



# Conference Program

2017 Summer Biomechanics, Bioengineering, and  
Biotransport Conference

June 21 – 24, 2017 Tucson, AZ

# S<sup>B</sup>3C

**biomechanics.**  
**bioengineering.**  
**biotransport.**

Funding for this conference was made possible (in part) by the National Science Foundation's Chemical, Bioengineering, Environmental, and Transport Systems Division (Engineering of Biomedical Systems, Disability & Rehabilitation Engineering, Fluid Dynamics), Civil, Mechanical and Manufacturing Innovation Division (Biomechanics and Mechanobiology), and the Division of Materials Research (Biomaterials).

Funding for this conference was also made possible (in part) by 1R13EB024395-01 from the National Institute of Biomedical Imaging and Bioengineering and the National Institute of Arthritis and Musculoskeletal and Skin Diseases. The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services; nor does mention of trade names, commercial practices, or organizations imply endorsement by the U.S. Government.

Prizes and other support for the Student Paper Competition were provided by the Bioengineering Division of the American Society of Mechanical Engineers.

**The 2017 Summer Biomechanics, Bioengineering, and Biotransport Conference (SB<sup>3</sup>C) organizers gratefully acknowledge the support of the National Science Foundation, the National Institutes of Health, and American Society of Mechanical Engineers.**



NIAMS



National Institute of Biomedical Imaging  
and Bioengineering



*SETTING THE STANDARD*

## FOREWORD AND ACKNOWLEDGMENT

---

On behalf of the 2017 Summer Biomechanics, Bioengineering & Biotransport Conference organizers, welcome to SB<sup>3</sup>C2017. The unbeatable combination of great biomechanics, amazing colleagues, and a beautiful setting have made this our favorite meeting since we first attended, and we were honored to have the opportunity to lead a team of incredibly hard-working colleagues dedicated to continuing the rich SBC/SB<sup>3</sup>C tradition in 2017.

The theme of this year's meeting is "Growth, Development, Remodeling, and Repair," a dynamic and exciting area that has risen in prominence in recent years both at this conference and nationally. Highlighting this theme, the conference features a plenary lecture by Dr. Lakshminarayanan Mahadevan, Lola England de Valpine Professor of Applied Mathematics, Organismic and Evolutionary Biology, and Physics at Harvard University, as well as special sessions to celebrate the contributions of Dr. Larry Taber and Dr. Don Giddens.

The Student Paper Competition is a traditional highlight of the meeting. This year, the BS and MS poster competitions will be featured on Thursday evening, and the PhD oral presentations will be Friday afternoon. The American Society of Mechanical Engineers (ASME) is sponsoring the competition, providing funding for the cash prizes, and both ASME and the National Science Foundation helped fund registration fees for Student Paper Competition finalists. Another annual meeting highlight is the plenary lectures by winners of prestigious ASME awards: Kristin Myers from Columbia University (Y.C. Fung Young Investigator Award), Richard Neptune from the University of Texas (Van C. Mow Medal), Arthur Erdman from the University of Minnesota (Savio L-Y. Woo Medal), and Gerard Ateshian of Columbia University (H.R. Lissner Medal).

In addition to our Plenary and Award Lectures and regular technical sessions, there are a number of Workshops featured each day, including 'How-to' Sessions and a whole day focused on industrial interactions. Opportunities for social and networking interactions also abound — please see pages 8 to 16 of this program book for details on these events.

In addition to the features familiar to those of you who have attended prior SBC/SB<sup>3</sup>C meetings, we are pleased to report that SB<sup>3</sup>C2017 includes some new and notable features. This is our first desert venue ever, and we hope you enjoy the beauty of the surrounding Saguaro National Park. For the hikers, bikers, and golfers among you we have flipped the traditional meeting schedule to provide free time in the mornings, when temperatures are cooler and the desert is at its most beautiful. We are also proud that this is the biggest year ever for both the B.S. Student Paper Competition and the Diversity Travel Awards, thanks to a concerted effort by the organizing committee and fantastic support from the National Science Foundation.

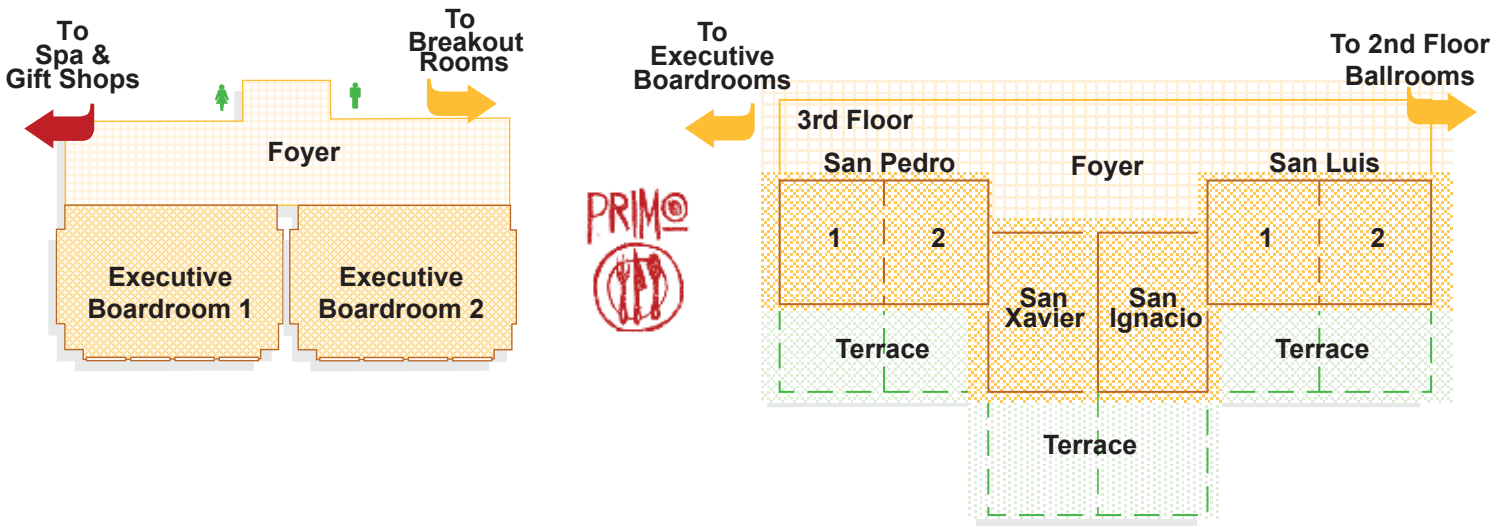
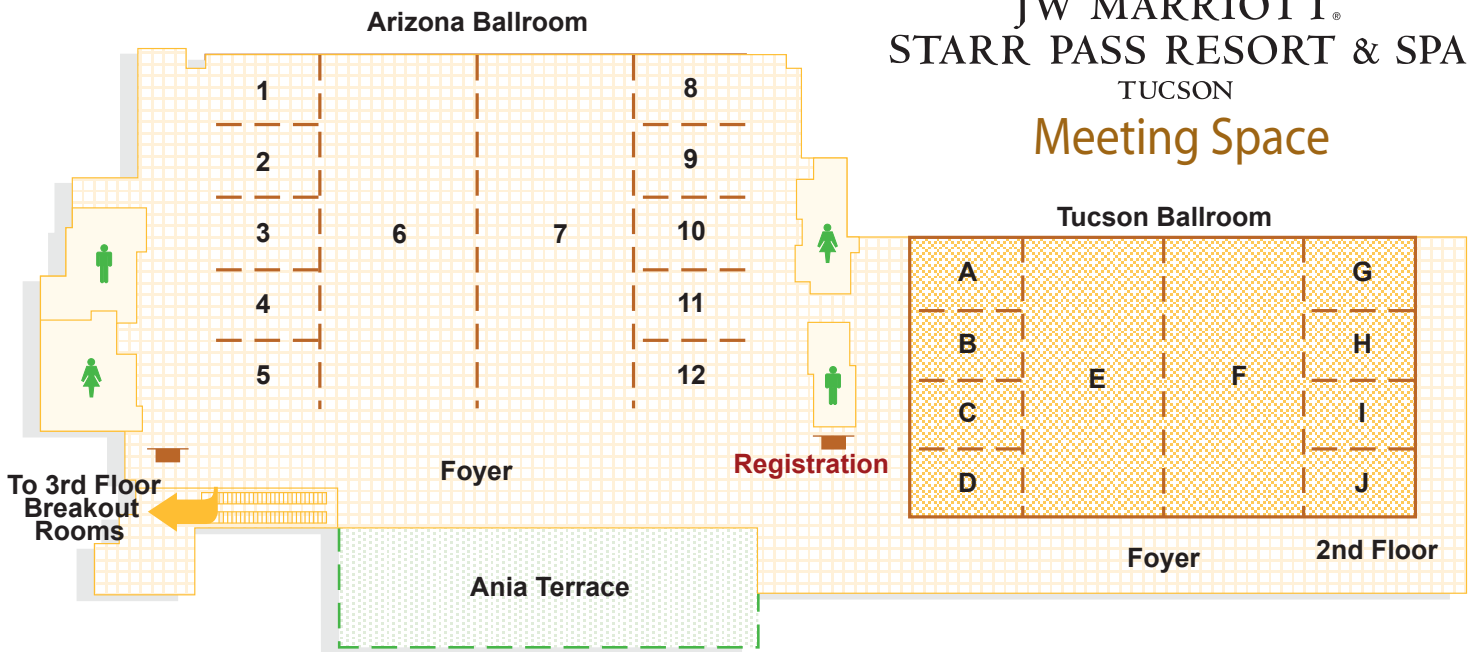
We would like to thank the Sponsors listed in this program, particularly the National Science Foundation, the American Society of Mechanical Engineers, and the National Institutes of Health, for their generous support. Even more importantly, we would like to thank the many of you who played critical roles in organizing SB<sup>3</sup>C2017. The Conference Organizers, Program Committee, and Student Paper Competition Committee listed in the program devoted an enormous amount of time and energy to this conference, but that was just the beginning: together with abstract reviewers and session chairs, more than 200 people helped make SB<sup>3</sup>C2017. We hope you enjoy it, and then join the team for SB<sup>3</sup>C2019. We'll see you at the Tequila Toast,

**Jeff Holmes, Conference Chair**  
University of Virginia

**Rob Mauck, Program Chair**  
University of Pennsylvania

# CONFERENCE SITE MAP & ACCESSIBILITY

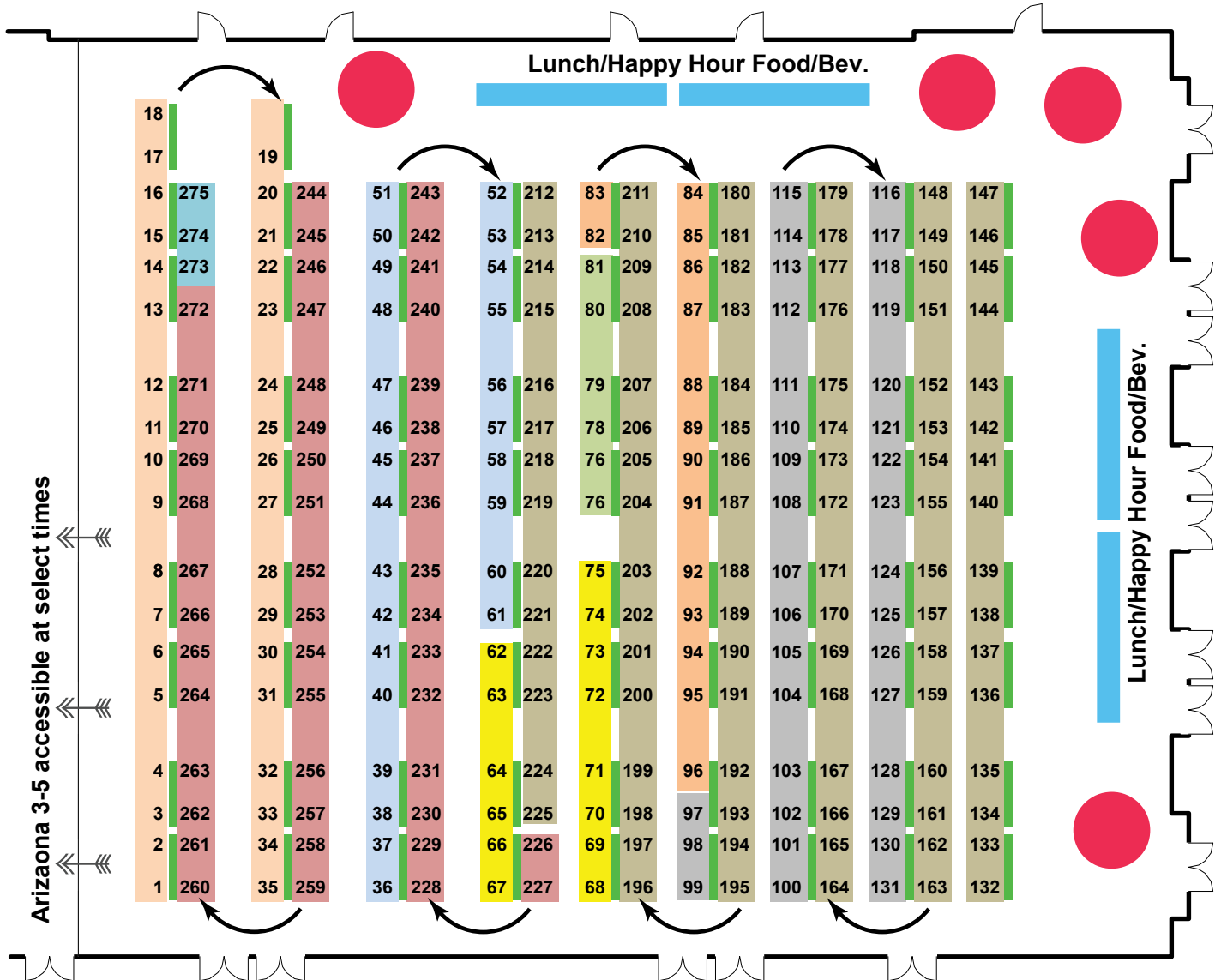
  
**JW MARRIOTT®**  
**STARR PASS RESORT & SPA**  
 TUCSON  
**Meeting Space**



## ACCESSIBILITY

Both floors (2nd and 3rd) of the meeting spaces are accessible. The following hotel spaces are accessible: main entrance, pathway to registration, registration desk, route to accessible guest rooms (which have 32 inch wide openings), business center entrance, fitness center entrance, pool entrances (with self-operating lifts or sloped entry for all pools), spa entrance, restaurants and lounges. The hotel has on site accessible self-parking, and service animals allowed for persons with disabilities. Additionally, golf carts are available on request to assist with transportation at check-in / check-out and around the resort. Participants with disabilities are encouraged to contact the general manager of the hotel prior to arrival to arrange this service.

