotic Shunt for Fetal Aplacental Stenosis)

**AWARD 3 –** I-HITS: Individualized Hand Improvement and Tracking System After Stroke

**AWARD 4 –** Minimally Invasive Delivery of Therapeutic Cells to Abdominal Aortic Aneurysm

**AWARD 5 –** Reducing Alloimmunization and Sickle Crisis in SCD Patients Using a Novel Method of Replacing HbS with Donor Hb in Patient’s RBCs

**AWARD 6 –** A Motorized Flexible Arm Retractor for Open Abdominal Surgery

2015 PILOT FUNDING AWARDS

**Round-2**

**AWARD 1 –** Self-Cleaning Smart Antibacterial Surfaces

**AWARD 2 –** Esophocclude: Temporary Occlusion of the Esophagus in Patients Requiring Emergent Intubation

**AWARD 3 –** Controlled Release, Gel-based Ear Drops for Treatment of Otitis Media

**AWARD 4 –** RegenMatrix: Collagen-mimetic Bioactive Hydrogels for Bone Regeneration

The information printed in this document was accurate to the best of our knowledge at the time of printing and is subject to change at any time at the University’s sole discretion.

The University of Pittsburgh is an affirmative action, equal opportunity institution.