

BME CAPSTONE SYMPOSIUM

~ April 25, 2007 ~



- 5:45-6:00 p.m. Welcome and Introduction by Dr. Shayn Peirce-Cottler & Dr. Timothy Allen
{1st Floor Atrium}
- 6:00-7:20 p.m. *SESSION A.* Concurrent talks held in 6 different rooms. Each team presents for 15 minutes followed by 5 minutes of questioning from the audience.
- 7:20-7:50 p.m. *Intermission.* Refreshments, Thank You Gift Distribution, and Remarks by Tom Skalak, Chairman, BME {1st Floor Atrium}
- 7:50-9:10 p.m. *SESSION B.* Concurrent talks held in 6 different rooms. Each team presents for 15 minutes followed by 5 minutes of questioning from the audience.

SESSION A.

Topic	Project Title	Team Name	Student Team Members	Team Advisor(s)	Time
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ROOM 1041 (1st floor)

Novel Approaches for Tissue Engineering I	Fluorescently Labeling and Tracking Human Adipose-derived Stem Cells	LIGHT	Alexis Bailey Jenny Saik	Shayn Peirce-Cottler, Ph.D. (UVa BME)	6:00-6:20
	Bioscaffold and Stem Cell Delivery for Peripheral Nerve Regeneration		Mia Link	Roy Ogle, Ph.D. (UVa Pulmon. and Crit. Care Med.)	6:20-6:40
	Vascularized Tissue Engineered Bone Construct	MiMiC	Tea Andric Rena Burbey	Shayn Peirce-Cottler, Ph.D. (UVa BME)	6:40-7:00
	Synthesis of Bone Tissue Engineering Scaffolds with Varied Mechanical Properties	PORES	John Jameson	Yusuf Khan, Ph.D. (UVa Orthopaedics)	7:00-7:20

ROOM 1005 (1st floor)

Improved Methods for Clinical Monitoring	Sensor Package for Wireless Physiological Monitoring of Small Animals	WEMAPP	Chris Holden Lucia Molina Isaac Rodriguez	Gene Parker, Ph.D. (Barron Associates, Inc.)	6:00-6:20
	EcoMOD 3: Medical Monitoring System	EGAD	Jonathan Zimmerman	Paxton Marshall, Ph.D. (UVa ECE)	6:20-6:40
	A New ECG Mat for Use with Cardiac Magnetic Resonance Imaging	OMEGA-MRI	Lara Kachachi Daniel Sohinki	Rajan Patel, M.D. (UVa Cardiovascular Medicine)	6:40-7:00
	MRI Compatible Exercise Device	MULLET	Joseph Carr Ryan Ochs	Brett Blackman, Ph.D. (UVa BME)	7:00-7:20

ROOM 1019 (1st floor; CVRC Library)

Improving Cardiovascular Health Through Diet / Vascular Smooth Muscle Cell Phenotype	Comparing the Effects of PDGF-BB and KLF4 on Cell Cycle Regulation in Smooth Muscle Cells		Tiffany Shih	Gary Owens (UVA Molecular Biology)	6:00-6:20
	The Novel Effects of Nitric Oxide on Smooth Muscle Myosin and Non-Muscle Myosin	NORM	Randi Saunders	Will Guilford, Ph.D. (UVa BME)	6:20-6:40
	Does Melatonin Elicit an Angiogenic Response?	AIM	Mark Brewster	Thomas Skalak, Ph.D. (UVa BME)	6:40-7:00
	Effect of Soy on Cardiovascular Health	TOFU	Zach Katz	Brian Helmke, Ph.D. (UVa BME)	7:00-7:20

SESSION A. (continued)

Topic	Project Title	Team Name	Student Team Members	Team Advisor(s)	Time
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ROOM 2005 (2nd floor)

Biomechanics of Tissues and Cells	Quantitative Image Analysis of Structural Displacement in Living Cells under Local Force Applications		Jiahui Li	Brian Helmke, Ph.D. (UVa BME)	6:00-6:20
	Probing the Plasma Membrane Using Atomic Force Microscopy		Stephen Hoang	Brett Blackman, Ph.D. (UVa BME) and Ed Berger, Ph.D. (UVa MAE)	6:20-6:40
	Model of Non-Lethal Strangulation for Forensics and Litigation	MINE	Patty Washington	Kathryn Laughon, Ph.D. (UVa Nursing), Timothy Allen (UVa BME)	6:40-7:00
	A Model for Human Multiple Blast Injury Using <i>Drosophila melanogaster</i> Larvae	HIMM-BUD	Andrew Damon	Cameron Bass, Ph.D. (UVa MAE – Center for Appl. Biomech.)	7:00-7:20

ROOM 2019 (2nd floor; BME Library)

Engineering Education and Sustainable Product Design	Biodegradable Plastic for Medical Product Packaging	BioPAGE	Hae-Rim Ban Daniel Kim	Bill Hess (Ideas on Legs)	6:00-6:20
	Biodegradable Plastic for Medical and Research Supplies	MAD CAPPs	Kai Auyang Hannah Williams	Bill Hess (Ideas on Legs)	6:20-6:40
	Biomedical Engineering Teaching Kit	BETKAT	James Crawford Mark Remaly Katherine Murray	Shayn Peirce-Cottler, Ph.D. (UVa BME) and Leyf Peirce (Charlotte Prov. Day School)	6:40-7:00
	A Biomedical Engineering Teaching Tool for High School Students	BITE	Jennifer Chu Rai Oshima	Gene Parker, Ph.D. (Barron Associates, Inc.)	7:00-7:20