## Arizona Ballroom 6-12: Poster Sessions



Poster Numbers	1- 35	36 - 61	62 - 75	76 - 81	82 - 96
Theme	BS Level Posters	MS Level Posters	Biotransport Posters	Education Posters	Design, Dynamics, and Rehabilitation Posters
Poster Numbers	97 - 131	132 - 225	226 - 272	273 - 275	
Theme	Cell and Tissue Engineering Posters	Solids Posters	Fluids Posters	Undergraduate Design Competition Posters	

\*See page 5 for poster instructions. See page 23 for more details on poster numbering. See page 62 for poster sessions.

**TABLE OF CONTENTS**

---

**Foreword and Acknowledgement** ..... 1

**Conference Site Maps & Accessibility** ..... 2

**General Information** ..... 4

Social Program

Conference Registration Hours

Committee Meetings

Instructions for Poster Presenters and Speaker Ready Rooms

**Organizing Committee** ..... 6

**Student Competition & Leadership Committees** ..... 7

**Special Sessions, Plenary Sessions & Workshops** ..... 7

**Awards** ..... 17

**Abstract Reviewers** ..... 21

**Program Book How-To** ..... 23

**Scientific Sessions** ..... 24

**Authors Index (by presentation #)** ..... 85

**Authors Index (by page #)** ..... 98

**Chair/Co-Chair Index** ..... 109

**Meeting-at-a-Glance** ..... **back cover**

**SOCIAL PROGRAM**

---

<b>Wednesday, June 21</b>		
Opening Reception	Ania Terrace	6:15 - 8:00 PM
<b>Thursday, June 22</b>		
Diversity/Mentoring Event	Arizona 3-5	11:00 - 12:00 AM
<b>Friday, June 23</b>		
IAB/SLC Networking Mixer	Arizona 3-5	6:15 - 7:45 PM
<i>(registration required)</i>		
SB <sup>3</sup> C Women’s Networking Event	Arizona 2	6:15 - 7:45 PM
BEDRock	Ania Terrace	8:00 - 10:00 PM
<b>Saturday, June 24</b>		
Lissner Reception	Ania Terrace	6:45 - 7:15 PM
Conference Banquet & Awards	Arizona 6-7	7:15 - 9:30 PM

**CONFERENCE REGISTRATION HOURS**

---

<b>Wednesday</b>	10:00 AM - 9:00 PM
<b>Thursday</b>	10:00 AM - 7:30 PM
<b>Friday</b>	10:00 AM - 4:00 PM
<b>Saturday</b>	12:00 PM - 4:00 PM

## COMMITTEE MEETINGS

---

Unless denoted by an \*, the committee meetings are open to all. Attending these meetings is a terrific way to get more involved with the Bioengineering Division of ASME! Please consider joining one or more of the meetings listed below.

### Wednesday, June 21

BED Executive*	Arizona 1	7:00 - 9:30 AM
SB <sup>3</sup> C Organizing & Program* (NOTE: 1)	Arizona 1	9:30 - 10:20 AM
SB <sup>3</sup> C Oversight* (NOTE: 2)	Arizona 1	10:30 - 11:20 AM
New Directions	Arizona 2	10:30 - 11:20 AM
Solid Mechanics	Tucson AB	11:30 - 12:20 PM
Biotransport	San Ignacio	11:30 - 12:20 PM
Education	Arizona 1	11:30 - 12:20 PM
Cell & Tissue Engineering	Tucson AB	12:30 - 1:20 PM
Fluid Mechanics	Tucson CD	12:30 - 1:20 PM
Design, Dynamics & Rehabilitation Biotransport	San Ignacio	12:30 - 1:20 PM

### Thursday, June 22

Open Executive Business Meeting	San Ignacio	9:00 - 10:30 PM
---------------------------------	-------------	-----------------

### Friday, June 23

JBME Editors (with breakfast)*	Arizona 1	9:00 - 10:15 AM
--------------------------------	-----------	-----------------

### Saturday, June 24

Student Leadership Council Meeting	San Ignacio	11:00 - 11:50 AM
Industrial Advisory Board*	offsite (see page 8)	12:15 - 1:45 PM

NOTE 1: SB<sup>3</sup>C Organizing committee meeting: members for three conference years (2017, 2018, 2019) should attend. SB<sup>3</sup>C Program committee meeting: Program Chair (2018), Program Chair (2016), and Chairs of Technical Committees. Organizing Committee chaired by Conference Chair 2017; Program Committee chaired by Program Chair 2017.

NOTE 2: Conference Oversight Committee consists of the Conference Chairs from 2016-2019 and the Program Chairs from 2016-2019. Chaired by Conference Chair 2016.

## INSTRUCTIONS FOR POSTER PRESENTERS

---

The poster room will be available to conference attendees from Thursday morning to Saturday early morning. All posters should be hung before 11 AM on Thursday; the room will be open from 6:00 AM on Thursday for this purpose.

There will be two formal poster sessions during which time poster presenters should be available to discuss their work. **Poster Session I** will be held Thursday June 22nd from 5:30-7:30 PM and **Poster Session II** will be held Friday June 23rd from 12:30-2:00 PM. The MS and BS Poster Competition will take place during Poster Session I and all finalists (Posters #1-61, as indicated in the program book) should be present at their poster during this entire period.

All other posters will present in both sessions. In Poster Session I, Posters #62-147 will present from 5:30-6:30 PM, and Posters #148-275 will present from 6:30-7:30 PM. In Poster Session II, posters #62-147 will present from 12:30-1:15 PM, and posters #148-275 will present from 1:15-2:00 PM.

All posters must be removed by 5:30 PM on Friday. Any poster remaining after this time will be removed by the organizers.

## **SPEAKER READY ROOMS**

---

Session rooms will be available outside of scheduled meeting times. Speakers are encouraged to test their presentations in the appropriate room prior to their presentation.

## **ORGANIZING COMMITTEE**

---



**Jeff Holmes, Conference Chair**  
University of Virginia



**Rob Mauck, Program Chair**  
University of Pennsylvania

**Laurel Kuxhaus**, Information Chair, Clarkson University

**Anna Grosberg**, Local Arrangements Chair, University of California Irvine

**Steven Abramowitch**, Publications Chair, University of Pittsburgh

**Matt Fisher**, Exhibits Co-Chair, North Carolina State University and UNC- Chapel Hill

**Craig Goergen**, Exhibits Co-Chair, Purdue University

**Alison Marsden**, Diversity Chair, Stanford University

**Spencer Lake**, Student Paper Competition Chair, Washington University in St. Louis

**Bhargavi Krishnan**, Student Leadership Chair, University of Kansas

**Josh Drost**, Student Leadership Co-Chair, Michigan State University

## **PROGRAM COMMITTEE**

---

**Rob Mauck**, Chair, Program Committee, University of Pennsylvania

**M. Nichole Rylander**, Chair, Biotransport Technical Committee, University of Texas at Austin

**Xiaoming (Shawn) He**, Vice Chair, Biotransport Technical Committee, Ohio State University

**Rob Mauck**, Chair, Cell & Tissue Engineering Technical Committee, University of Pennsylvania

**Ed Guo**, Vice Chair, Cell & Tissue Engineering Technical Committee, Columbia University

**Tammy Reid Bush**, Chair, Design, Dynamics & Rehabilitation Technical Committee, Mich. St. Univ.

**Mike Moreno**, Vice Chair, Design, Dynamics & Rehabilitation Technical Committee, Texas A&M Univ.

**Alisa Clyne**, Chair, Education Committee, Drexel University

**Ferris Pfeiffer**, Vice Chair, Education Committee, University of Missouri

**Keefe B. Manning**, Chair, Fluid Mechanics Technical Committee, Pennsylvania State University  
**Alison Marsden**, Vice Chair, Fluid Mechanics Technical Committee, Stanford University  
**Jonathan Vande Geest**, Chair, Solid Mechanics Technical Committee, University of Pittsburgh  
**Vicky Nguyen**, Vice Chair, Solid Mechanics Technical Committee, Johns Hopkins  
**Bhargavi Krishnan**, Chair, Student Leadership Committee, University of Kansas  
**Josh Drost**, Vice Chair, Student Leadership Committee, Michigan State University  
**Spencer Lake**, Chair, Student Paper Competition, Washington University in St. Louis

### STUDENT PAPER COMPETITION COMMITTEE

**Spencer Lake** – Chair, Student Paper Competition – Washington University in St. Louis  
**Rouzbeh Amini** – PhD Level – University of Akron  
**Shannon Stott** – MS Level – Mass. General Hospital Cancer Center, Harvard Medical School  
**Sara Roccabianca** – BS Level – Michigan State University

### UNDERGRADUATE DESIGN COMPETITION COMMITTEE

**Mike Moreno**, Undergraduate Design Competition, Texas A&M University

### ASME BED STUDENT LEADERSHIP COMMITTEE PLANNED EVENTS

<p><b>Friday, June 23rd, 2017: Grad School Pro Tips Workshop</b>            How do you establish your scientific credibility? Come to this workshop and learn what it takes to conduct science responsibly.</p>	<p><b>Time:</b> 11 AM - 12:30 PM  <b>Location:</b> Tucson IJ</p>
<p><b>Friday, June 23rd, 2017: Student Networking Mixer</b>            Join us in a networking event where you can interact with industry professionals. Learn about their job opportunities and what it takes to be successful in your career. RSVP required.</p>	<p><b>Time:</b> 6:45 - 7:45 PM  <b>Location:</b> Arizona 3-5</p>
<p><b>Friday, June 23rd, 2017: Hike to the Bowen Stone House</b>            Hike and socialize with fellow graduate students to the Bowen Stone House. Don't forget your water bottles!</p>	<p><b>Time:</b> 6:00 AM  <b>Location:</b> Conference site lobby</p>
<p><b>Saturday, June 24th, 2017 Open Meeting</b>            Attend this open meeting to provide feedback on the events hosted at the conference, suggestions for future work, and meet the Student Leadership Committee.</p>	<p><b>Time:</b> 11:00 – 11:50 AM  <b>Location:</b> San Ignacio</p>

For more information on things to do and live updates about events follow us on Facebook (ASME Bioengineering Division) and on Twitter (@asmebedstudents)  
 Don't Forget about the BEDRock concert on Friday, June 23, 2017!

## INDUSTRY DAY

The Industry Advisory Board (IAB) consists of members from Industry and Academia who are interested in enhancing connections that can be beneficial to both. Industry gains access to important research capabilities and academics benefit from a more customer needs focused approach to problem solving. Combining the resources of both entities can create strong teams for solving critical medical needs. Students also benefit from making important connections in industry that help them obtain jobs and companies have opportunities to meet talented students to fill important positions.

This year the IAB has organized several events specifically designed to meet the needs of conference participants from industry. We scheduled “Industry Day” to begin at the end of the regular workweek, from Friday evening through Saturday afternoon. We also coordinated with other committees for co-sponsored events (see program for details).

### **IAB/SLC Networking Mixer**

Students and industry representatives join together, make connections with potential employers, and network with a wide variety of participants. *(registration required)*

### **BEDRock Concert**

Don't miss this exciting event! The rock concert is one of the highlights of the conference providing opportunities to relax and socialize (unless you are in the band).

### **Industry Workshop**

Learn how to “Establish and Improve Collaborations between Industry and Academia” from experts in the field. Hear from the experts and participate in small group discussions to get your questions answered.

### **ASME Sponsored Industry Luncheon & IAB Meeting**

This year we are combining our IAB meeting with a special luncheon sponsored by ASME. The luncheon will provide good food and opportunities to establish and reinforce connections between industry and academic partners. *(registration required; location provided upon registration)*

### **Technical Session**

Attend a session of your choice based in your area of interest. Consider the **Medical Devices 1**: “Experimental Modeling for Clinical Surgical Applications” session.

### **Technical Session**

Attend a session of your choice based in your area of interest. Consider the **Medical Devices 2**: “Surgical Device Design Applications” session.

### Friday - June 23

**IAB/SLC Networking Mixer**  
6:45 - 7:45 PM

**BEDRock Concert**  
8:00 - 10:15 PM

### Saturday - June 24

**Industry Workshop**  
10:30 - 12:00 PM

**ASME Sponsored Industry Luncheon & IAB Meeting**  
12:15 - 1:45 PM

**Medical Devices 1**  
2:15 - 3:45 PM

**Medical Devices 2**  
4:00 - 5:30 PM

The mission of the IAB is to establish and improve interconnections between people in academics and industry for mutual benefit. Our goal is to make the conference “industry friendly” and provide value for all participants.

