



UNC CHARLOTTE

The WILLIAM STATES LEE COLLEGE of ENGINEERING

The Center for Biomedical Engineering & Science

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**Charlotte Biomedical 2018**

320 East 9th Street, Charlotte, NC

Special Topic: Regenerative Medicine

Friday, May 4, 2018

Symposium Agenda:

- 08:00 AM - 08:20 AM Arrival, Registration, Badges & Breakfast
- 08:20 AM - 08:25 AM Welcome and Introductory remarks by Dr. Charles Lee, CBES Director (Auditorium)
- 08:25 AM - 08:30 AM Greetings from Dr. Bob Wilhelm, Vice Chancellor for Research and Economic Development, UNCC (Auditorium)
- 08:30 AM - 09:30 AM **Session 1 (Auditorium):**  
Translational Regenerative Medicine
- 09:30 AM - 09:40 AM Vendor Presentation – VWR (Auditorium)
- 09:40 AM - 10:10 AM Break, Vendors, Posters (Atrium)
- 10:10 AM - 11:10 AM **Keynote Speaker (Auditorium):**  
Dr. Anthony Atala, Director WFIRM  
Regenerative Medicine: Current Concepts and Changing Trends
- 11:10 AM - 11:20 AM Vendor Presentation – Miltenyi Biotec (Auditorium)
- 11:20 AM - 11:30 AM Vendor Presentation – BMG Labtech (Auditorium)
- 11:30 AM - 12:00 PM Vendor/Lunch/Posters (Atrium)
- 12:00 PM - 01:30 PM Parallel Sessions:  
**Session 2 (Auditorium):** Cancer Diagnostics and Personalized Medicine  
**Session 3 (Lecture Hall):** Cryopreservation of Tissues and Organs
- 01:30 PM - 02:00 PM Break/Vendor/Posters
- 02:00 PM - 03:30 PM Parallel Sessions:  
**Session 4 (Auditorium):** 3D Organs and Organs on a Chip  
**Session 5 (Lecture Hall):** Orthopedic Regenerative Medicine
- 03:30 PM - 05:00 PM 10<sup>th</sup> Annual CBES Graduate Student Poster Competition (Atrium)



## Session Talks

### Session 1: Translational Regenerative Medicine (Auditorium, 8:30 AM - 9:30 AM)

Introduction: Co-Chairs: Drs. Mark Clemens, UNCC & Cynthia Wilkins-Port, WFIRM

- Translational Process and Manufacturing Challenges for Regenerative Medicine Therapies  
Todd Meinecke, WFIRM
- Translation from Lab to Clinic...not a walk in the park  
Darren Hickerson, WFIRM  
Derek Raghavan, Atrium Health
- Panel Discussion

### Session 2: Cancer Diagnostics and Personalized Medicine (Auditorium, 12:00 PM - 1:30 PM)

Introduction: Co-Chairs: Drs. Didier Dreau, UNCC & Shay Soker, WFIRM

- Biology of Kidney and Bladder Cancer  
Peter Clark, Atrium Health
- Multiple myeloma immunotype and minimal residual disease  
Manisha Bhutani, Levine Cancer Institute
- Imaging optically cleared whole tissue with unprecedented resolution of macroscale architecture, cellular anatomy and extracellular matrix using inCITE  
Frank Marini, WFIRM
- Target-Specific Multifunctional Mesoporous Silica Nanoparticles for Detection and Treatment of Cancer  
Juan Vivero-Escoto, UNCC
- Bioengineered tumor organoids for optimizing precision medicine-driven therapies  
Aleks Skardal, WFIRM
- Panel Discussion

### Session 3: Cryopreservation of Tissues and Organs (Lecture Hall, 12:00 PM - 1:30 PM)

Introduction: Co-Chairs: Dr. Gloria Elliott, UNCC & Dr. Hooman Sadri-Ardekani, WFIRM

- Tissue and Organ Banking: A National Priority  
Kate Franz, Organ Preservation Alliance
- The Charlotte Banks Tissue and Organ Preservation Initiative  
Gloria Elliott, UNCC
- Human Testis Cryopreservation from Body to the Dish  
Hooman Sadri-Ardekani, WFIRM
- Scale-up of Vitrification for Heart Valves and Blood Vessels  
Kelvin Brockbank, Tissue Testing Technologies
- Panel Discussion

#### **Session 4: 3D Organs and Organs on a Chip (Auditorium, 2:00 PM - 3:30 PM)**

Introduction: Co-Chairs: Drs. Hansang Cho, UNCC & Aleks Skardal, WFIRM

- The Microenvironment in 3D Models of Breast Cancer                      Didier Dreau, UNCC
- Neuron-glia interactions recapitulated in a 3D organotypic human Alzheimer's disease brain-on-a-chip                      Hansang Cho, UNCC
- Deconvoluting cell homing in a bone marrow niche-on-a-chip                      Christopher Porada, WFIRM
- Integrated drug and toxicity testing in a multi-organoid body-on-a-chip                      Thomas Shupe, WFIRM

Panel Discussion

#### **Session 5: Orthopedic Regenerative Medicine (Lecture Hall, 2:00 PM - 3:30 PM)**

Introduction: Co-Chairs: Drs. Nigel Zheng, UNCC & John Jackson, WFIRM

- 3D Bioprinting Strategies for Plastic and Reconstructive Surgery                      Sang Jin Lee, WFIRM
- Advances in Skeletal Muscle Tissue Engineering                      James Poteracki, WFIRM
- Biomechanical Testing for Orthopedic Regenerative Medicine                      Nigel Zheng, UNCC
- Bone Regeneration Using a Bioactive Ceramic Delivery System: Effect of Human Adipose Stem Cells and Growth Factors                      Ahmed El-Ghannam, UNCC
- Effect of Chitosan Thermosensitive Gels Containing Phosphocitrate Molecules on the Development of Posttraumatic Osteoarthritis in Sprague Dawley Rats.                      Alex J. Kiraly, Atrium Health

