

Ken Gall

Chair, Mechanical Engineering and Materials Science
Associate Director, MEDx

engineering innovation in medicine

Duke
MEDx

My Research – Synthetic Biomaterials and Translation

Shape Memory Alloys

Basic science 1995 - 2015

Ankle Fusion Nail, 2012



3D Printed Materials

Basic science 2013-Present

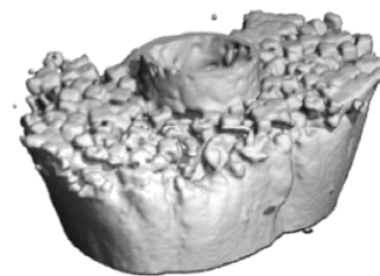
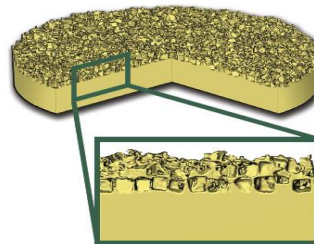
Bunion Repair Device, 2015



Surface Porous Polymers

Basic Science 2011-Present

Spine Cage Q2 2016 (DAN)



engineering innovation in medicine

Duke
MEDx

MEDx and the Pratt Departments

Pratt

- Tosh Chilkoti (BME)
- Chris Dwyer (ECE)
- Claudia Gunsch (CEE)
- George Truskey (BME)
- Jennifer West (BME/MEMS)
- Pei Zhong (MEMS)

Percent of primary faculty doing “some” biomedical research

- BME – 100%
- MEMS – 40%
- ECE – 25%
- CEE – 15%

Discipline Specific “Focuses”

BME	Biochemistry, Anatomy, Tissues, Cells, Materials, Devices
MEMS	Materials, Mechanics, Design, Devices, Implants
ECE	Sensors, Robotics, Imaging, Chips, Micro/Nano Fabrication
CEE	Computations, Structures, Environmental Impact

engineering innovation in medicine

Medical Device Startup Conference

- Led by MEMS Undergrad Nikhil Jain
- 120 participants from across campus



Entrepreneurs and Ground-Level Innovators		
10:10-10:10	Nikhil Jain	Welcome and Introductions
10:10-10:35	Joe Knight	The Life and Trails of a Serial Entrepreneur: From Undergraduate Engineering to InnAvasc
10:35-11:00	Juliana Blum	Blending Biotechnology and Devices: The Story of Humacyte
11:00-11:10	10 minute break	
11:10-11:35	Nandan Lad	Using Neuroscience in Medical Innovation: The Story of NeuroAccess
11:35-12:00	Kenneth Gall	Using Engineering to Revolutionize Implants: The Story of MedShape
12:00-12:10	10 minute break	
12:10-12:50	Panel: Lad, Gall, Knight, Blum, Batinic-Haberle, Mod: Jain	Question and Answer Panel - Ground-Level Entrepreneurs
12:50-1:35	Lunch	Speakers and Students will have the opportunity to meet and interact

Growing the Company: Executive Managers and Financial Experts		
1:35-2:00	Jonathan Fassberg	Taking Your Medical Startup to the Next Level: Financial Tools for Growth
2:00-2:25	Tom O'Connor	Exiting a Mature Company: The Role of Wall Street
2:25-2:35	10 minute break	
2:35-3:00	Greg Mossinghoff	Where Managers Meet Scientists: The Role of Business in Medicine
		Harnessing Science Background to Advance a Medical

engineering innovation in medicine

InnovateMD Program

- Led by David Ranney, general surgery resident
- Goal is to link Surgeons to Engineers through Residents/Fellows and Masters Students
- Launching pilot program Summer of 2016



The graphic is a blue-bordered box containing the following information:

- InnovateMD** logo and **Duke MEDx** logo.
- Text: "A program to provide Duke residents and fellows with the opportunity to collaborate with engineering students and faculty in the field of medical device innovation"
- Project-Centered Experience*
 - Multidisciplinary Teams**
 - Medical, Surgical, Engineering trainees
 - Medical/Surgical faculty mentor
 - Engineering faculty mentor
 - Individual Projects**
 - Choose from a variety of specialties
 - Start by identifying an unmet clinical need, or
 - Join a project/ team at a later stage of development
- Supplemental Learning*
 - Seminar Series**
 - Monthly speakers from a variety of related fields
 - Topics include concept design, intellectual property, business models, regulatory processes, and investment
 - Course Materials**
 - Online course pack
 - "Biodesign" Textbook
- Program Contact Information:
 - David Ranney MD
Department of Surgery
david.ranney@dm.duke.edu
 - Ken Gall PhD
Professor and Chair, Department of Mechanical Engineering & Materials Science
ken.gall@duke.edu
- DukeHealth** logo
- Duke UNIVERSITY** | **PRATT SCHOOL of ENGINEERING** logo

engineering innovation in medicine

Duke
MEDx