*Martin Tanaka – Chair IAB; Lacey Gorochow – Vice Chair IAB;  
M.L. Suresh Raghavan & Ethan Kung – IAB Leadership Team Members*

**WEDNESDAY, JUNE 21****1:30-2:30 PM****'How-To' Session: SimVascular Workshop and New User Training****Tucson AB**

**Organizers:** Alison Marsden (Stanford University), Shawn Shadden (UC Berkeley), and Nathan Wilson (Open Source Medical Software Corporation)

SimVascular is the only available open source software package that provides a complete pipeline from medical image data to cardiovascular blood flow simulation results and analysis ([www.simvascular.org](http://www.simvascular.org)). It offers capabilities for image segmentation, unstructured adaptive meshing, physiologic boundary conditions, and an efficient Navier-Stokes finite element solver with fluid structure interaction. An accompanying vascular model repository provides over 100 clinical data sets with simulation results from different parts of the vasculature to enable research. Extensive online documentation and tutorials with clinical examples are provided online. This workshop will introduce several exciting new features of SimVascular, including a completely overhauled user interface, and improved solid modeling operations. We will interactively take new users through a step-by-step tutorial, highlighting new software features. We will cover basic steps of model construction, meshing and flow simulations, as well as underlying theory, numerical methodology and best practices for high quality results. Following a series of interactive demonstrations, we will moderate a question and answer session for current and potential users.

**WEDNESDAY, JUNE 21****1:30-2:30 PM****'How-To' Session: FEBio Workshop – New features****Tucson CD**

**Organizers:** Jeff Weiss (University of Utah) and Gerard Ateshian (Columbia University)

The FEBio software suite is a set of free software tools for nonlinear finite element analysis in biomechanics and biophysics ([febio.org](http://febio.org)). It offers modeling scenarios, constitutive models and boundary conditions that are relevant to many research areas in biomechanics. The software is open-source, and pre-compiled executables for Windows, Mac OS X and Linux platforms are available. This workshop covers some of the latest and upcoming features in FEBio, including a fluid solver for computational fluid dynamics, improved shell formulations for large deformations, porous shells to model solvent and solute transport in membranes, expanded parameter optimization capabilities, methods to implement homogenization, and a FEBiochem plugin to solve for solute transport and reactive kinetics in non-deforming media.

**WEDNESDAY, JUNE 21****4:30 PM - 6:00 PM**

**Special Tribute Session: Tucson CD**  
**Celebration for Larry Taber: Growth and Remodeling in**  
**Development and Disease**

The purpose of this session is to honor Larry Taber, who is retiring following 39 years of pioneering work in the fields of developmental biomechanics, and tissue growth and remodeling. Larry Taber is currently the Dennis and Barbara Kessler Professor of Biomedical Engineering and Professor of Mechanical Engineering and Materials Science at Washington University in St. Louis. He moved to WU in 1997, after spending four years at the General Motors Research Laboratories and 15 years at the University of Rochester. He has published more than 100 journal articles on a wide range of topics including cochlear mechanics, nonlinear shell



SPECIAL SESSIONS, PLENARY SESSIONS & WORKSHOPS

theory, cardiovascular mechanics, and the mechanics of growth and development. Larry is a Fellow of the American Society of Mechanical Engineers and the American Institute for Medical and Biological Engineering. From 2011-2016, he served as co-editor-in-chief of the journal Biomechanics and Modeling in Mechanobiology. Larry is the only three-time winner of the Richard Skalak Award for the best paper published in the Journal of Biomechanical Engineering 2004, 2007, 2015.

<b>THURSDAY, JUNE 22</b>	<b>11:00 AM - 12:00 PM</b>
--------------------------	----------------------------

**Mixer: Diversity / Mentoring Event**

**Arizona 3-5**

**Organizers:** Alison Marsden (Stanford University) and Naomi Chesler (University of Wisconsin-Madison)

A “chilly” climate at the peer, departmental and institutional levels is often responsible for poor retention of women graduate students and in academic positions pre- and post-tenure. Isolation and accumulated effects of unconscious bias are also key factors in the loss of persons from underrepresented minorities (URM) groups from academic positions. Professional societies and associated conferences such as SB<sup>3</sup>C can provide a venue for reducing isolation and increasing mentoring opportunities that help refresh and promote women and members of URM groups at all stages of the academic career path.

The diversity and inclusion committee is therefore happy to announce a mentor-mentee match mixer at SB<sup>3</sup>C, designed to develop mentoring relationships between junior and senior colleagues in biomechanics, bioengineering, and biotransport. The mixer will include some initial remarks on the mentoring process and best practices in mentoring and in being mentored, after which the majority of the time will be devoted to one-on-one or one-on-two conversations between mentors and mentees, promoting discussion on specific matters of importance to the individual participants to complement the broader guidelines.

*Pre-registration is required.* Questions may be directed to Alison Marsden at [amarsden@stanford.edu](mailto:amarsden@stanford.edu)

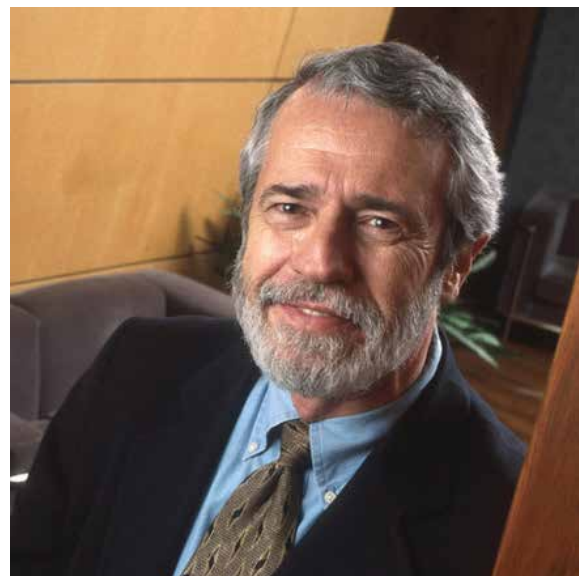
<b>THURSDAY, JUNE 22</b>	<b>2:15 PM - 3:45 PM</b>
--------------------------	--------------------------

**Special Tribute Session:**

**Tucson GH**

**Don Giddens’ Impact on Cardiovascular Fluid Dynamics and Atherosclerosis**

The purpose of this session is to honor and celebrate Don Giddens’ 45+ year academic career, highlighting his seminal research contributions, committed role to engineering education and mentorship, dedicated service to the ASME-BED, and visionary leadership in Bioengineering. Don is considered one of the pioneers in the biofluid mechanics research community, making seminal contributions in the area of fluid dynamics and arterial disease. He has mentored countless graduate students and post-docs, many of whom have gone on to successful careers in academia and industry. Don’s academic career includes serving as Chair of the Department of Aerospace Engineering at Georgia Tech (1988-92), Dean of the Whiting School of Engineering at Johns Hopkins (1992-97), founding Chair of the Coulter Department of Biomedical Engineering at Georgia Tech/Emory (1998-2002), and Dean of the College of Engineering at Georgia Tech (2002-2011). He is the past President of the ASEE (2012). At the ASME society level, Don received the H.R. Lissner Medal (1993) and R.H. Thurston Lecture Award (1996). Don is a member of the National Academy of Engineering and is a Fellow of the ASME, the AHA, and AIMBE (founding fellow).



**THURSDAY, JUNE 22****4:00 - 4:30 PM****Y.C. Fung Young Investigator Award Lecture:****Tucson EF****The Mechanical Environment of Pregnancy****Kristin M. Myers, PhD** (Columbia University)

Description: The reproductive soft tissues supporting the fetus undergo some of the most dramatic and unique growth and remodeling events in the human body. During pregnancy, the uterus and fetal membrane must grow and stretch to accommodate the fetus. Simultaneously, the cervix must remodel and be a mechanical barrier to keep the fetus within the uterus. All three tissues must withstand mechanical forces to protect, support, and maintain an optimal growth environment for the developing baby. Then, in a reversal of roles, ideally nearing term, the uterus begins to contract and the cervix deforms to allow for a safe delivery. The magnitude of stress and stretch of these soft tissues supporting the fetus are thought to control physiologic processes that regulate tissue growth, remodeling, contractility, and rupture. It is generally hypothesized that these mechanical signals are clinical cues for normal labor and preterm birth, a major long-lasting public health problem with heavy emotional and financial consequences. In this talk I will reveal what we know about the soft tissue mechanics of pregnancy. I will present finite element models of pregnancy based on ultrasonic anatomical data, and I will examine the mechanical function of the soft tissues supporting the fetus. I will also characterize cervical material properties using a hyperelastic constitutive model that accounts for the cervical collagen fiber architecture. Through this experimental and modeling effort I aim to identify which factor or combination of factors is responsible for clinically-observed mechanical dysfunction in pregnancy.

**THURSDAY, JUNE 22****4:30 - 5:00 PM****Van C. Mow Medal Award Lecture:****Tucson EF****Biomechanical Analyses of Human Movement and the Implications for Clinical Interventions****Richard R. Neptune, PhD** (University of Texas at Austin)

Description: The human neuromusculoskeletal system is exceedingly complex. As a result, gaining insight into normal and pathological movement remains a challenge due to the extremely difficult task of measuring the principle elements of muscle coordination and the effects of individual muscle forces on the resulting movement. This talk will discuss how experimental and modeling and simulation techniques are being used to gain insight into the biomechanics and neuromotor control of human movement with the goal to improve rehabilitation outcomes for those with movement impairments. Specifically, we will look at how individual muscles contribute to specific biomechanical task demands of human movement and the implications for prescribing clinical interventions.

**THURSDAY, JUNE 22****5:00 - 5:30 PM****Savio L-Y. Woo Medal Award Lecture:****Tucson EF****Lessons Learned from Kinematics Research Applied to Medical Device Design****Arthur G. Erdman, PhD** (University of Minnesota)

Description: Current medical device development is often limited to incremental changes to known products or suboptimal solutions for which more insight is desired about the true impact of design decisions upon device interactions with tissue and organs. Major advances in medical device design and manufacture currently require extensive/expensive product cycles that usually include animal and clinical trials. New computational design methodologies are needed to provide designers with more meaningful, accurate feedback earlier in the design process; to enable designers to more broadly

SPECIAL SESSIONS, PLENARY SESSIONS & WORKSHOPS

explore the space of potential design alternatives; and to expand the boundaries of complex designs that are possible given today's computer-assisted design tools. The proposed methodology includes human-in-the-loop optimization techniques that were first applied for designing linkage mechanisms. New tools for the medical device industry will allow accelerated and less costly development cycles including more robust modeling environments.

<b>FRIDAY, JUNE 23</b>	<b>11:00 AM - 12:30 PM</b>
------------------------	----------------------------

**Workshop: Additive Manufacturing and Biofabrication in Mechanobiology** **Tucson AB**

**Organizers:** Jessica Sparks (Miami University), Grace O'Connell (University of California, Berkeley), and Matthew Fisher (North Carolina State University / University of North Carolina)

This session will focus on research that harnesses the unique capabilities of additive manufacturing and biofabrication technologies to drive the design, development, and manufacturing of biological systems or biomedical devices. Biofabrication is understood to include approaches for bioprinting, bioassembly, or tissue maturation processes, among other strategies. Other topics of interest include use of additive manufacturing for non-biological products with biomedical relevance, such as flexible/wearable electronics or surgical guides. The goal of the session is to promote and highlight important synergies between fundamental biomechanics and mechanobiology research and more applied, technology-driven investigations on additive manufacturing or biofabrication methods. This workshop is a joint workshop between the Solid Mechanics and the Cell & Tissue Engineering technical committees. Important themes include:

- (Mechanics) Bioprinting for functional tissue/organ development (e.g., with or without a bioreactor)
- (Cell and Tissue) Printable complexity of materials and cells used to create a single scaffold
- Challenges and limitations in current printing technology (e.g., resolution, printing integrity)

Speakers:

**Jay B. Hoying, PhD** (Advanced Solutions Life Sciences) -- "Biofabrication of the Vasculature"

**Adam W. Feinberg, PhD** (Carnegie Mellon University) -- "Rebuilding the Heart by 3D Bioprinting of the Extracellular Matrix"

**Wei Gao, PhD** (University of California, Berkeley) -- "Wearable Sweat Biosensors"

<b>FRIDAY, JUNE 23</b>	<b>11:00 AM - 12:30 PM</b>
------------------------	----------------------------

**Workshop: Ocular Biomechanics: What's Our Vision?** **Tucson CD**

**Organizers:** Ian Sigal (University of Pittsburgh, Ophthalmology) and Jonathan Vande Geest (University of Pittsburgh, Bioengineering)

The eye must seamlessly integrate several complex systems in order to achieve its proper function – effective capture and transmission of a visual signal to the brain. These subsystems rely on finely tuned biomechanics, so that mechanical properties and microstructure of ocular tissues play a critical role in providing the appropriate environment to promote proper integration and function of these complex subsystems and the eye itself. The complexity of this organ requires the use of experiments and modeling to understand the role of ocular biomechanics on visual function. This knowledge is also necessary to improve the available tools for diagnosis and treatment of eye disease, as well as to develop novel methods to enhance vision.

This symposium will bring experts in ocular biomechanics together to disseminate state of the art tools experimental, theoretical and computational modeling of the eye. A particular focus of this symposium will be discussions related to the future of this field and how ocular biomechanics might play a role in restoring vision in a variety of ocular pathologies and injuries.

Speakers:

**Ross Ethier, PhD** (Georgia Institute of Technology)

**Rouzbeh Amini, PhD** (University of Akron)

**Vicky Nguyen, PhD** (Johns Hopkins University)

**Ian Sigal, PhD** (University of Pittsburgh)

**Jonathan Vande Geest, PhD** (University of Pittsburgh)

**Bradley Greger, PhD** (Arizona State University)

<b>FRIDAY, JUNE 23</b>	<b>11:00 AM - 12:30 PM</b>
------------------------	----------------------------

**Workshop: Grad School Pro Tips – Responsible Conduct in Science**

**Tucson IJ**

**Organizers:** Mitra Shabani (Clemson University), Aslak Wigdahl Bergersen (Simula Research Laboratory), Katrina J Hansen (Worcester Polytechnic Institute), and Bhargavi Krishnan (University of Kansas)

During university studies, students are trained in the subject they study, such as biomechanics, numerical methods etc., however they are not taught the study of science, or more practical tasks such as how to peer review. The goal of this workshop is therefore to discuss on how to conduct science responsibly. The workshop will cover a variety of topics including responsible conduct in computational modeling, responsible conduct working with data: acquisition, management, sharing, and ownership of data and responsible conduct in collaborations, peer review, publication practices, and authorship. The workshop will be organized as a panel comprised of fellow presenters at the SB<sup>3</sup>C followed by questions from the audience.

