DREXEL UNIVERSITY
School of
Biomedical Engineering,
Science and Health Systems

# Senior Design Proposal Presentations – Winter 2016-2017

## Bossone Research Center, Room 709

| SESSION: Thursday, March 16th 2017 – Morning | | |
|---|---|---|
| 10:00am | **Team 14** | **Application of a Novel Ultrasound Applicator to the Skull of a Mouse**<br>*Justin Bernauer, Nick Damraska, Eric Dluhy, Randy Goldfarb, Justin San Juan*<br>*Advisor: Dr. Peter Lewin* |
| 10:20am | **Team 12** | **Optimizing a Non-invasive Ultrasound Applicator to Treat Human Osteoporotic Minor Long Bone Fractures via Low Frequency (20 kHz)and Low Pressure (55 kPa) Therapy**<br>*Ajo Joseph, Neel Patel, Sunil Shah, Mohana Nagda, Kevin Kunju*<br>*Advisors: Dr. Peter Lewin, Dr. Kara Spiller, Dr. Donald McEachron* |
| 10:40am | **Team 03** | **Radial Inlet Volute Design for a Pediatric Centrifugal Cardiac Pump**<br>*Sarah Haynes, Sherika Gordon, Jennifer Patten, Ashley Ramirez, Khyati Prasad*<br>*Advisor: Dr. Amy Throckmorton* |
| 11:00am | **Team 17** | **Small Rotary Pump for the Lymphatic Circulation**<br>*Samantha Cassel, Kelsey Chung, Raymond Dulman, Maneesha Sahni, Kelly Fox*<br>*Advisor: Dr. Amy Throckmorton* |
| 11:20am | **Team 02** | **Gait Modification via Rythmic Sonification**<br>*Jaclyn Goulet, Samantha Fox, Tyler Kern, Cory Quigley, Yang Wan*<br>*Advisor: Dr. Joseph Sarver* |
| 11:40am | **Team 11** | **ThermoKloth: Heating and Cooling Therapy for Muscle Pain**<br>*Chung Cheng, Uyen Tran, Dennis Roy, James Parsons, John Yockey*<br>*Advisor: Dr. Ryszard Lec* |
| 12:00pm | **Lunch Break** | |

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| SESSION: Thursday, March 16th 2017 – Afternoon | | |
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| 12:40pm | **Team 18** | **Stabilization Device for Cervical Interlaminar Epidural Steroid Injection Therapy**<br>*Matt Bova, Tyler Miller, Ashley Moy, Amanda Tilles, Greg Toci*<br>*Advisors: Dr. Marek Swoboda, Dr. Peter Corda* |
| 1:00pm | **Team 07** | **DNA Combing Flow Cell for Genomic Analysis**<br>*Anmol Arora, Mohan Avula, Michael Bene, Yoseph Dance, Tyler Lee*<br>*Advisors: Dr. Ming Xiao, Dr. Moses Noh* |
| 1:20pm | **Team 01** | **Controlled drug delivery system for chronic wound healing applications**<br>*Samantha Santos, Allison Liptak, Matthew Geib, Anh Trinh, Kathryn Volk*<br>*Advisor: Dr. Kara Spiller* |
| 1:40pm | **Team 04** | **In-Situ Malalignment Device for Midshaft Clavicular Fractures**<br>*Seth Greber, Margaret Gunn, Kristin Irons, Alicia Rusnak, Cassandra Tu*<br>*Advisors: Dr. Joseph Sarver, Dr. David Ebaugh* |
| 2:00pm | **Team 09** | **Detecting and Validating Synthetic Synapses**<br>*Ayan Desai, Yiyang Deng, Xinyi Lu, Sohil Patel*<br>*Advisor: Dr. Catherine von Reyn* |
| 2:20pm | **Team 16** | **Anti-Kink Custom-Curve Endotracheal Tube Stabilizer**<br>*Sarah Julius, Bryan Melilli, Emily Qian, Luke Raymond, Victoria Sadowski*<br>*Advisor: Dr. Ken Barbee* |
| 2:40pm | **Team 27** | **Surgical Skills VR: Virtual Reality Simulator**<br>*Mashaal Syed, Haiyue Lu, Muammar Johnson*<br>*Advisors: Dr. Wan Shih, Nick Jushchyshyn* |