ROOM 3005 (3rd floor)

Designing Surgical Devices and Biomarkers	Improved Detection of Tuberculosis in Developing Countries	REDDOT	Courtney Paulding Christine Hoang	Mike Lawrence, Ph.D. (UVa BME) and Eric Houpt, M.D. (UVa Infectious Diseases)	6:00-6:20
	<i>Short Break in this room only.</i>				6:20-6:40
	Adjustable Mouse Ventilator	VINTAGE	Ryan Clohessy Michael Hull Uma Loganathan	Klaus Ley, M.D. (UVa BME)	6:40-7:00
	Ear Tube Insertion Device Design and Market Research	CREDIT	Isi Azeke Ashley Davenport Kristin Melnyczuk Trevor Royce Daniel Walters	Shayn Peirce-Cottler, Ph.D. (UVa BME), Bradley Kesser, M.D. (UVa Otolaryngology), David Chen (UVa BME)	7:00-7:20

SESSION B.

Topic	Project Title	Team Name	Student Team Members	Team Advisor(s)	Time
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ROOM 1041 (1st floor)

Novel Approaches for Tissue Engineering II	Tissue Engineering Applications of S1P	LAPD	Robert Amanfu	Ed Botchwey, Ph.D. (UVa BME)	7:50-8:10
	The Creation of a Composite Polymer Matrix by Coaxial Electrospinning	BEAMS	Allison Mautone Doug Johnson	Ed Botchwey, Ph.D. (UVa BME)	8:10-8:30
	Development of Bioactive Nanostructured Scaffolds	ESPN	Izu Akamiro	Lakshmi Nair, Ph.D. (UVa Orthopaedics)	8:30-8:50
	Stimuli Sensitive Hydrogels for Biomedical Applications		Martin Burks	Lakshmi Nair, Ph.D. (UVa Orthopaedics)	8:50-9:10

ROOM 1005 (1st floor)

Methods for Improved Clinical Evaluation and Rehabilitation	Neural Assist Device for Restoration of Motor Function	NIFES	Martin Akhavan Frank Block George Glass Alex Lesnick Quang Nguyen	Yong Kim, Ph.D. (UVa BME)	7:50-8:10
	Better Eye Therapy through a Computer Game Rehabilitation Tool	GATES	Stephanie Casper Jacqueline Cho Andreas Lamelas Brent Woodhouse	Gene Parker, Ph.D. (Barron Associates, Inc.)	8:10-8:30
	Newton's Apple to Evaluate Lower-Quarter Biomechanics: A Proof of Concept	MED-JOB	William Humsi Luke Matyja	Gene Parker, Ph.D. (Barron Associates, Inc.)	8:30-8:50

SESSION B. (continued)

Topic	Project Title	Team Name	Student Team Members	Team Advisor(s)	Time
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ROOM 2005 (2nd floor)

Bioengineering and the Musculoskeletal System	Characterizing the Biomechanical Properties of Pediatric costal Cartilage to Enhance Automobile Safety for Children	P-CCC	Braden McIntosh	Richard Kent, Ph.D. (UVa Auto Lab)	7:50-8:10
	Minimization of Bone Resorption around an Artificial Femoral Stem	BORIAH	Sarah Gillen Jonathan Ray Jennifer Trainer	Yusuf Khan, Ph.D. (UVa Orthopaedics)	8:10-8:30
	A Finite-Element Model to Predict Strain Patterns in the Hamstrings	HAMI	Mike Rehorn	Silvia Blemker, Ph.D. (UVa MAE)	8:30-8:50

ROOM 2019 (2nd floor; BME Library)

New Methods for Drug Delivery and Gene Therapy	Analyzing the Effectiveness of Electroporation as a Gene Therapy Technique	TOES	David Catalogna	Timothy Allen, Ph.D. (UVa BME) and Brett Blackman, Ph.D. (UVa BME)	7:50-8:10
	Designing an Ultrasound Pulse and Firing to Deliver Nanoparticles to Specific Regions in Tissue	NARNIA	Jennifer Nguyen Liang Zhang	Bill Walker, Ph.D. and Rich Price, Ph.D. (UVa BME)	8:10-8:30
	Targeting Capabilities of USPIOs on Human Endothelial Cell Surface Markers in the Vasculature	VAPID	Steve Gilday	Brett Blackman, Ph.D. (UVa BME)	8:30-8:50

ROOM 3005 (3rd floor)

Computational Systems Bioengineering: Multi-Scale Models of Physiology and Disease	Reconstruction and Analysis of the <i>Leishmania major</i> Metabolic Network	ULTRA	James Eddy Jeffrey Whittemore Kyle Williams	Jason Papin, Ph.D. (UVa BME)	7:50-8:10
	Multiscale Computational Model of <i>Xenopus laevis</i> Embryogenesis	IMAGINE	Anna Langhans Sara McLinden Scott Robertson Chris Smith	Jason Papin, Ph.D. (UVa BME) and Shayn Peirce-Cottler, Ph.D. (UVa BME), Doug DeSimone (UVa Cell Biology)	8:10-8:30
	Optimization of Artificial Heart Model	Lev-VAD	Michael Sue-Ling	Houston Wood III, Ph.D. (UVa MAE)	8:30-8:50