Speakers:

**Sara Wilson, PhD** (University of Kansas)

**Robert Nerem, PhD** (Georgia Institute of Technology)

**Michele Grimm, PhD** (National Science Foundation and Wayne State University)

**Jeffrey Holmes, PhD** (University of Virginia)

Moderator:

**Kristian Valen-Sendstad, Ph.D.** (Simula Research Laboratory, Norway)

<b>FRIDAY, JUNE 23</b>	<b>11:00 AM - 12:30 PM</b>
------------------------	----------------------------

**Workshop: Advanced Medical Imaging for Assessing Physiological Flows**

**San Luis**

**Organizer:** Alejandro Roldán-Alzate (University of Wisconsin – Madison)

Recent advances in medical imaging technologies have improved our ability to non-invasively assess fluid dynamics phenomena in physiological and pathological conditions. The combination of these techniques with experimental set ups as well as numerical simulations have the potential to serve as predictive tools for surgical and treatment planning. The purpose of this workshop is to review the available medical imaging techniques and how those could help the fluid biomechanics research.

Speakers:

**Craig J. Goergen, PhD** (Weldon School of Biomedical Engineering, Purdue University) --

Doppler Ultrasound Imaging for Blood Flow Assessment

**Kevin M. Johnson, PhD** (University of Wisconsin – Madison) -- MRI techniques for imaging fluid flow and motion.

SPECIAL SESSIONS, PLENARY SESSIONS & WORKSHOPS

**Alex Barker, PhD** (Feinberg School of Medicine, Northwestern University) -- MRI Derived Biomarkers of Hemodynamic Performance

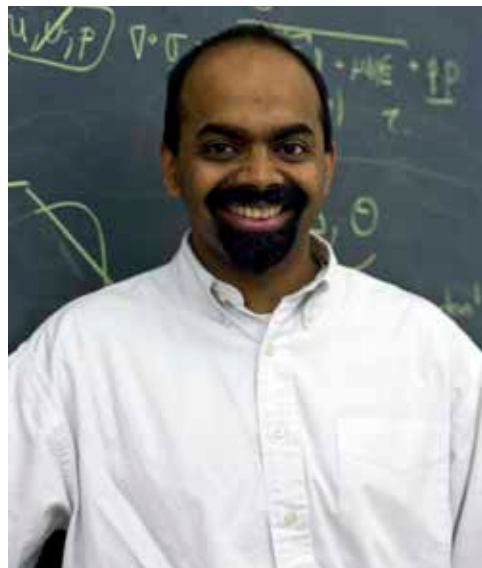
**Charles Strother, MD** (University of Wisconsin – Madison) -- Time Resolved 3D DSA (4D DSA) and Angiographic Flat Detector Derived Dynamic Brain Perfusion Maps; Anatomy and Physiology in the Angiographic Suite

<b>FRIDAY, JUNE 23</b>	<b>5:45 - 6:45 PM</b>
------------------------	-----------------------

**Plenary Lecture: On Growth and Form – Geometry, Physics and Biology** **Tucson EF**

**L. Mahadevan, PhD** (School of Engineering and Applied Sciences, and Departments of Physics, and Organismic and Evolutionary Biology, Harvard University)

A century ago, the publication of D’Arcy Thompson’s classic “On growth and form” laid out his vision to look at form from a mathematical and physical perspective, a view that has finally begun to permeate into the fabric of modern biology. Motivated by qualitative and quantitative biological observations, I will show that there is a “method in the madness” - using examples of growth and form in cells, tissues and organs such as a freely growing pollen tube, undulating fringes on a leaf or petal, the growth of floral spurs, the looping of the gut and the coiling of tendrils. In each case, we will see how a combination of biological and physical experiments, mathematical models and computations allow us to unravel the quantitative basis for the diversity and complexity of biological form, with tantalizing links to evolutionary canalization, biomimetic technologies, and new aspects of geometry and analysis.



<b>FRIDAY, JUNE 23</b>	<b>6:45 - 7:45 PM</b>
------------------------	-----------------------

**Mixer: IAB/SLC Networking Mixer** **Arizona 3-5**

**Organizers:** Industrial Advisory Board and Student Leadership Council

This year the IAB has organized several events specifically designed to meet the needs of conference participants from industry (see page 8 for additional details and events). At this networking mixer, students and industry representatives join together, make connections with potential employers, and network with a wide variety of participants. *(registration required)*

<b>FRIDAY, JUNE 23</b>	<b>6:45 - 7:45 PM</b>
------------------------	-----------------------

**SB<sup>3</sup>C Women’s Networking Event** **Arizona 2**

**Organizer:** Rita M. Patterson (University of North Texas Health Science Center)

We welcome all University Faculty, Post doctorate, Government, and Industry women to attend.

Our purpose is to provide mentoring, networking and communication for women involved in biomedical engineering to help further their careers and facilitate award nominations.

**SATURDAY, JUNE 24****10:30 AM - 12:00 PM****Workshop:****Tucson AB****Establishing and Improving Collaboration Between Industry and Academics**

**Organizers:** Martin L. Tanaka (Western Carolina University) and Alan Eberhardt (University of Alabama at Birmingham)

Establishing collaborations between industry and academics can be beneficial to both. Industry gains access to important research capabilities and academics benefit from a more customer needs focused approach to problem solving. Combining the resources of both entities can create a strong team that can focus on solving critical medical needs. However, the pathway towards joining forces comes with challenges. We have invited two experts to discuss how they initiate and manage these collaborations. Dr. Art Erdman is the Director of the Medical Devices Center at the University of Minnesota, a Fellow of ASME and AIMBE, and former editor of the ASME Journal of Medical Devices. Our second expert, Dr. Ahmed Al-Jumaily, is the Founder & Director of the Institute of Biomedical Technologies at Auckland University of Technology, a Fellow of ASME, and the Track Organizer for Biomedical & Biotechnology Engineering at ASME's IMECE. The workshop will begin with brief presentations by the organizers and key speakers. Following this will be small group discussions where workshop participants can ask the organizers/speakers specific questions. This workshop is sponsored by the Industry Advisory Board; Design, Dynamics, and Rehabilitation Technical Committee; and the Education Committee.

**Speakers:**

**Art Erdman, PhD** (University of Minnesota)

**Ahmed Al-Jumaily, PhD** (Auckland University of Technology – New Zealand)

**SATURDAY, JUNE 24****12:30 PM - 2:00 PM****Workshop:****Tucson AB****From Bench to Bedside: Mechanics, Materials, and Metrics for Tendon Repair and Regeneration**

**Organizers:** Nelly Andarawis-Puri (Cornell University), Alice Huang (Mount Sinai School of Medicine), and Spencer Lake (Washington University)

Tendon and ligament damage is one of the major causes of musculoskeletal dysfunction, yet few new therapies to treat these disorders have emerged, despite considerable clinical interest. Potential strategies to treat damage must integrate numerous considerations, including structure, mechanics, materials, and cell biology. To address these considerations, this workshop will provide an overview of the state of the field, current perspectives, and new insights on tendon biomechanics and tissue engineering/regeneration. Presentations by leading experts will be followed by a breakout discussion with guided talking points to identify new directions for the field and foster collaboration across groups.

**Speakers:**

**Ray Vanderby, PhD** (University of Wisconsin, Madison)

**Ellen Arruda, PhD** (University of Michigan)

<b>SATURDAY, JUNE 24</b>	<b>12:30 PM - 2:00 PM</b>
--------------------------	---------------------------

**Workshop:****Tucson CD****Using MATLAB in Biomedical Engineering Education and Research**

**Organizers:** Rouzbeh Amini (University of Akron), Alisa Morss Clyne (Drexel University), Corinne Henak (University of Wisconsin-Madison), Joseph Iaquinto (VA/University of Washington), Ferris Pfeiffer (University of Missouri), Ye Cheng (Mathworks), Anita Singh (Widener University), Sara Wilson (University of Kansas)

MATLAB is a programming language with numerous built-in functions and examples useful in biomedical engineering education and research. This workshop is designed for a broad audience of SB3C attendees, including graduate students, post-doctoral trainees, and faculty members. During the first 30 minutes of the workshop, Dr. Richard Hart will share his experiences teaching a sophomore biomedical engineering course on “Numerical Simulations in Biomedical Engineering,” which extensively uses MATLAB. During the remaining 60 minutes, Dr. Balaji Sharma from MathWorks will demonstrate how to use MATLAB in education and research, covering topics such as Hardware for project-based learning (such as Arduino/Raspberry Pi), Live editor for interactive teaching, Autograder for instant feedback, App Designer to create MATLAB apps, or Internet of things and data analytics. Through this workshop, attendees will learn about recent features in MATLAB that are relevant to bioengineering teaching and research.

**Speakers:****Richard Hart, PhD** (The Ohio State University)**Balaji Sharma, PhD** (Mathworks)

<b>SATURDAY, JUNE 24</b>	<b>5:45 - 6:45 PM</b>
--------------------------	-----------------------

**H.R. Lissner Medal Award Lecture:****Tucson EF****A Perspective on the Role of Modeling in Biomechanics****Gerard Ateshian, PhD** (Columbia University)

Bioengineering is an interdisciplinary field where engineers often interact with physicians, biologists, biochemists, and other practitioners in the biomedical sciences. Engineers are trained to include modeling as part of their scientific approach for addressing societal needs, but sometimes find themselves at odds trying to justify this fundamental strategy to members of scientific communities that have traditionally relied primarily on experimental observations for uncovering and deducing mechanisms in living systems. This presentation provides my perspective on the challenges, and occasional successes, encountered with the modeling of biological tissues and associated processes in living systems, with illustrations from our research in cartilage mechanics and tissue engineering. I also present my perspective for a road plan to advance biomechanics theories to meet these challenges in the long term.

**2017 RICHARD SKALAK AWARD  
ASME JOURNAL OF BIOMECHANICAL ENGINEERING**

Each year the Editors-in-Chief and the editorial board members of the ASME Journal of Biomechanical Engineering select a paper that they believe is the most meritorious of all the papers published in the Journal in the previous calendar year. The authors of this paper are the recipients of the Richard Skalak Award, named after an early leader within the ASME Bioengineering community. The 2017 award winners will be announced at the conference banquet.

## H.R. Lissner Medal



1977 Robert W. Mann  
 1978 Y.C. Fung  
 1979 Robert F. Rushmer  
 1980 F. Gaynor Evans  
 1981 Max Anliker  
 1982 R.M. Kenedi  
 1983 Henning E. von Gierke  
 1984 Perry L. Blackshear  
 1985 Richard Skalak  
 1986 Albert H. Burstein  
 1987 Van C. Mow  
 1988 Alf Louis Nachemson  
 1989 Robert M. Nerem  
 1990 Albert B. Schultz  
 1991 Savio Lau-Yuen Woo  
 1992 John C. Chato  
 1993 Don P. Giddens  
 1994 Sheldon Weinbaum  
 1995 Robert E. Mates  
 1996 Albert I. King  
 1997 Ajit P. Yoganathan  
 1998 Malcolm H. Pope  
 1999 Stephen C. Cowin  
 2000 Morton H. Friedman  
 2001 W. Michael Lai  
 2002 Kenneth R. Diller  
 2003 Vijay K. Goel  
 2004 John M. Tarbell  
 2005 Steven A. Goldstein  
 2006 Peter A. Torzilli  
 2007 Maury L. Hull  
 2008 Noshir A. Langrana  
 2009 Thomas P. Andriacchi  
 2010 Roger D. Kamm  
 2011 Jay D. Humphrey  
 2012 David Butler  
 2013 Mehmet Toner  
 2014 Kyriacos A. Athanasiou  
 2015 James A. Ashton-Miller  
 2016 Roger C. Haut  
 2017 Gerard A. Ateshian

The H.R. Lissner Medal recognizes outstanding achievements in the field of bioengineering. These achievements may be in the form of (1) significant research contributions in bioengineering; (2) development of new methods of measuring in bioengineering; (3) design of new equipment and instrumentation in bioengineering; (4) educational impact in the training of bioengineers; and/or (5) service to the bioengineering community, in general, and to the Bioengineering Division of ASME, in particular. The Bioengineering Division of ASME established the H. R. Lissner Award as a divisional award in 1977. It was upgraded to a society award in 1987, made possible by a donation from Wayne State University and is named in honor of Professor H. R. Lissner of Wayne State University for his pioneering work in biomechanics that began in 1939.

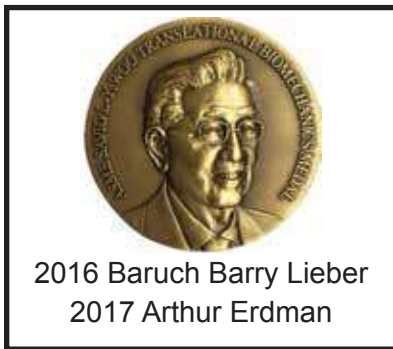
### 2017 Gerard A. Ateshian, PhD

Dr. Gerard A. Ateshian received his B.S. (1986), M.S. (1987) and Ph.D. (1991) degrees in Mechanical Engineering at Columbia, pursuing his doctoral research in the Department of Orthopaedic Surgery. He stayed on as a faculty member at Columbia where he is currently the Andrew Walz Professor of Mechanical Engineering. Dr. Ateshian has been a longstanding member of the Bioengineering Division of ASME (BED), having served on multiple committees and rising to the position of Division Chair in 2006. He has mentored 25 Ph.D. students,



42 M.S. students and 61 B.S. students to date. He has received the Great Teacher Award from the Society of Columbia Graduates in 2002 and the Columbia Engineering Alumni Association Distinguished Faculty Teaching Award in 2012. Dr. Ateshian's research has addressed many different facets of osteoarthritis research with an experimental focus on cartilage mechanics and tissue engineering, while also making significant theoretical and computational advances in the field of continuum mechanics. He was awarded the Y.C. Fung Young Investigator Award from the BED in 1997 and the OARSI Basic Science Award from the Osteoarthritis Research Society International in 2013. He has published over 200 peer-reviewed full-length manuscripts, with 19,000 citations and an h-index of 71. Dr. Ateshian is also a co-developer of the FEBio finite element open-source software suite, which addresses the specific needs of the biomechanics community. Currently, there are more than 5,100 registered FEBio users; since its initial release in 2007 there have been more than 110,000 software downloads.