Panel Discussion

#### **Poster Session I (Atrium, 9:00AM - 2:00PM)**

- Darren Hickerson, WFIRM - Growth kinetic modeling for improvement of timing live cell expansion to a predetermined dosing schedule in a clinical trial
- Chi Lo, WFIRM - Characterization of New Vendor for Non-woven PGA Felt
- Dalia Alzebedeh, WFIRM - Effects of Eliminating Phenol Red from Human Bladder Cell Isolation and Expansion
- Sita Somara, WFIRM - Regulatory Requirement for RMAT – Case Study EPT
- Bradford Kuhlman, WFIRM - Effects of Microgravity on Natural Killer Cell Antileukemic Cytotoxicity and the Repair of Double-Stranded DNA Breaks
- Nadia El-Akabawy, WFIRM - Defining the Optimal Cellular Vehicle and FVIII Transgene for Hemophilia A Gene Therapy

- Guillermo Galdon, WFIRM - Cryo-storage of immature and mature human testis tissue to preserve Spermatogonial Stem Cells (SSCs)
- Nima Pourhabibi Zarandi, WFIRM - Three Dimensional Human Testis Organoid System; Cryopreservation Feasibility
- Gregory Gillispie, WFIRM - Bioprinted Constructs for Simultaneous Bone and Cartilage Tissue Engineering
- Xin Gu, WFIRM - Long-Term Therapeutic Effect of Mesenchymal Stem Cells on Improvement of Erectile Function in a Rat Model
- Andrea R. Mazzocchi, WFIRM - Primary Patient Tumor Organoids for Personalized Drug Treatment
- Julio Aleman, WFIRM - Exploring Normal and Malignant Hematopoietic Stem/Progenitor Cell–Niche Interactions Using a Novel Bone Marrow-on-a-Chip Platform
- Shiny Rajan, WFIRM - Adhesive membrane based body-on-a-chip platform for assessing drug efficiency and toxicity
- Kathryn G. Almon, Atrium Health - Oral Mucositis-associated Microbiome following Conditioning Therapy in Hematologic Cancer Patients

#### **Poster Session II - Graduate Student Poster Competition (Atrium, 03:30 PM - 05:00 PM)**

- .Nitika, UNCC - Identifying synergistic drug combinations for cancer treatment using high-throughput small molecule screening of an Hsp40 CRISPR KO cell line
- Fateme Barancheshme, UNCC - Antibiotic Resistance Development in Heavy Metal Contaminated Wastewater during Biological Treatment
- Mukulika Bose, UNCC - A novel antibody TAB 004 blocks anti-apoptotic activity of MUC1 in pancreatic cancer cell line Capan 2
- Anindita Ghosh, UNCC - Role of DNA Repair protein XLF in Bioflavonoid induced Childhood Leukemia
- Shreya Goyal, UNCC - Characterization of Sorting Nexin paralog, VPS5L, reveals role in autophagy regulation
- Priyanka Grover, UNCC - MUC1 regulates TGF- $\beta$  in Pancreatic Cancer
- Katherine Holtzman, UNCC - MCC950 blocking of the inflammasome limits breast cancer growth, in vitro
- Akhil Gargey, UNCC - Role of electrostatic interactions in the isoform-specific rate of ADP release from human cardiac myosin
- Hyunjae Jeon, UNCC - The effects of plyometric exercise training on patient reported outcomes following ACL reconstruction
- Weina Ke, UNCC - RNA-DNA fibers and polygons with controlled immunogenicity can activate RNAi and transcriptional regulation of NF- $\kappa$ B
- Zachary Lyles, UNCC - Polysilsesquioxane Nanoparticles for the Delivery of Protoporphyrin IX
- Khanh Nguyen, UNCC - Heterodimerization of CXCL4 and CXCL12 chemokines prevents breast cancer migration
- Braxton Noll, UNCC - Telomere Length in glandular tissue of Sjögren's syndrome patients as a potential biomarker for lymphoma development

- Samantha Pennington, UNCC - Gender Differences in Mitochondrial Dysfunction Contribute to Hepatic Microvascular Injury in Endotoxemia
- Amanda Reid, UNCC - Tryptophan mediated FRET of undecaprenyl diphosphate synthase with fluorescent substrates
- Beth Scarbrough, UNCC - Chemoenzymatic synthesis of fluorescently labeled undecaprenyl linked glycan intermediates with WecG homolog from *Brucella ovis*
- Sara Seegers, UNCC - Experimental evolution of oncolytic vesicular stomatitis virus in pancreatic cancer cells
- Deepika Suryaprakash, UNCC - IL-18 and IL-18 binding proteins modulate the inflammasome-driven inflammatory environment in breast cancer
- Mubin Tarannum, UNCC - Targeted combinatorial drug delivery using multifunctional mesoporous silica nanoparticles in allograft and GEM mice models for PDAC therapy
- Shangcheng Wang, UNCC - Hamstring Graft versus Patellar Tendon Graft for Anterior Cruciate Ligament Reconstruction: Biomechanical Outcomes during Walking
- Isaac Wetzel, UNCC - Single-Step Extrusion of Multi-Cellular Cerebral Vessels in 3D
- Zheng Xu, UNCC - Using an Inertial Measurement Unit to Quantify Sit-to-Stand
- Mahboubeh Yazdanifar, UNCC - A novel engineered T cell fights against pancreatic cancer

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