

University of Calgary

13th Annual Biomedical Engineering Undergraduate Summer Research Symposium

August 20, 2019

KNB 214a & 427, 9:00AM – 4:30PM

Welcome to the 13th Annual Biomedical Engineering (BME) Undergraduate Summer Research Symposium! This symposium is an opportunity for students to showcase their summer work, practice their presentation skills, and learn about the exciting biomedical research being conducted at the University of Calgary.

Many of the student presenters have received awards allowing them to participate in academic research, and their presentations cover a range of topics including biomechanics, imaging, and cellular engineering. Made possible by the BME Graduate Program and Dr. Walter Herzog, the BME Summer Symposium is a day to acknowledge the hard work of our undergraduate researchers and biomedical research as a whole at the University of Calgary.

Symposium At-a-Glance

9:00-9:30 am	WELCOME: Networking and Coffee – 2 nd Floor Atrium (KNB 2234)	
9:30-11:50 am	KNB 214a Presentations	KNB 427 Presentations
12:00-1:00 pm	LUNCH – 2 nd Floor Atrium (KNB 2234)	
1:00-3:40 pm	KNB 214a Presentations	KNB 427 Presentations
3:45-4:00 pm	Presentation from Innovation 4 Health (KNB 214a)	
4:00-4:15 pm	Closing Remarks (KNB 214a)	
4:15-4:30 pm	Presentation of Awards (KNB 214a)	

Acknowledgements

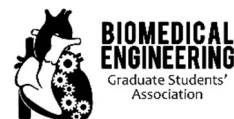
Thank you to the BME Graduate Program and CBRE Administration for help in organizing this event.
Thank you also to the BME Graduate Student Association and to graduate volunteers.

Event sponsor: Biomedical Engineering Graduate Program

Prize sponsor: Dr. Walter Herzog



UNIVERSITY OF CALGARY
Biomedical Engineering Graduate Program



Presentation Schedule for KNB 214a

Time	Title	Presenter	Supervisor
<i>Cell and tissue engineering, development, and bioinformatics</i>			
9:30 am	Unique patterns of neuronal activity underlie neurite growth and synaptic connectivity as determined by a neurochip	Atika Syeda	Dr. Naweed Syed, Dr. Colin Dalton
9:43 am	The regenerative potential of endogenous epidural fat stem cells following injury	Sophia Shah	Dr. Roman Krawetz
9:56 am	Protocol optimization for large scale production of oncolytic viruses in stirred suspension bioreactors	Alexis Pawluk	Dr. Michael Kallos
10:09 am	Bioprocess pilot for the large-scale expansion of human Schwann cells	Sanchit Chopra	Dr. Michael Kallos
10:22 am	Protocol development for single-cell inoculation of human induced pluripotent stem cells grown as aggregates in vertical-wheel bioreactors	Tiffany Dang	Dr. Michael Kallos
10:35 am	B-cell regulation of lung neutrophils during idiopathic pulmonary fibrosis	Kelsie Volek	Dr. Bryan Yipp
10:48 am	Analyzing the nanomechanical oscillations of skin cancer carcinoma cells using optical tweezers: Continuation of a novel approach	Jared Topham	Dr. Matthias Amrein
11:01 am	Investigating the molecular implications of obesity associated with osteoarthritis	Taylor Pigott	Dr. Walter Herzog
11:14 am	Exploring extracellular matrix remodeling during lung morphogenesis	Henna Sekhon	Dr. Antoine Dufour
11:27 am	Developing an <i>in vitro</i> aneurysm model with endothelial lining using 3D printing technologies with hydrogel	Nameerah Wajahat	Dr. Amir Sanati-Nezhad
11:40 am	Tuning the biomechanical properties of smart microcarriers	Jason Xu	Dr. Hector Siegler
12:00 pm	Lunch		
<i>Cell and tissue engineering, development, and bioinformatics</i>			
1:00 pm	Structural and functional connectivity in the brain	Jade Fischer	Dr. Jörn Davidsen, Dr. Giuseppe Iaria
<i>Medical imaging, devices, and software</i>			
1:13 pm	A wearable technology approach to determine exercise fidelity during a neuromuscular training warm-up program	Mathieu Chin	Dr. Kati Pasanen
1:26 pm	Machine learning signal processing for transcranial ultrasound therapy	Nathan Meulenbroek	Dr. Samuel Pichardo
1:39 pm	Drug-eluting stents - The next step in revolutionizing chemotherapy	Reese Ladak	Dr. Alim Mitha