## Savio L-Y. Woo Medal



The Savio L-Y. Woo Translational Biomechanics Medal was established in June 2015 as a society-level award and recognizes a sustained level of meritorious contributions in translating bioengineering research to clinical application, to improve the quality of life. This award is named in honor of Savio Lau-Yuen Woo, Ph.D., Distinguished University Professor of Bioengineering and the Founder and Director of the Musculoskeletal Research Center (MSRC), a diverse multidisciplinary research and educational center in the Department of Bioengineering at the University of Pittsburgh. Beyond pioneering and world-renowned scholarly contributions, Professor Woo has made an enormous impact in 40 years of translational research that has significantly contributed to the delivery of healthcare. Any member of ASME who has demonstrated a sustained level of outstanding achievement in translating bioengineering findings to the clinical community may be eligible for this medal.

### 2017 Arthur Erdman, PhD

Arthur G. Erdman, P.E., is the Richard C. Jordan Professor and a Morse Alumni Distinguished Teaching Professor of Mechanical Engineering at the University of Minnesota, specializing in mechanical design, bioengineering and product design. In July 2007, he was selected as the Director of the Medical Devices Center at the U of M and is also the Co-Editor of the ASME Journal of Medical Devices.

He received his BS degree at Rutgers University, his MS and Ph.D. at RPI. Dr. Erdman has published over 370 technical papers, 3 books, is co-inventor of over 45 patents and shares with his former students 9 Best Paper Awards at international conferences. Dr. Erdman has had research collaborations with numerous health sciences faculty including those in Ophthalmology, Neuroscience, Epidemiology, Cardiology, Urology, Orthopedics, Surgery, Dentistry, Otolaryngology, Veterinary Medicine and Sports Biomechanics.

He has consulted at over 50 companies in mechanical, biomedical and product design, including Xerox, 3M, Andersen Windows, Proctor and Gamble, HP, Rollerblade, Sulzer Medica, St. Jude Medical and Yamaha. He has received a number of awards including ASME Machine Design Award, the ASME Outstanding Design Educator Award and the U of M Outstanding Service Award. Erdman is a Fellow of ASME and a Founding Fellow of AIMBE. Dr. Erdman has served as chair of the Publications committee, the Design Division and the Bioengineering Divisions of ASME. He has also been the Chair of fifteen Design of Medical Devices Conferences which are held next to the University of Minnesota each April.

In April 2013, he received the Academy of Medical Device Innovators Award from the University of Minnesota and The Institute for Engineering for Medicine. Dr. Erdman was selected as a "Titan of Technology" in the Technology Advocate category October 2014 by the Minneapolis/St. Paul Business Journal. In 2017 he received the ASME Savio L-Y Woo Translational Biomechanics Medal, for "translating meritorious bioengineering science to clinical practice through research, education, professional development, and with service to the bioengineering community."



## Van C. Mow Medal



2005 Kyriacos A. Athanasiou  
 2006 Robert Lie-Yuan Sah  
 2007 Lori A. Setton  
 2008 Scott L. Delp  
 2009 Michael Sacks  
 2010 Tony M. Keaveny  
 2011 David A. Vorp  
 2012 John Bischof  
 2013 Jeffrey Weiss  
 2014 Christopher R. Jacobs  
 2015 Dawn M. Elliott  
 2016 Beth A. Winkelstein  
 2017 Richard R. Neptune

The Van C. Mow Medal is bestowed upon an individual who has made significant contributions to the field of bioengineering through research, education, professional development, leadership in the development of the profession, as a mentor to young bioengineers, and with service to the bioengineering community. The individual must have earned a PhD or equivalent degree between ten and twenty years prior to June 1 of the year of the award. The award was established by the Bioengineering Division in 2004.

### 2017 Richard R. Neptune, PhD

Dr. Richard R. Neptune earned his Ph.D. in Mechanical Engineering from the University of California, Davis. He held post-doctoral positions at the University of Calgary and the VA Palo Alto Rehabilitation Research and Development Center. He has served on the Department of Mechanical Engineering faculty at UT



Austin since 2001. His research integrates musculoskeletal modeling, computer simulation and experimental analyses to identify the neuromotor and biomechanical mechanisms that contribute to locomotor impairments in those with movement disabilities including lower-limb amputees, stroke patients and wheelchair users. His research also seeks to improve the performance of orthotic and prosthetic devices using advanced additive manufacturing techniques. His research has been supported primarily by the Department of Veteran's Affairs, National Science Foundation and National Institutes of Health. He has received the American Society of Biomechanics Young Scientist Award and CAREER award from the National Science Foundation. He is also the recipient of the Da Vinci Award from the Engineering Society of Detroit and National Multiple Sclerosis Society and the Outstanding Young Scientist Award from the Houston Society for Engineering in Medicine and Biology. He recently received the Joe and Bettie Branson Ward Endowed Excellence Award from The University of Texas at Austin for his teaching and research that has contributed to changes of positive value to society. He also received the Lockheed Martin Aeronautics Company Award for Excellence in Engineering Teaching and was elected Fellow of the American Society of Biomechanics. He has served ASME in a number of capacities including organizing and chairing conference sessions and as an Associate Editor for the Journal of Biomechanical Engineering. He is currently the Chair of the Department of Mechanical Engineering and a Provost Teaching Fellow, and holds the John T. MacGuire Professorship in Mechanical Engineering.

## Y.C. Fung Young Investigator Award



1986 Mark H. Holmes  
 1987 Steven A. Goldstein  
 1989 David N. Ku  
 1990 Jay D. Humphrey  
 1991 Michael Kwan  
 1992 Cheng Zhu  
 1993 John A. Frangos  
 1994 Mehmet Toner  
 1995 Cheng Dong  
 1996 Antony Keaveny  
 1997 Gerard A. Ateshian  
 1998 Louis J. Soslowsky  
 1999 Rebecca Richards-  
 Kortum  
 2000 Farshid Guilak  
 2001 David F. Meaney  
 2002 Jeffrey A. Weiss  
 2003 Sangeeta N. Bhatia  
 2004 Richard E. Debski  
 2005 Jeffrey W. Holmes  
 2006 Beth A. Winkelstein  
 2007 Stavros Thomopoulos  
 2008 Gabriel A. Silva  
 2009 Robert Mauck  
 2010 Matthew J. Gounis  
 2011 Ali Khademhosseini  
 2012 Marissa Nichole  
 Rylander  
 2013 Jonathan Vande Geest  
 2014 W. David Merryman  
 2015 Adam J. Engler  
 2016 Triantafyllos  
 Stylianopoulos  
 2017 Kristin Myers

The Y.C. Fung Young Investigator Award is given to young investigators who are committed to pursuing research in the field of Bioengineering and have demonstrated significant potential to make substantial contributions to the field of Bioengineering. Such accomplishments may take the form of, but are not limited to, design or development of new methods, equipment or instrumentation in bioengineering; and research publications in peer-reviewed journals. The award was established by the Bioengineering Division in 1985 and operated as a division award until 1998 when it was elevated to a Society award.

### 2017 Kristin Myers, PhD

Kristin Myers is an Associate Professor in the Department of Mechanical Engineering at Columbia University in the City of New York. She received her Mechanical Engineering doctorate (2008) and masters (2005) degrees from MIT under the mentorship of Dr. Simona Socrate and her bachelors (2002) degree from the University of Michigan under the guidance of Dr. Alan Wine- man. In 2010 she completed post-doctoral research in the field of ocular biomechanics mentored by Dr. Thao (Vicky)



Nguyen at Johns Hopkins. In 2010 she founded the Myers Soft Tissue Lab at Columbia, which uses experimental, theoretical, and computational mechanics to solve problems in Women's Health and Reproductive Biomechanics. With clinical translation in mind, her lab is uncovering the structural antecedents of preterm birth. Through the experimental interrogation of nonpregnant and pregnant cervical tissue and multi-organ finite element models of pregnancy, her work has: 1) quantified the nonlinear and time-dependent material behavior of the cervix, 2) measured the evolution of cervical collagen crosslinking throughout a murine pregnancy, identifying the key gestational time points of collagen network remodeling, 3) established an anisotropic material model for human cervix informed by collagen directionality data 4) quantified and visualized the loading environment of human pregnancy to uncover the load-sharing capability

of the uterus, fetal membranes, and cervix, and 5) demonstrated the structural role of the cervical collagen fiber architecture and collagen fiber strength in preventing early cervical deformation. Dr. Myers' work is funded by the NIH, NSF, and the March of Dimes, including the NSF CAREER award to develop the framework to model hormone-mediated tissue growth and remodeling of the uterine cervix during pregnancy.

## The SB<sup>3</sup>C Program Committee thanks all of our abstract reviewers!

Adam Abraham	Nilay Chakraborty	Tom Gardner	Roland Kaunas
Steven Abramowitch	Deva Chan	Brian Garner	Eric Kennedy
Ankush Aggarwal	Grace Chao	Francis Gayzik	Pekkan Kerem
Jonathan Akins	Ajit Chaudhari	Michael Gee	Mariana Kersh
Ozan Akkus	Naomi Chesler	Guy Genin	Sepideh Khoshnevis
Alptekin Aksan	Claudio Chiastra	Stephanie George	Ata Kiapour
Ali Akyildiz	Karmonik Christof	Rudy Gleason	Megan Killian
Gambaruto Alberto	Brittany Coats	Jason Gleghorn	Hyunjoon Kong
Pat Alford	David Corr	VijayK. Goel	Reuben Kraft
Kyle Allen	Daniel Cortes	Craig Goergen	Ethan Kung
Alejandro Almarza	Lakshmi Dasi	Matt Gounis	Mehmet Kurt
Buck Amanda	Rafael Davalos	Joan Greve	Michael Kutzer
Rouzbeh Amini	Lance Davidson	Michele Grimm	Laurel Kuxhaus
Nelly Andarawis-Puri	Raffaella De Vita	Anna Grosberg	Spencer Lake
Andrew Anderson	Richard Debski	Rafael Grytz	Hongzhi Lan
Anayiotos Andreas	Lou DeFrate	Edward Guo	Avione Lee
Dennis Andrews	Dean Demetropoulos	Christopher Haggerty	Chung-Hao Lee
Elizabeth Antoine	Ram Devireddy	Bumsoo Han	Jia-Jye Lee
Seungik Baek	Paolo DiAchile	Hai-Chao Han	Lik Chuan Lee
James Baish	Denis DiAngelo	Sangyoon Han	Susan Lessner
Brendon Baker	Kenneth Diller	Brendan Harley	Guoan Li
Rupak Banerjee	Todd Doehring	Nastaran Hashemi	Justin Lipner
Victor Barocas	Matthew Doyle	Fatemeh Hassanipour	X. Sherry Liu
Mark Begonia	Andrew Drach	Hamed	Yaling Liu
Chiara Bellini	Alan Eberhardt	Hatami-Marbini	Jia Lu
Joel Berry	Benjamin Ellis	Xiaoming He	Trevor Lujan
Matthew Bersi	Adam Engler	Zhaoming He	Herbertson Luke
Christopher Bertram	Alejandro Espinoza	Rebecca Heise	Hannah Lundberg
Michael Bey	Pena Estefania	Corinne Henak	Suzanne Maher
Shamik Bhattacharya	Ross Ethier	Heath Henninger	Lorin Maletsky
Sankha Bhowmick	Cui Fangsen	Jeff Holmes	Keefe Manning
Kristen Billiar	Yuan Feng	Timothy Holsgrove	Navid
John Bischof	Andrew Feola	Robert Hood	Manuchehrabadi
Jeff Bischoff	Virginia Ferguson	Alice Huang	Haojie Mao
Joel Boerckel	Jacopo Ferruzzi	Zhongping Huang	Alison Marsden
Sachin Budhabhatti	Richard Figliola	Allison Hubel	Robert Mauck
Christine Buffinton	Ender Finol	Campbell Ian	Patrick McGarry
Adrian Buganza	Ken Fischer	Joseph Iaquinto	Tom Merrill
Tepole	Matt Fisher	Jeff Jacot	W. David Merryman
Tammy Bush	Vittoria Flamini	Sheriff Jawaad	Clark Meyer
Jonathan Butcher	Gijsen Frank	Songbai Ji	Sharp Michael Keith
Ian Campbell	Cai Gao	Liao Jun	Arthur Michalek
Allesandro Carriero	John Gardiner	Konstantinos	Kristin Miller
Nadeen Chahine	Joseph Gardinier	Kapnisis	Mark Miller