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| 10:00am | **Team 23** | **Melatonin Pump for Elderly and Dementia Patients**<br>*Jordan Bucher, Thomas Donnelly, Sean Jenkins, Samuel Kim, Dalton Lester*<br>*Advisor: Dr. Marek Swoboda* |
| 10:20am | **Team 15** | **Design of Electrospinning System for Control of Nanofiber 3D Architecture**<br>*Alex Mariner, James Kirwan, Michael Shmukler, Brendan Sweeney, Brandon Eng, Ravi Shah*<br>*Advisor: Dr. Lin Han* |
| 10:40am | **Team 13** | **Tensile Specimen Stage for *in situ* Nano-mechanical and Nano-structural Testing of Biological Tissues**<br>Kawyn Somachandra, Leif Malm, Anthony Young, Jonathan Amora, Tara Jordan<br>*Advisor: Dr. Lin Han* |
| 11:00am | **Team 25** | **Hypercapnia Inducement System for Assessment of Cerebral Vascular Reactivity in Traumatic Brain Injury Population**<br>*Stephen Brown, Thomas Lightfoot-Vidal, Ashley Malone, Yerram Pratusha Reddy, Joseph Sincavage*<br>*Advisor: Dr. Meltem Izzetoglu* |
| 11:20am | **Team 05** | **Compact Functional Near Infrared Spectroscopy (fNIRS) System Design for Evaluation of Dyslexia in Students**<br>*Valeria Beckhoff, Tushaar Godbole, Michael Islchakov, Mhomo Kadiri, Durand O'Meara*<br>*Advisors: Dr. Meltem Izzetoglu* |
| 11:40am | **Team 26** | **Automated Mapping of Neural Connections in the Brain**<br>*Edgar Cardenas, Melissa DuBois, Andrew Kaiser, Rea Parikh, Eaindra Tin Latt*<br>*Advisor: Dr. Will Dampier* |
| 12:00pm | **Lunch Break** | |

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| 12:40pm | **Team 21** | **Controlled Laparoscopic Attachment for the Adjustment of Applied Surgeon Pressure**<br>*Eric Barbalace, Zachary Block, Matthew Bolopue, William Dackis, Allison Grasmeder*<br>*Advisor: Dr. Sri Balasubramanian* |
| 1:00pm | **Team 20** | **Manual Muscle Testing Simulator as a Teaching Aid**<br>*Oyinkansola Aderele, Emily Du, Melissa Frendo-Rosso, Caleb Gerald, Loveena Williams*<br>*Advisors: Dr. Sri Balasubramanian, Dr. Allan Glanzman, Dr. Matthew Kirschen* |
| 1:20pm | **Team 08** | **Spider Assisting Spinal Cord Repair**<br>*Kalgi Chokshi, Megan Donohue, Chris Brennan, Liam Barnes, Angelica Spinelli*<br>*Advisor: Dr. Margaret Wheatley* |
| 1:40pm | **Team 22** | **Systems Integrated Multifunction Near Infrared Device (SimNIR)**<br>*Chris Cox, Murynia Hernandez, Anna Lu, Kaitlyn Money, Beverly Tomita*<br>*Advisors: Dr. Banu Onaral, Dave Solt, Tony Groch, Dr. Hasan Ayaz, Dr. Meltem Izzetoglu* |
| 2:00pm | **Team 10** | **Probing Deep Tissue Injuries (DTIs) by Contrasting Tissue Stiffness using Piezoelectric Fingers**<br>*Alice Alderson, Luyando Chibwe, Peter Esslinger, Arlene Offemaria, Kevin Yeamans*<br>*Advisor: Dr. Wan Shih* |
| 2:20pm | **Team 19** | **3D Printed Trachea Scaffold for Tissue Engineering Applications**<br>*Kosha Kumar, Alexandria Neiman, Nick Wancio, David-Luke Wetnight, Emrecan Yener*<br>*Advisors: Dr. Wan Shih, Dr. Michael Frohberg* |
| 2:40pm | **Team 24** | **Tremor Monitoring and Tracking for Neonatal Abstinence Syndrome**<br>*Nsilo Berry, Todd Roescher, Chris Bijumon, Priyanka Karekar, Josué Manjarrez*<br>*Advisors: Dr. Kambiz Pourrezaei, Dr. Barbara Amendolia* |
| 3:00pm | **Team 06** | **Functional Near Infrared Imaging Implant for Rat Stroke Models**<br>*Daniel Finnegan, Andrew Joseph, Trevor Montez, Marina Louis, Michal Swoboda*<br>*Advisors: Dr. Kambiz Pourrezaei, Dr. Meltem Izzetoglu* |