Department of Biomedical Engineering
32nd Annual Senior Design Project Conference

— **Friday, May 5, 2017** —

8:45AM-9:45 AM	Continental Breakfast & Check-in
9:45 AM	Welcome and Opening Remarks: Prof. Michael Smith, PHO 206

9:45AM-10:30AM: SESSION I

PHO 206
DIAGNOSTICS I
Session Chair: Prof. Catherine Klapperich

Rapid Detection of Zika Virus for Point-of-Care Diagnostics During Pandemics
Connor Beck, Jordan Haburcak, Jenna Schroeder

A Low-Cost Diagnostic Test for Cervical Cancer Screening
Allison Ramsey, Tania To

Simple Visual Pathogen Detection on Paper Strips
Carmen Li, Lisa Nguyen

10:30AM-10:45AM: BREAK

10:45AM-12:00PM: SESSIONS IIa & IIb

PHO 206 **DIAGNOSTICS II** Session Chair: Prof. Joyce Wong	PHO 203 **BIOMECHANICS** Session Chair: Prof. Dimitrije Stamenovic
Ear Biometric Scanner for Improved Patient Identification in Zambia Rachael Campion, Lauren Etter (ME), David Martinez (ME)	**pMPC: A Synthetic Crosslinked Polymer Biolubricant** Kamila Drezek, Archana Jeyaram, Wali A. Sabuhi
Flexible Electrodes for Portable Microfluidic Diagnostics Kyle Cheng, Matthew Kim	**A Comparative Biomechanical Study of the Surgical Reconstruction of the Scapholunate Ligament** Beatrice Baumberger Altirriba, Isaac Dashefsky, Riley Morien
Biosensor to Measure Oxidative Stress in Marine Coral Populations Peter Cho, Rahul Daftari, Rishi Jain	**Assessment of Tendon Tear Progression In-Vivo** Ved Patel, Daniel Ripley, Vanessa Zoghbi-Harb
Identifying Pathogens Using Real-Time PCR and Pseudo-Complementary Primers with Label-Free Multiplex Capabilities Jennifer Asaro, Arjun Patel, Nicholas Serdaru	**Method to Obtain Facet Joint Displacement in Healthy and Degenerated Spines** Cameron Curtiss, Caeleigh Higgins, Lindsay Hulley
Saving Lives through Telemedicine: The Pneumonia Diagnosing App Anna Hughes, Kenny Song	**Lesion-Specific QCT to Improve Prediction of Pathologic Vertebrae Fracture Load** Bryan Chiakpo, Mohit Dangeti, John Ziamandanis

12:00PM-12:15PM: COFFEE BREAK

12:15PM-1:30PM: SESSIONS IIIa& IIIb

PHO 206 HEALTH MONITORING Session Chair: Prof. Michael Smith	PHO 203 TISSUE ENGINEERING/DRUG DELIVERY/ DISEASE MODELS I Session Chair: Prof. Allyson Sgro
Neonatal Vitals Monitoring Pad Josef Atmaz Al-Sibaie, Teja Karri, Eric Loreaux	**3D Bioprinting for Tumor Engineering** Kevin Huang
Project BraveHeart: Sleep Tracking for Patients with Congestive Heart Failure Moustafa Amin, Michael Hanna, Dimitrios Psaltos, Dewey Robinson IV	**Does the Inter-Epithelial Transfer of Exosomal NOS and P-gp Promote Inflammation in Sinonasal Cells?** Ander Gomez, Conor Sullivan
Micro Battery-Free Wireless Sensor for In-hospital Neonatal Monitoring Chen Dong, Andrew Russo, Zhengyang Zhang, Zhiqian Zhou	**Nanoparticles for Oligonucleotide and Curcumin Delivery to Breast Cancer Cells** Erin Chang, Alexander Czaja
Design of an iPhone-Based Nitric Oxide (NO) Meter Ashley Hartman, Chase Richard, Michelle Rose	**Engineered Adipose Tissue That Can Grow** Margaret Ann Bolick, Samantha Chua, Melissa Garcia, Tyler Ryan
Design of an iPhone-Based Instrument for Monitoring Blood Alcohol Noura Al Zayed, Christian A. Montero, Ziqi Zhang	**Optimizing Calcium Phosphate Particles for Growth Factor Delivery** Shahd Bawarith, Lidia De Barros, Shaheer Piracha, Sruti Raja, Fiza Shaukat

1:30PM-2:15PM: LUNCH

2:15PM-3:45PM: SESSIONS IVa & IVb

PHO 206 **IMAGING & TRACKING** Session Chair: Prof. Irving Bigio	PHO 203 **DEVICES** Session Chair: Prof. Mary Dunlop
2-Photon Imaging: Simplifying time and labour-intensive post-experimental data processing Eric Tam, Sherry Yan, William Yen	**Comparison and Implementation of Trapezoidal and FOC Commutation Methods** Eugene Kwan, Evan Reynolds
Optical tracking of anesthetized Caenorhabditis elegans Danielle Dougherty, Padric Garden	**Exploration of Lubricity in Transcatheter Delivery Systems** Undina Gisladottir, Wayne Huynh, Megan Priem
Real Time Muscle Movement Quantification by Ultrasound for Individuals After Stroke Monika Lee, Jennifer Rock, Paul Sliwinski	**PID Control of Treadmill Speed Using Human Kinematics** Jacob Ferriero, Matti Groll, Elizabeth Kenny, Brian Weden
Wireless Optical Recording of Neural Activity in Behaving Mice Jessica Lin, Paul Yao	**Optimizing Epinephrine Auto Injector Storage Strategies** Mohammad Alaghband, Brandon DeLeva, John Kleitz, Patricia Pikura
Simultaneous localization and mapping using biologically inspired interactions of visual feature angle and spatial location Micheal Gutman, Clark Ikezu, Avninder Singh	**Design of an Electromyographic Switch for Communication System Access** Victoria Frick, Katherine Girouard, Evi Shiakolas (ME)
Modelling and Measuring Particle Deposition in Asymmetric Airways Using 3D Printing Edward Taylor, Daniel Wiley	**HeartinSole: A Remote Monitoring Device for Congestive Heart Failure Patients** Susanna Chen, Austin Lent, Brianna Rodgers

3:45PM-4:00 PM: COFFEE BREAK

4:00PM-5:15PM: SESSION V

PHO 206
TISSUE ENGINEERING/DRUG DELIVERY/DISEASE MODELS II
Session Chair: Prof. John White

Development of a Novel Progressive Supranuclear Palsy Mouse Model
Aaron Bockmiller, Mina Botros

Examining Muscle-Bone Crosstalk: Design of Muscle Trauma Model for Study of Stem Cell Recruitment in Injury Repair
Jaclyn Grode, Kathryn Hardin, Blake Oberfeld

Design and Implementation of an Automated Bioreactor System to Investigate the Development of Hyperreactivity in Airways
Daniel Brewster, Suzanne Stasiak

Engineering Nanoparticles for Cancer Immunotherapy Application
Melissa Kallander, Kayla Myers, Ashika Patel

Understanding Design Principles of CRISPR Based Activation of Gene Transcription in Mammalian Cells
Yash Agarwal, Nikita Patil, Kathleen Ryan

5:15PM-Closing Remarks
Prof. Catherine Klapperich, PHO 206