ABSTRACT REVIEWERS

Kunal Mitra	Marnie Saunders	Zhijie Wang
Ken Monson	Daniele Schiavazzi	Jennifer Wayne
James Moore	Shawn Shadden	Ashley Weaver
Elise Morgan	Tarek Shazly	Johannes
Melissa Morrow	Jason Shearn	Weickenmeier
Alisa Morss	Joseph Sherwood	Jeffrey Weiss
Sungsoo Na	Ian Sigal	Jonathan Wenk
Raghu Natarajan	Chelsey Simmons	Lakiesha Williams
Celeste Nelson	Hyun Sinjae	Sara Wilson
Rick Neptune	Joshua Smith	Beth Winkelstein
Nandan Nerurkar	Nate Sniadecki	Colleen Witzenburg
Corey Neu	Joao Soares	Laura Wojcik
Dan Nicolella	Lou Soslowsky	Jeff Wolchok
Glen Niebur	Jessica Sparks	Neil Wright
Niamh Nowlan	Meade Spratley	Jun Xu
Grace O'Connell	David Steinman	Choon Hwai Yap
Jessica Oakes	Joel Stitzel	Narayan Yoganandan
Darryl Overby	Shannon Stott	Kyoko Yoshida
Matt Paszek	Antonis Stylianou	Meilin Yu
Amit Pathak	Philippe Sucusky	Yang Yun
Segers Patrick	Wei Sun	Rana Zakerzadeh
Rita Patterson	Harinig	Aili Zhang
Ryan Pedrighi	Sundararaghavan	JiangYue Zhang
Carrie Peterson	Larry Taber	Katherine Zhang
Ferris Pfeiffer	Wei Tan	Wujie Zhang
David Pierce	Dalin Tang	Gang Zhao
Heidi-Lynn Pleog	Darryl Thelen	Jiangbing Zhou
Christopher Price	Stavros Thomopoulos	Liang Zhu
Paolo Provenzano	Amy Throckmorton	
Zhenpeng Qin	Lucas Timmins	
Raghu Raghavan	Joseph Towles	
Ramesh Raghupathy	Morbiducci Umberto	
Sharan Ramaswamy	Jillian Urban	
Amber RathStern	Daniela Valdez-Jasso	
Manuel Rausch	Kristian	
Matthew Reilly	Valen-Sendstad	
Sara Roccabianca	Jonathan Vande Geest	
Alejandro	Carolyn VanToen	
Roldán-Alzate	Vijay Vedula	
Steven Rowson	Liming Voo	
Chris Rylander	Andrew Voorhees	
M. Nichole Rylander	Jessica Wagenseil	
Ali Sadegh	Amy Wagoner	
Ed Sander	Johnson	
Sethuraman Sankaran	Joseph Wallace	
Sarah C Vigmostad	Hai Wang	
Malisa Sarntinoranont	Sihong Wang	
Sudeep Sastry	Vincent Wang	

## HOW TO NAVIGATE THIS BOOK

This year the organizing committee made a few changes to the program book related to the assigned abstract number, (e.g. SB<sup>3</sup>C2017-1 or SB<sup>3</sup>C2017-P1). Below are examples of a technical session presentation and a poster presentation as they are presented in the program book with a box around the abstract number.

### Technical Session (Podium) Presentation Example

2:45PM **Alterations in Mechanical Properties and In Vivo Geometry of the Mitral Valve Following Myocardial Infarction**

SB<sup>3</sup>C2017-1

**Bruno V. Rego**<sup>1</sup>, Salma Ayoub<sup>1</sup>, Amir H. Khalighi<sup>1</sup>, Andrew Drach<sup>1</sup>, Joseph H. Gorman<sup>2</sup>, Robert C. Gorman<sup>2</sup>, Michael S. Sacks<sup>1</sup>, <sup>1</sup>*Institute for Computational Engineering and Sciences, The University of Texas at Austin, Austin, TX, United States*, <sup>2</sup>*Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA, United States*

Here the “1” at the end indicates the number of the presentation as it is listed in the program book. It also indicates the order of the abstract in the conference proceedings.

Here “P1” at the end indicates that this is a poster presentation and it is the first listed in the program book. This is also the number to use when hanging your poster. It also indicates the order of the abstract in the conference proceedings following the technical session presentations.

### Poster Presentation Example

**The Effect of Floor Stiffness on Standing Posture and Sway** SB<sup>3</sup>C2017-P1

**Daiane Aizen Grill**<sup>1</sup>, Sara E. Wilson<sup>1</sup>, <sup>1</sup>*Department of Mechanical Engineering, The University of Kansas, Lawrence, KS, United States*

Additionally, there are 2 author indices (as highlighted below). The first organizes the authors according to the **presentation number** as described above. It starts on page 85. The second organizes authors according to the **page number** in the program book. It starts on page 98. There is also a session chair/co-chair index organized by page number on page 109.

AUTHOR INDEX BY PRESENTATION NUMBER

#### Author Index

Abdulhai, Sophia ..... 299	Anderson, Deirdre E. .... 147	Banks, Darren ..... 117
Abel, Richard L. .... 48	Anderson, Ronald C. .... P165	Bankwala, Danesh ..... 325
Ables, Elizabeth T. .... 281	Andreasen, Christina ..... 22	Bansal, Sonia ..... 164

AUTHOR INDEX BY PAGE NUMBER

Black, Anthony ..... 35, 64	Burgoyne, Suzanne ..... 68	Che, Zifan ..... 51
Blanche, Syndey ..... 28	Burris, David L. .... 34, 45	Chen, Christopher S. .... 57
Bland, Megan L. .... 41	Bush, Tamara Reid ..... 32, 69, 76	Chen, Michelle L. .... 76
Blome, Oliver ..... 81	Bushman, Sarah ..... 28	Chen, Po-Hsu ..... 75

# **SCIENTIFIC SESSIONS**

**Wednesday, June 21****2:45pm - 4:15pm****Heart Valve Mechanics (Solids)****Tucson AB****Session Chair: Wei Sun**, *Georgia Institute of Technology, GA, United States***Session Co-Chair: Robert L. Hood**, *Houston Methodist, TX, United States*

- 2:45PM Alterations in Mechanical Properties and In Vivo Geometry of the Mitral Valve Following Myocardial Infarction** SB<sup>3</sup>C2017-1  
**Bruno V. Rego**<sup>1</sup>, Salma Ayoub<sup>1</sup>, Amir H. Khalighi<sup>1</sup>, Andrew Drach<sup>1</sup>, Joseph H. Gorman<sup>2</sup>, Robert C. Gorman<sup>2</sup>, Michael S. Sacks<sup>1</sup>, <sup>1</sup>*Institute for Computational Engineering and Sciences, The University of Texas at Austin, Austin, TX, United States*, <sup>2</sup>*Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA, United States*
- 3:00PM Blocking Cadherin-11 Prevents Calcific Aortic Valve Disease In Notch1<sup>+/-</sup> Mice** SB<sup>3</sup>C2017-2  
**W. David Merryman**, Cyndi Clark, *Vanderbilt University, Nashville, TN, United States*
- 3:15PM Coaptation Zone in Tricuspid Annulus Cinching: A Pilot Study Using an Ex-Vivo Porcine Model** SB<sup>3</sup>C2017-3  
**Ashley Thomas**<sup>1</sup>, Paola Diaz-Portela<sup>2</sup>, Edward Y. Sako<sup>3</sup>, Shamik Bhattacharya<sup>2</sup>, <sup>1</sup>*Physics, St. Mary's University, San Antonio, TX, United States*, <sup>2</sup>*Engineering, St. Mary's University, San Antonio, TX, United States*, <sup>3</sup>*Cardiothoracic Surgery, The University of Texas Health Science Center at San Antonio, San Antonio, TX, United States*
- 3:30PM Effect Of Restricting Mitral Valve Annular Contraction On Anterior Leaflet Strain: An In Vitro Study** SB<sup>3</sup>C2017-4  
**Thomas F. Easley**<sup>1</sup>, Vinay Bhal<sup>2</sup>, Charles H. Bloodworth<sup>1</sup>, Ajit P. Yoganathan<sup>2</sup>, <sup>1</sup>*Parker H. Petit Institute for Bioengineering and Bioscience, Georgia Institute of Technology, Atlanta, GA, United States*, <sup>2</sup>*Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology, Atlanta, GA, United States*
- 3:45PM In Vitro Left Heart System with 7T MRI Provides High Resolution Mitral Valve 3D Imaging Datasets for Computational Modeling** SB<sup>3</sup>C2017-5  
Sam E. Stephens<sup>1</sup>, Mariana R. Maissonette<sup>2</sup>, Serguei Liachenko<sup>3</sup>, Jonathan F. Wenk<sup>4</sup>, **Morten O. Jensen**<sup>2</sup>, <sup>1</sup>*Department of Mechanical Engineering, University of Arkansas, Fayetteville, AR, United States*, <sup>2</sup>*Department of Biomedical Engineering, University of Arkansas, Fayetteville, AR, United States*, <sup>3</sup>*Bioimaging Laboratory, Division of Neurotoxicology, FDA National Center for Toxicology Research, Jefferson, AR, United States*, <sup>4</sup>*Department of Mechanical Engineering, University of Kentucky, Lexington, KY, United States*
- 4:00PM Long-term Growth Of Calcific Aortic Valve Disease: A Mechanobiology Model** SB<sup>3</sup>C2017-6  
**Amirhossein Arzani**<sup>1</sup>, Kristyn S. Masters<sup>2</sup>, Mohammad R. K. Mofrad<sup>1</sup>, <sup>1</sup>*University of California Berkeley, Berkeley, CA, United States*, <sup>2</sup>*University of Wisconsin Madison, Madison, WI, United States*

**Wednesday, June 21****2:45pm - 4:15pm****Spine Mechanics (Solids)****Tucson CD****Session Chair: Beth Winkelstein**, *University of Pennsylvania, PA, United States***Session Co-Chair: John Peloquin**, *University of Delaware, DE, United States*

- 2:45PM Biomechanical Differences Between Male And Female Sacroiliac Joints Implanted With Three Different Sacroiliac Implant Systems: Stress Analyses** SB<sup>3</sup>C2017-7  
**Amin Joukar**, Anoli Shah, Ali Kiapour, Ardalan Seyed Vosoughi, Anand K. Agarwal, Hossein Elgafy, Nabil Ebraheim, Vijay K. Goel, *University of Toledo, Toledo, OH, United States*
- 3:00PM The Occipitoatlantal Capsular Ligaments Are The Primary Stabilizers of The Adult Craniocervical Junction** SB<sup>3</sup>C2017-8  
**Rinchen Phuntsok**<sup>1,2</sup>, Douglas L. Brockmeyer<sup>3</sup>, Andrew T. Dailey<sup>3</sup>, Michael R. Herron<sup>1,2</sup>, Kenneth L. Smith<sup>1,2</sup>, Benjamin J. Ellis<sup>1,2</sup>, <sup>1</sup>*Department of Bioengineering, University of Utah, Salt Lake City, UT, United States*, <sup>2</sup>*Scientific Computing and Imaging Institute, University of Utah, Salt Lake City, UT, United States*, <sup>3</sup>*Department of Neurosurgery, University of Utah, Salt Lake City, UT, United States*
- 3:15PM Towards Enhancing the Consistency of Vertebral Kinematics in a Rat Dislocation Spinal Cord Injury Model** SB<sup>3</sup>C2017-9  
**Stephen Mattucci**<sup>1</sup>, Jie Liu<sup>2</sup>, Paul Fijal<sup>1</sup>, Wolfram Tetzlaff<sup>2</sup>, Thomas Oxlund<sup>1</sup>, <sup>1</sup>*Orthopaedics, University of British Columbia, Vancouver, BC, Canada*, <sup>2</sup>*International Collaboration on Repair Discoveries (ICORD), Vancouver, BC, Canada*

SCIENTIFIC SESSIONS

- 3:30PM Electro-Mechanical Actuator for High Frequency Magnetic Resonance Elastography In-Vivo of the Spine** SB<sup>3</sup>C2017-10  
**Sean M. Rothenberger**<sup>1</sup>, Thomas U. Neuberger<sup>2</sup>, Corina S. Drapaca<sup>3</sup>, Daniel H. Cortes<sup>1</sup>, <sup>1</sup>*Department of Mechanical and Nuclear Engineering, Pennsylvania State University, University Park, PA, United States*, <sup>2</sup>*Department of Biomedical Engineering, Pennsylvania State University, University Park, PA, United States*, <sup>3</sup>*Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA, United States*
- 3:45PM MRI Quantification of In Vivo Human Disc Diurnal Compression and Induced Flexion** SB<sup>3</sup>C2017-11  
**Kyle D. Meadows**<sup>1</sup>, John M. Peloquin<sup>1</sup>, Edward J. Vresilovic<sup>2</sup>, Dawn M. Elliott<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, University of Delaware, Newark, DE, United States*, <sup>2</sup>*Department of Orthopaedics and Rehabilitation, Pennsylvania State University, Newark, DE, United States*
- 4:00PM Effect of Spinal Fusion on Biomechanics of Adjacent Segment Discs: An In-Vivo Patient Study** SB<sup>3</sup>C2017-12  
**Kamran Z. Khan**<sup>1</sup>, Thomas D. Cha<sup>1</sup>, Louis G. Jenis<sup>1</sup>, James D. Kang<sup>2</sup>, Kirkham B. Wood<sup>3</sup>, Guoan Li<sup>1</sup>, <sup>1</sup>*Orthopaedic Surgery, Harvard Medical School & Massachusetts General Hospital, Boston, MA, United States*, <sup>2</sup>*Orthopaedic Surgery, Harvard Medical School & Brigham and Women's Hospital, Boston, MA, United States*, <sup>3</sup>*Orthopaedic Surgery, Stanford University Medical Center, Redwood City, CA, United States*

<b>Wednesday, June 21</b>	<b>2:45pm - 4:15pm</b>
---------------------------	------------------------

**Cardiovascular Growth, Remodeling, & Repair (Solids)**

**Tucson IJ**

**Session Chair:** Seungik Baek, *Michigan State University, MI, United States*  
**Session Co-Chair:** Chiara Bellini, *Yale University, CT, United States*

