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). Established in 2011, CMI promotes the application and development of innovative biomedical technologies to clinical problems; educates the next generation of innovators in cooperation with the schools of Engineering, Health Sciences, Business, and Law; and facilitates the translation of innovative biomedical technologies into marketable products and services. CMI has supported 59 early-stage projects through more than $1 million in funding 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.
The University of Pittsburgh’s Center for Medical Innovation (CMI) awarded grants totaling $115,000 to five engineering and medicine groups through its 2017 Round-2 Pilot Funding Program for Early Stage Medical Technology Research and Development. The latest funding proposals include proposed solutions to conditions such as peripheral artery disease, pulmonary fibrosis, improving auditory pathology detection, improved wound healing and repair, and a better means to perform root canal surgery.

CMI, a University Center housed in Pitt’s Swanson School of Engineering, 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 seventh year of pilot funding,” said Alan D. Hirschman, PhD, CMI Executive Director. “Since our inception, more than $1 million from external funding sources and from the Swanson School of Engineering has been invested in early stage medical technologies. Many of these technologies have the potential to significantly improve the delivery of health care and several new companies have resulted from the program, which has successfully partnered UPMC’s clinicians and surgeons with the Swanson School’s engineering faculty.”

2017 ROUND-2 PILOT FUNDING AWARDEES

AWARD 1
Jonathan P. Vande Geest, PhD Professor of Bioengineering Swanson School of Engineering
Kang Kim, PhD Associate Professor of Medicine School of Medicine; and secondary appointment in Department of Bioengineering Swanson School of Engineering
William R. Wagner, PhD Professor of Surgery, School of Medicine Director, McGowan Institute for Regenerative Medicine; and secondary in Department of Bioengineering, Swanson School of Engineering
John J. Pacella, MD, MS Assistant Professor of Medicine, Division of Cardiology, School of Medicine; and Vascular Medicine Institute
Kenneth J. Furdella Graduate Student, Department of Bioengineering Swanson School of Engineering

FOR: A Structurally and Mechanically Tunable Biocarpet for Peripheral Arterial Disease

Development of a prototype “Biocarpet” that is mechanically and topographically tunable and can be used to treat complex peripheral arterial disease. This will help treat long lesions in peripheral arteries that have multiple stenoses.

AWARD 2
Cecelia C. Yates, PhD Assistant Professor of Health Promotion and Development, School of Nursing
Timothy E. Corcoran, PhD Associate Professor of Medicine Division of Pulmonary, Allergy, and Critical Care Medicine, School of Medicine; and secondary appointments in departments of Bioengineering and Chemical and Petroleum Engineering Swanson School of Engineering

AWARD 3
Catherine V. Palmer, PhD Program Director and Associate Professor Audiology Program, Department of Communication Science & Disorders, School of Health and Rehabilitation Sciences; and Department of Otalaryngology, UPMC
Jeffrey S. Vipperman, PhD Professor and Department Vice-Chair of Mechanical Engineering and Materials Science Swanson School of Engineering

FOR: Hearing for Health: Single Unit Hearing Screener and Amplifier

Development of a wearable product that will allow health care professionals to quickly screen individuals for hearing loss. The device would also further provide sound amplification for those individuals with difficulty hearing.

AWARD 4
Morgan Fedorchak, PhD Assistant Professor of Ophthalmology and Clinical & Translational Sciences, School of Medicine; secondary appointment in Chemical Engineering Swanson School of Engineering; and Louis J. Fox Center for Vision Restoration

AWARD 5
Jenny Yu, MD, FACS Assistant Professor and Vice Chair for Clinical Operations Department of Ophthalmology UPMC Eye Center; and Assistant Professor of Ophthalmology and Otolaryngology School of Medicine
Michael Washington, PhD Postdoctoral Scholar, Department of Ophthalmology, School of Medicine
Herbert Lee Ray Jr., DMD Assistant Professor of Endodontics and Director, Graduate Endodontic Residency Program School of Dental Medicine; and Center for Craniofacial Regeneration McGowan Institute of Regenerative Medicine
Jingming Chen, B.S. Department of Bioengineering Swanson School of Engineering Center for Craniofacial Regeneration McGowan Institute of Regenerative Medicine

FOR: Vital-Dent, a Revitalizing Root Canal Solution

Development of a novel device to regenerate vital tooth pulp after root canal therapy. Vital pulp will help protect the tooth from future infection and injury, reducing the need for tooth extraction, implants and dentures.

PREVIOUSLY AWARDED PILOT FUNDING

2017 PILOT FUNDING AWARDS
Round 1
AWARD 1 – Objective Postpartum Uterine Tone Monitoring
AWARD 2 – Novel Thermal Block Technology to Block Nerve Conduction
AWARD 3 – OrganEvac/Whole Organ Thrombolysis Device

2016 PILOT FUNDING AWARDS
Round 2
AWARD 1 – Intrapancreatic Lipid Nanoparticles to Treat Diabetes
AWARD 2 – The Esophoclude: Medical Device for Temporary Occlusion of the Esophagus in Patients Requiring Emergent Intubation

2016 PILOT FUNDING AWARDS
Round 1
AWARD 1 – TopoGraft 2.0: Anti-platelet Surfaces for Bypass Grafts and Artificial Hearts Using Topo-Graphic Surface Actuation
AWARD 2 – RegenMatrix: Collagen-mimetic Bioactive Hydrogels for Bone Regeneration
AWARD 3 – Hearing Screen for Treating Orbital Trauma and Periocular Wounds

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