2015 UMN BME
MedTech Industry Day

Wednesday, May 6
3:00 - 6:00 pm
Boston Scientific, Maple Grove Campus
3 Scimed Place, Building #3
Graduate Student Posters

Spectroscopic detection of intravesicular analytes using a novel optofluidic device
AVIJIT BARIK | Advisor: Sang-Hyun Oh

Lipids with one saturated and one polyunsaturated DHA chain homogenize lipid rafts and affect the membrane environment of \( \alpha \)-Synuclein
BENJAMIN BRUMMEL | Advisor: Jonathan Sachs

Influence of transport in the glomerular mesangium
SARAH HUNT | Advisor: Victor Barocas

Improving motor recovery after stroke by combined rTMS and BCI training
NESSA JOHNSON | Advisor: Bin He

Feasibility of visualizing higher regions of Shannon entropy in atrial fibrillation patients
SHIVARAM POIGAI ARUNACHALAM | Advisor: Alena Talkachova

Tubular heart valves from sutured coaxial engineered tissue tubes
JAY REIMER | Advisor: Bob Tranquillo

Functional consequences of a tissue engineered myocardial patch utilizing human iPSC-derived cardiomyocytes for cardiac repair in an acute rat infarct model
JACQUELINE WENDEL | Advisors: Jay Zhang, Bob Tranquillo

In vivo 7T MRI brain atlas of the non-human primate: thalamus and brainstem
LAURA ZITELLA | Advisor: Matthew Johnson
Senior Design Projects

1 Pediatric Reminding and Dose Tracking Inhaler
   Katherine Batman, Kevin Papke, Hope Pearson, Jeremy Stimack, Lingzi Xie
   Advisor: Sean Lundquist (Surmodics)
   UMN Clinical Area: Pediatrics

2 The Bambino Brain Drain: Improvements to the External Ventricular Drain
   Lisa Bailey, Donald Mattia, Seneca Thornley, Sofia Shuying Zhang
   Advisor: Bill Rissmann (Medical Innovations Product Development, UMN Adjunct Faculty)
   UMN Clinical Area: Pediatrics

3 Retractor for Sensing Muscle Ischemia during Spinal Fusion Surgery
   Scott Fredrickson, Katelyn Osmek, Alison Seacord, Lauren Smith, Olivia Terp, Stephanie Vogeli
   Advisor: Steven Saliterman (Physician, UMN Adjunct Faculty)
   UMN Clinical Area: Surgery

4 Automated Urine Output Measurement Device
   Masaki Amada, Austin Becicka, Jake Choi, Megan Snyder, Daniel Stone
   Advisor: Ralph Cardinal (Boston Scientific)
   UMN Clinical Area: Urology

5 Access Port for Transsphenoidal Tumor Removal
   Caytlin Gale, Sandra Hodzic, Justin Nerpel, Luke Parker, Steven Pehoski
   Advisor: Dane Stimart (Medtronic)
   UMN Clinical Area: Neurosurgery

6 Expandable Endotracheal Intubation Tube
   Matthew Keefe, Ethan Meyers, Parker Ottinger, Emily Sevcik, Emilea Sykes
   Advisor: Richard Stein (British Standards Institute)
   UMN Clinical Area: Anesthesiology

7 Cascading Filter for Removal of Electrocautery/Ablation Noise
   Allie Haarstad, Megan Harris, Alexander Leick, Connor Nolan, Tyler Senjem
   Advisor: Tim Winn (Boston Scientific)
   UMN Clinical Area: Cardiology

8 Easy Incline Device
   Julia Brekke, Henisha Dhandhusaria, Abigale Field, Leah Kruc, Sasha Ostrer, Alexander Peterson
   Advisor: Joram Slager (Surmodics)
   UMN Clinical Area: Emergency Medicine
Senior Design Projects (cont.)

9  Early Detection of Diabetic Retinopathy: Automated Digital Retinal Imager
   Ben Dang, Mikala Jaderborg, Bradley Olson, Soon Keat (Edwin) Teoh, Samuel Viesselman, Nicholas Womac
   Advisors: Tom McPeak, Nicole Atchison, Niraj Rauniyar (Covidien)
   UMN Clinical Area: Ophthalmology

10 Device for Augmenting Hand Strength in Neurodegenerative Disease
   Emma Czeck, Alexander Konop, Andrew Nazy, Tyler Spiczka, Albert You
   Advisor: Paul Emerson (Boston Scientific)
   UMN Clinical Area: Physical Medicine and Rehabilitation

11 Pelvic Organ Prolapse Support Device
   Khoa Cao, Irena Cich, Nicolette Marquardt, David Onushko
   Advisor: Karl Jagger (American Medical Systems)
   UMN Clinical Area: Obstetrics and Gynecology

12 Device to Better View Transphenoid Surgery
   Max Johnson, Troy Kariniemi, Brenden Lenning, Alexander Weston
   Advisor: Andreas Pfahnl (Devicix)
   UMN Clinical Area: Otolaryngology

13 The EasyProne Positioning System for Breast Cancer Radiotherapy
   Sarah Bening, Joshua Bush, Michael Maring, Luis Morales Tenorio, Arman Shahriar
   Advisor: Adam Reinhardt (Boston Scientific)
   UMN Clinical Area: Radiation Oncology

14 Stereotactic Body Frame
   Austin Battles, Alexander Kinne, Cedar Kuoch, Kshitij Pendurkar, Brittney Reed, Alexis Rogers
   Advisor: Andrew Walsh (Medtronic)
   UMN Clinical Area: Radiation Oncology

15 Recco: A Retrograde Intramedullary Nailing Guidance Device
   Kathryn Empanger, Sardar Hossain, Christopher Johnson, Claire Manlove, Derek Pederson
   Advisor: W. Shawn Morris (UMN)
   UMN Clinical Area: Orthopedic Surgery
Name Tag Color Key

- Biomedical Engineering Program Alumnus/-a
- Senior Design Team Advisor
- Biomedical Engineering Senior Student
- Industrial Advisory Board Member
- Biomedical Engineering PhD Student
- Biomedical Engineering Department Faculty