- 2:45PM Computational Modeling Of Remodeling Following Relief Of Hemodynamic Overload In A Biventricular Canine Heart Model** SB<sup>3</sup>C2017-13  
**Amir Nikou**<sup>1</sup>, Kyoko Yoshida<sup>2</sup>, Colleen M. Witzenburg<sup>2</sup>, Andrew D. McCulloch<sup>1</sup>, Jeffrey H. Omens<sup>1</sup>, Jeffrey W. Holmes<sup>2</sup>, <sup>1</sup>*University of California San Diego, La Jolla, CA, United States*, <sup>2</sup>*University of Virginia, Charlottesville, VA, United States*
- 3:00PM Targeting Serotonin 2B Receptor To Improve Cardiac Function Following Myocardial Infarction** SB<sup>3</sup>C2017-14  
**J. Caleb Snider**<sup>1</sup>, Qinkun Zhang<sup>2</sup>, Hind Lal<sup>2</sup>, W. David Merryman<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, Vanderbilt University, Nashville, TN, United States*, <sup>2</sup>*Department of Cardiovascular Medicine, Vanderbilt University, Nashville, TN, United States*
- 3:15PM The Interplay of Growth and Remodeling in Human Heart Valves During Somatic Growth** SB<sup>3</sup>C2017-15  
Pim J. A. Oomen<sup>1,2</sup>, Carlijn V. C. Bouten<sup>1</sup>, Ellen Kuhl<sup>2</sup>, **Sandra Loerakker**<sup>1,2</sup>, <sup>1</sup>*Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*, <sup>2</sup>*Mechanical Engineering, Stanford University, Stanford, CA, United States*
- 3:30PM Regional Variations in Cell-Matrix Mechano-Adaptation Drive Hypertensive Vascular Remodeling** SB<sup>3</sup>C2017-16  
**Matthew R. Bersi**<sup>1,2</sup>, Ramak Khosravi<sup>2</sup>, Anna Wujciak<sup>2</sup>, Alexander W. Caulk<sup>2</sup>, David G. Harrison<sup>3</sup>, Jay D. Humphrey<sup>2,4</sup>, <sup>1</sup>*Biomedical Engineering, Vanderbilt University, Nashville, TN, United States*, <sup>2</sup>*Biomedical Engineering, Yale University, New Haven, CT, United States*, <sup>3</sup>*Medicine and Pharmacology, Vanderbilt University, Nashville, TN, United States*, <sup>4</sup>*Vascular Biology & Therapeutics Program, Yale University, New Haven, CT, United States*
- 3:45PM Strain Mediated Enzyme Degradation of Arterial Tissue; Implications in Disease and Medical Device Design** SB<sup>3</sup>C2017-17  
**Robert Gaul**, Caitriona Lally, *Trinity College Dublin, Dublin, Ireland*
- 4:00PM Modelling the Dissection of Arterial Tissue** SB<sup>3</sup>C2017-18  
**Brian FitzGibbon**<sup>1,2</sup>, Niamh Hynes<sup>2</sup>, Sherif Sultan<sup>2</sup>, Peter McHugh<sup>1</sup>, Patrick McGarry<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, National University of Ireland, Galway, Co. Galway, Ireland*, <sup>2</sup>*Western Vascular Institute, Vascular & Endovascular Surgery, Galway University Hospitals, Co. Galway, Ireland*

Wednesday, June 21

2:45pm - 4:15pm

**Bone Biomechanics (Solids)****San Ignacio****Session Chair:** Elise Morgan, *Boston University, MA, United States***Session Co-Chair:** Dan Nicolella, *Southwest Research Institute, TX, United States*

- 2:45PM Effects of Daily and Cyclic Parathyroid Hormone (PTH) Treatment Regimens on Bone in Ovariectomized Rats** SB<sup>3</sup>C2017-19  
**Hongbo Zhao**, Wei-Ju Tseng, Wonsae Lee, Yang Liu, Yihan Li, Chantal de Bakker, X.Sherry Liu, *Department of Orthopaedic Surgery, University of Pennsylvania, Philadelphia, PA, United States*
- 3:00PM TART Cherry Prevents Bone Loss Through Inhibition of RANKL in TNF-Overexpressing Mice** SB<sup>3</sup>C2017-20  
**Linda A. Effiong**<sup>1</sup>, Nicolas Moon<sup>2</sup>, Saquib Nizami<sup>1</sup>, Thomas R. Gardner<sup>1</sup>, Do Y. Soung<sup>1</sup>, *Department of Orthopaedic Surgery, Columbia University, New York, NY, United States*, <sup>2</sup>*Department of Medicine, Case Western Reserve University, Cleveland, OH, United States*
- 3:15PM In Vivo Bone Strain and Cortical Bone Response to Mechanical Load in the Mouse Tibia** SB<sup>3</sup>C2017-21  
**Kari Verner**<sup>1</sup>, Haisheng Yang<sup>2</sup>, Russell Main<sup>2</sup>, <sup>1</sup>*Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN, United States*, <sup>2</sup>*Basic Medical Sciences, Purdue University, West Lafayette, IN, United States*
- 3:30PM The Relationship Between Pore Morphology and Cortical Bone Mechanics** SB<sup>3</sup>C2017-22  
Lydia P. Bakalova<sup>1</sup>, Jesper S. Thomsen<sup>2</sup>, Christina M. Andreasen<sup>3</sup>, Annemarie Br uel<sup>2</sup>, Ellen M. Hauge<sup>2</sup>, Birgitte Jul Kill<sup>2</sup>, Thomas Levin Andersen<sup>3</sup>, **Mariana E. Kersh**<sup>1</sup>, *Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States*, <sup>2</sup>*Department of Biomedicine, Aarhus University, Aarhus, Denmark*, <sup>3</sup>*Dept. of Clinical Cell Biology (KCB), Vejle Hospital - Lilleb elt Hospital, Institute of Regional Health Research, University of Southern Denmark, Vejle, Denmark*
- 3:45PM Experimental Measurement of Multiaxial Strain States and Multiaxial Yielding of Trabecular Bone During Vertebral Failure** SB<sup>3</sup>C2017-23  
**Johnfredy Loaiza**, Amira I. Hussein, Elise F. Morgan, *Mechanical Engineering, Boston University, Boston, MA, United States*
- 4:00PM Development and Validation of Subject-Specific Proximal Femur and Lumbar Spine Finite Element Models of Obese, Older Adults to Evaluate the Effects of Weight Loss on Bone Strength** SB<sup>3</sup>C2017-24  
**Ashley A. Weaver**<sup>1</sup>, Samantha L. Schoell<sup>1</sup>, Daniel P. Beavers<sup>2</sup>, Leon Lenchik<sup>3</sup>, W. Jack Rejeski<sup>4</sup>, Joel D. Stitzel<sup>1</sup>, Kristen M. Beavers<sup>4</sup>, <sup>1</sup>*Biomedical Engineering, Wake Forest University, Winston-Salem, NC, United States*, <sup>2</sup>*Biostatistical Sciences, Wake Forest University, Winston-Salem, NC, United States*, <sup>3</sup>*Radiology, Wake Forest University, Winston-Salem, NC, United States*, <sup>4</sup>*Health and Exercise Science, Wake Forest University, Winston-Salem, NC, United States*

Wednesday, June 21

2:45pm - 4:15pm

**Thrombosis (Fluids)****Tucson GH****Session Chair:** Keefe Manning, *Pennsylvania State University, PA, United States***Session Co-Chair:** Shawn Shadden, *UC Berkeley, CA, United States*

- 2:45PM Limitations of the Scalar Stress for Predicting Hemolysis in Complex Flows** SB<sup>3</sup>C2017-25  
**Mohammad M. Faghieh**, M. Keith Sharp, *Mechanical Engineering, University of Louisville, Louisville, KY, United States*
- 3:00PM 3D Reconstruction Of The Hemostatic Plug Transport Microenvironment** SB<sup>3</sup>C2017-26  
**Mehran Mirramezani**<sup>1</sup>, Maurizio Tomaiuolo<sup>2</sup>, Timothy J. Stalker<sup>2</sup>, Shawn C. Shadden<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of California, Berkeley, Berkeley, CA, United States*, <sup>2</sup>*Department of Medicine, University of Pennsylvania, Philadelphia, PA, United States*
- 3:15PM An Investigation of the Relationship between Platelet Adhesion and Surface Topography in the Penn State Pediatric VAD** SB<sup>3</sup>C2017-27  
Ashlyn Mueser<sup>1</sup>, Chris A. Siedlecki<sup>1,2</sup>, William J. Weiss<sup>1,2</sup>, **Keefe B. Manning**<sup>1,2</sup>, <sup>1</sup>*Biomedical Engineering, The Pennsylvania State University, University Park, PA, United States*, <sup>2</sup>*Surgery, Penn State Hershey Medical Center, Hershey, PA, United States*

- 3:30PM A Predictive Multiscale Mode For Simulating Flow-induced Platelet Activation And Aggregation: Correlating With In-vitro Results** SB<sup>3</sup>C2017-28  
**Peng Zhang**<sup>1</sup>, Jawaad Sheriff<sup>1</sup>, Prachi Gupta<sup>2</sup>, Marvin J. Slepian<sup>3</sup>, Yuefan Deng<sup>2</sup>, Danny Bluestein<sup>1</sup>, <sup>1</sup>*Biomedical Engineering Department, Stony Brook University, Stony Brook, NY, United States*, <sup>2</sup>*Applied Mathematics Department, Stony Brook University, Stony Brook, NY, United States*, <sup>3</sup>*Departments of Medicine and Biomedical Engineering, University of Arizona, Tucson, AZ, United States*
- 3:45PM Clot Formation in a Model Intracranial Aneurysm is Modulated by Endovascular Coil Shape and Arrangement** SB<sup>3</sup>C2017-29  
**Brittany Earnest**<sup>1</sup>, Avery J. Evans<sup>2</sup>, Brian P. Helmke<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, University of Virginia, Charlottesville, VA, United States*, <sup>2</sup>*Radiology, University of Virginia, Charlottesville, VA, United States*
- 4:00PM Evaluation of a Near-Wall Residence Time Model for Thrombogenic Potential** SB<sup>3</sup>C2017-30  
**Kirk B. Hansen**, Shawn C. Shadden, *Mechanical Engineering, University of California, Berkeley, Berkeley, CA, United States*

<b>Wednesday, June 21</b>	<b>2:45pm - 4:15pm</b>
---------------------------	------------------------

### Biotransport and Microfluidics (BTR)

San Luis

**Session Chair:** Bumsoo Han, *Purdue University, IN, United States*

**Session Co-Chair:** Jiangzhou Zhou, *Yale University, CT, United States*

- 2:45PM Efficient Capture Of Circulating Tumor Cells In A Microfluidic Device** SB<sup>3</sup>C2017-31  
**Yaling Liu**<sup>1,2</sup>, Shunqiang Wang<sup>1</sup>, Wentao Shi<sup>2</sup>, <sup>1</sup>*Department of Mechanical Engineering and Mechanics, Lehigh University, Bethlehem, PA, United States*, <sup>2</sup>*Bioengineering Program, Lehigh University, Bethlehem, PA, United States*
- 3:00PM Microfluidic Sorting Of Cell Viability Based On Stiffness For Applications In Regenerative Medicine** SB<sup>3</sup>C2017-32  
 Muhymin Islam<sup>1</sup>, Hannah Brink<sup>2</sup>, Sydney Blanche<sup>2</sup>, Caleb DiPrete<sup>2</sup>, Tom Bongiorno<sup>1</sup>, Nicholas Stone<sup>1</sup>, Anna Liu<sup>2</sup>, Anisha Philip<sup>3</sup>, Gonghao Wang<sup>1</sup>, Wilbur Lam<sup>2,3</sup>, Alexander Alexeev<sup>1</sup>, Edmund K. Waller<sup>3</sup> **Todd Sulchek**<sup>1,2</sup>, <sup>1</sup>*George W. Woodruff School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, United States*, <sup>2</sup>*Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology, Atlanta, GA, United States*, <sup>3</sup>*Winship Cancer Institute, Emory School of Medicine, Atlanta, GA, United States*
- 3:15PM PTEN Deletion in Pancreatic Cancer Associated Fibroblasts Decreases Hydraulic Permeability in a 3D Microfluidic Model of the Tumor Stroma** SB<sup>3</sup>C2017-33  
**Alex Avendano**<sup>1</sup>, Jonathan Chang<sup>2</sup>, Christina Ennis<sup>3</sup>, Amanda Stratton<sup>4</sup>, Jason R. Pitarresi<sup>5</sup>, Michael C. Ostrowski<sup>6</sup>, Jonathan W. Song<sup>1,6</sup>, <sup>1</sup>*Department of Mechanical Engineering, The Ohio State University, Columbus, OH, United States*, <sup>2</sup>*Department of Biomedical Engineering, The Ohio State University, Columbus, OH, United States*, <sup>3</sup>*Neuroscience, Kenyon College, Gambier, OH, United States*, <sup>4</sup>*Bioengineering, Lehigh University, Bethlehem, PA, United States*, <sup>5</sup>*Division of Gastroenterology, University of Pennsylvania, Philadelphia, PA, United States*, <sup>6</sup>*The Comprehensive Cancer Center, The Ohio State University, Columbus, OH, United States*
- 3:30PM Development Of A Vascularized 3D Microfluidic Tumor Platform To Study Particle Transport** SB<sup>3</sup>C2017-34  
**Manasa Gadde**<sup>1</sup>, Rhys Michna<sup>2</sup>, Marissa N. Rylander<sup>3</sup>, <sup>1</sup>*Biomedical Engineering, University of Texas at Austin, Austin, TX, United States*, <sup>2</sup>*Mechanical Engineering, University of Texas at Austin, Austin, TX, United States*, <sup>3</sup>*Mechanical Engineering, University of Texas at Austin, Austin, TX, United States*
- 3:45PM Relation Between Accuracy and Persistence of Cancer Cell Migration Under Chemical Gradient** SB<sup>3</sup>C2017-35  
**Hye-ran Moon**<sup>1</sup>, Julien Varennes<sup>2</sup>, Andrew J. Mugler<sup>2</sup>, Bumsoo Han<sup>1,3</sup>, <sup>1</sup>*School of Mechanical Engineering, Purdue University, West Lafayette, IN, United States*, <sup>2</sup>*Department of Physics and Astronomy, Purdue University, West Lafayette, IN, United States*, <sup>3</sup>*Purdue Center for Cancer Research, Purdue University, West Lafayette, IN, United States*
- 4:00PM Impact of CXCL-12 Isoforms on Breast Cancer Invasion** SB<sup>3</sup>C2017-36  
**Sarah Bushman**, *Ohio State University, Columbus, OH, United States*