1:54 pm	Aperiodic neural noise as an alternate biomarker for subthalamic nucleus deep brain stimulation for Parkinson Disease	Talha Khalil	Dr. Zelma Kiss
2:07 pm	The integration of multimodal imaging in EEG, ECG and EMG systems	Qingfei Wang	Dr. Jeff Dunn
2:20 pm	Microfluidics in medicine: electrokinetic bidirectional flow	Stirling Cenaiko	Dr. Colin Dalton
2:33 pm	Real time bloodstream infection detection and antibiotic susceptibility testing	Anna Ulrich	Dr. Ian Lewis
2:46 pm	AORTA-ML: Tackling an ancient killer with cutting edge technology	Fady Mina	Dr. Vamshi Kotha
2:59 pm	Transfer entropy in neuroscience	Sean Habermiller	Dr. Jörn Davidsen
3:12 pm	Porous tubular microvasculature with reconstructed endothelium for organ-on-chip applications	Sobhan Panjavi	Dr. Amir Sanati-Nezhad
3:25 pm	Efficacy of mobile device applications in healthcare	Avneet Gill	
3:45 pm	Innovation 4 Health, David Tanhelson (Director of Innovator Recruitment)		
4:00 pm	Closing Remarks & Awards, Dr. John Bertram (Director of BME Graduate Program)		

Presentation Schedule for KNB 427

Time	Title	Presenter	Supervisor
<i>Biomechanics</i>			
9:30 am	Analysis of aortic porcine tissue mechanical properties derived from uniaxial and biaxial testing	Ruba Rashid	Dr. Elena Di Martino
9:43 am	Validation of <i>in vivo</i> tibiofemoral cartilage stiffness measure	Timothy Chang	Dr. Janet Ronsky
9:56 am	What do we know about interventions to prevent low back pain among nurses? A scoping review	Anya Siddons	Dr. Linda Duffett-Leger
10:09 am	Indentation mapping of articular cartilage and geometric reconstruction of porcine knee joint	Daniel Tang	Dr. Leping Li
10:22 am	Development of a clinical lameness assessment device for horses	Fatima Saleem, Karson Fitzsimons	Dr. John Bertram, Dr. Michael Scott
10:39 am	Effects of antiresorptive treatment on the fatigue of whole rabbit tibiae	Becca Page	Dr. Brent Edwards
10:52 am	Effects of combined axial-torsional loading on the fatigue life of whole rabbit-tibiae	Mattea Lee	Dr. Brent Edwards
11:05 am	Dynamic soaring in human locomotion: (how much) does elasticity matter in split-belt walking?	Quang Nguyen	Dr. John Bertram
11:18 am	Characterization of knee joint cartilage using a multi-echo T2 mapping approach for a 1.5T MRI unit	Billy Hornaday	Dr. Janet Ronsky, Dr. Yves Pauchard
11:31 am	Developing a variable stiffness carrying pole	Kieran Roberts	Dr. John Bertram
11:44 am	A novel mouse model of intervertebral disc degeneration	Kristian Corpuz	Dr. Roman Krawetz
12:00 pm	Lunch		
<i>Biomechanics</i>			
1:00 pm	Force after damage in skinned muscle fibers	Sadhiq Nazeer	Dr. Walter Herzog
1:13 pm	Differences in subchondral bone fat content of young and adult rats fed a high-fat high-sucrose diet	Muzammil Nasir	Dr. Walter Herzog
1:26 pm	Characterization of subchondral bone morphology in a rat model of metabolic osteoarthritis	Jeff Ilg	Dr. Walter Herzog
<i>Medical imaging, devices, and software</i>			
1:39 pm	Sims for Seniors: Administering reminiscence therapy through virtual reality	Judy Espiritu, Jacky Tang	Dr. Linda Duffett-Leger
1:56 pm	Synchronizing reality: Brain computer interface – Mixed reality for children with disabilities	Shaheed Murji	Dr. Adam Kirton
2:09 pm	Brain computer interface (BCI) applications in simultaneous fNIRS-EEG imaging	Mobina Jamali	Dr. Jeff Dunn

2:22 pm	Using brain computer interface for iPad control	Mitali Pradhan	Dr. Adam Kirton
2:35 pm	<i>In vitro</i> evaluation of protein-coated stents and interactions with mesenchymal stem cells	Cameron Wong	Dr. Alim Mitha

Please join us in KNB 214a for continued student presentations and program