**Wednesday, June 21****2:45pm - 4:15pm****Intrinsic and Extrinsic Regulation of Cellular  
Mechanotransduction (CTE)****San Pedro****Session Chair:** Joel Boerckel, *University of Notre Dame, IN, United States***Session Co-Chair:** Pen-hsiu Grace Chao, *National Taiwan University, Taipei, Taiwan*

- 2:45PM Nuclear Envelope Wrinkling and Connectivity Regulates MSC Mechano-Adaptation and YAP/TAZ Translocation** SB<sup>3</sup>C2017-37  
**Brian D. Cosgrove**, Tristan P. Driscoll, Eric N. Dai, Su-Jin Heo, Jason A. Burdick, Robert L. Mauck, *Bioengineering, University of Pennsylvania, Philadelphia, PA, United States*
- 3:00PM Modulating Substrate Stiffness, Cell Morphology and Oxygen Availability in 3D Hydrogels Direct the Chondrogenic and Myogenic Differentiation of Mesenchymal Stem Cells** SB<sup>3</sup>C2017-38  
**Paola Aprile**, Binulal N. Sathy, Daniel J. Kelly, *Trinity College Dublin, Dublin, Ireland*
- 3:15PM The Role Of Cadherin-11 In Mediating Mechanical Cues In Fibroblasts** SB<sup>3</sup>C2017-39  
**Meghan A. Bowler**<sup>1</sup>, Matthew R. Bersi<sup>1</sup>, Rachel J. Jerrell<sup>2</sup>, Aron Parekh<sup>2</sup>, W. David Merryman<sup>1</sup>, *<sup>1</sup>Biomedical Engineering Vanderbilt University, Nashville, TN, United States, <sup>2</sup>Otolaryngology, Vanderbilt University, Nashville, TN, United States*
- 3:30PM Modelling The Influence Of Cell Shape And Other Mechanical Cues On Differentiation** SB<sup>3</sup>C2017-40  
**Hamsini Suresh**, Siamak Soleymani Shishvan, Vikram Sudhir Deshpande, *Engineering, University of Cambridge, Cambridge, United Kingdom*
- 3:45PM Anisotropic YAP Mechanotransduction** SB<sup>3</sup>C2017-41  
**Wen-Cih Wen**, Pen-Hsiu Grace Chao, *Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan*
- 4:00PM Cell Cycle Synchronization Modulates Chondrogenesis and Mechanotransduction of Mesenchymal Stem Cells** SB<sup>3</sup>C2017-42  
**Andrea R. Tan**<sup>1</sup>, Eben G. Estell<sup>1</sup>, Alfonso Martin-Peña<sup>2</sup>, J. Chloe Bulinski<sup>3</sup>, Clark T. Hung<sup>1</sup>, *<sup>1</sup>Biomedical Engineering, Columbia University, New York, NY, United States, <sup>2</sup>Orthopaedics and Rehabilitation, University of Florida, Gainesville, FL, United States, <sup>3</sup>Biological Sciences, Columbia University, New York, NY, United States*

**Wednesday, June 21****4:30pm - 6:00pm****Soft Tissue Characterization and Modeling  
(Solids)****Tucson AB****Session Chair:** Jun Liao, *Mississippi State University, MS, United States***Session Co-Chair:** Spandan Maiti, *University of Pittsburgh, PA, United States*

- 4:30PM Experimental Characterization of Airway Tissue Exhibits Pronounced Directional and Regional Mechanical Property Variations** SB<sup>3</sup>C2017-43  
**Mona Eskandari**, Alberto L. Arvayo, Ellen Kuhl, Marc E. Levenston, *Mechanical Engineering, Stanford University, Stanford, CA, United States*
- 4:45PM Fatigue Failure of Simulated Networks: Effect of Network Architecture on its Fatigue Behavior** SB<sup>3</sup>C2017-44  
**Rohit Y. Dhume**, Victor H. Barocas, *Department of Mechanical Engineering, University of Minnesota, Minneapolis, MN, United States*
- 5:00PM Biaxial Mechanical Properties of Venous Valve Leaflet Tissues** SB<sup>3</sup>C2017-45  
**Jiaqi Lu**, Adam Benson, **Hsiao-Ying Shadow Huang**, *North Carolina State University, Raleigh, NC, United States*
- 5:15PM In Vivo Comparison of Myelin and Stiffness Maps in the Human Brain** SB<sup>3</sup>C2017-46  
**Efe Ozkaya**<sup>1</sup>, Max Wintermark<sup>2</sup>, Mehmet Kurt<sup>1</sup>, *<sup>1</sup>Stevens Institute of Technology, Hoboken, NJ, United States, <sup>2</sup>Department of Radiology, Stanford University, Stanford, CA, United States*

**5:30PM Influence Of Size And Shape On The Biomechanical Environment Of The Human Lamina Cribrosa: A Study On Racioethnic Disparity SB<sup>3</sup>C2017-47**

**Hirut G. Kolley<sup>1</sup>**, Reza Behkam<sup>2</sup>, Jonathan P. Vande Geest<sup>1,2,3,4</sup>, *Computation Modeling and Simulation, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>2</sup>*Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>3</sup>*Louis J. Fox Center for Vision Restoration, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>4</sup>*McGowan Institute for Regenerative Medicine, University of Pittsburgh, Pittsburgh, PA, United States*

**5:45PM The Impact of Cerebrospinal Fluid Pressure on Optic Nerve Head Deformation SB<sup>3</sup>C2017-48**

**Andrew Feola<sup>1</sup>**, Baptiste Coudrillier<sup>1,2</sup>, John Mulvihill<sup>1,3</sup>, Diogo M. Geraldles<sup>4</sup>, Nghia T. Vo<sup>5</sup>, Julie Albon<sup>6,7</sup>, Richard L. Abel<sup>8</sup>, Brian Samuels<sup>9</sup>, Ross Ethier<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, Georgia Institute of Technology and Emory University, Atlanta, GA, United States*, <sup>2</sup>*Exponent Inc., Menlo, CA, United States*, <sup>3</sup>*University of Limerick, Limerick, Ireland*, <sup>4</sup>*Mechanical Engineering, Imperial College London, London, United Kingdom*, <sup>5</sup>*Diamond Light Source, Didcot, United Kingdom*, <sup>6</sup>*School of Optometry and Vision Sciences, Cardiff University, Cardiff, United Kingdom*, <sup>7</sup>*Cardiff Institute of Tissue Engineering and Repair, Cardiff University, Cardiff, United Kingdom*, <sup>8</sup>*Surgery and Cancer, Imperial College London, London, United Kingdom*, <sup>9</sup>*Ophthalmology, University of Alabama at Birmingham, Birmingham, AL, United States*

**Wednesday, June 21****4:30pm - 6:00pm**

**Celebration for Larry Taber: Growth and Remodeling in Development and Disease (Solids/CTE)**

**Tucson CD**

**Session Chair: Pat Alford**, *University of Minnesota, MN, United States*

**Session Co-Chair: Victor Varner**, *The University of Texas at Dallas, TX, United States*

**4:30PM Vascular Smooth Muscle Cell Mechano-Adaptation Depends on Extracellular Mechanical Properties SB<sup>3</sup>C2017-49**

Kerianne E. Steucke, Kamilah Y. Amen, **Patrick W. Alford**, *Biomedical Engineering, University of Minnesota, Minneapolis, MN, United States*

**4:45PM Beyond the Force: Mechanics of Early Development in the Frog Illustrate Fundamental Design Principles of Growth and Development SB<sup>3</sup>C2017-50**

**Lance A. Davidson<sup>1,2</sup>**, <sup>1</sup>*Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>2</sup>*Developmental Biology, University of Pittsburgh, Pittsburgh, PA, United States*

**5:00PM FGF-Mediated Tensional Gradients Drive Morphogenesis of the Avian Hindgut. SB<sup>3</sup>C2017-51**

**Nandan L. Nerurkar<sup>1</sup>**, L. Mahadevan<sup>2</sup>, Cliff Tabin<sup>1</sup>, <sup>1</sup>*Genetics, Harvard Medical School, Boston, MA, United States*, <sup>2</sup>*Harvard University, Cambridge, MA, United States*

**5:15PM Buckling Morphogenesis of the Embryonic Airway Epithelium SB<sup>3</sup>C2017-52**

**Victor D. Varner**, *The University of Texas at Dallas, Richardson, TX, United States*

**5:30PM Modeling Mechanical Regulation of Gene Expression in Ventricular Myocytes SB<sup>3</sup>C2017-53**

**Andrew D. McCulloch<sup>1</sup>**, Kyle S. Buchholz<sup>1</sup>, Philip M. Tan<sup>2</sup>, Jeffrey H. Omens<sup>3</sup>, Jeffrey J. Saucerman<sup>2</sup>, <sup>1</sup>*Bioengineering, UC San Diego, La Jolla, CA, United States*, <sup>2</sup>*Biomedical Engineering, University of Virginia, Charlottesville, VA, United States*, <sup>3</sup>*Medicine, UC San Diego, La Jolla, CA, United States*

**5:45PM What Drives Cortical Folding in the Brain? SB<sup>3</sup>C2017-54**

**Philip V. Bayly<sup>1</sup>**, Gang Xu<sup>2</sup>, <sup>1</sup>*Mechanical Engineering and Materials Science, Washington University in Saint Louis, Saint Louis, MO, United States*, <sup>2</sup>*Engineering and Physics, University of Central Oklahoma, Edmond, OK, United States*

Wednesday, June 21

4:30pm - 6:00pm

**Atherosclerosis (Fluids)**

Tucson GH

Session Chair: Alison Marsden, *Stanford University, CA, United States*Session Co-Chair: Frank Gijzen, *Erasmus MC, Netherlands*

- 4:30PM Prediction of Post Stenotic Flow Instabilities in a Patient Specific Common Carotid Artery Model** SB<sup>3</sup>C2017-55  
Viviana Mancini<sup>1</sup>, Aslak Bergersen<sup>2</sup>, Patrick Segers<sup>1</sup>, Kristian Valen-Sendstad<sup>2</sup>, <sup>1</sup>*IBiTech-bioMMeda, Ghent University, Ghent, Belgium*, <sup>2</sup>*Scientific Computing, Simula Research Laboratory, Lysaker, Norway*
- 4:45PM Comprehensive Characterization of Rabbit Aortic Arch Hemodynamics from 4D PC-MRI Derived CFD** SB<sup>3</sup>C2017-56  
David S. Molony<sup>1</sup>, Lei Zhou<sup>1</sup>, Jaekeun Park<sup>1</sup>, Candace Fleischer<sup>1</sup>, John N. Oshinski<sup>1,2</sup>, Xiaoping Hu<sup>3</sup>, Habib Samady<sup>1</sup>, Amir Rezvani<sup>1</sup>, Don P. Giddens<sup>2</sup>, <sup>1</sup>*Department of Medicine, Emory University, Atlanta, GA, United States*, <sup>2</sup>*Wallace H Coulter Department of Biomedical Engineering, Georgia Institute of Technology, Atlanta, GA, United States*, <sup>3</sup>*Department of Bioengineering, University of California, Riverside, Riverside, CA, United States*
- 5:00PM Hemodynamic Risk in Coronary Bifurcations: A Computational Exploration** SB<sup>3</sup>C2017-57  
Diego Gallo<sup>1</sup>, Claudio Chiastra<sup>2</sup>, Paola Tasso<sup>1</sup>, Francesco Iannaccone<sup>3</sup>, Francesco Migliavacca<sup>2</sup>, Jolanda J. Wentzel<sup>4</sup>, Umberto Morbiducci<sup>1</sup>, <sup>1</sup>*Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Turin, Italy*, <sup>2</sup>*Department of Chemistry, Materials and Chemical Engineering "Giulio Natta", Politecnico di Milano, Milan, Italy*, <sup>3</sup>*FEops NV, Ghent, Belgium*, <sup>4</sup>*Department of Cardiology, Biomedical Engineering, Erasmus MC, Rotterdam, Netherlands*
- 5:15PM Blocking Cadherin-11 Decreases Atherosclerotic Plaque Development** SB<sup>3</sup>C2017-58  
Camryn L. Johnson<sup>1</sup>, MacRae F. Linton<sup>2</sup>, W. David Merryman<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, Vanderbilt University, Nashville, TN, United States*, <sup>2</sup>*Department of Pharmacology, Vanderbilt University, Nashville, TN, United States*
- 5:30PM Temporal And Spatial Correlation Of Wall Shear Stress To Plaque Composition In Atherosclerotic Mice During Plaque Progression** SB<sup>3</sup>C2017-59  
Ruoyu Xing, Astrid Moerman, Yanto Ridwan, Kim van der Heiden, Frank Gijzen, *Erasmus Medical Center, Rotterdam, Netherlands*
- 5:45PM Baseline Right Ventricular Function Does Not Predict Sudden Death in Sickle Cell Mice** SB<sup>3</sup>C2017-60  
David A. Schreier<sup>1</sup>, Diana Tabima<sup>1</sup>, Tim A. Hacker<sup>2</sup>, Naomi C. Chesler<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, University of Wisconsin-Madison, Madison, WI, United States*, <sup>2</sup>*Medicine, University of Wisconsin-Madison, Madison, WI, United States*

Wednesday, June 21

4:30pm - 6:00pm

**Biofluids (Fluids)**

Tucson IJ

Session Chair: Jessica M. Oakes, *Northeastern University, MA, United States*Session Co-Chair: Bryn A. Martin, *University of Idaho, ID, United States*

- 4:30PM Inter-Subject Variability to Inhaled Aerosols** SB<sup>3</sup>C2017-61  
Jessica M. Oakes, *Bioengineering, Northeastern University, Boston, MA, United States*
- 4:45PM Multiphase Flow Dynamics of Penetrant Behavior in Cough** SB<sup>3</sup>C2017-62  
Don Nadun S. Kuruppumullage<sup>1</sup>, Bari Hoffman Ruddy<sup>2</sup>, Olusegun J. Ilegbusi<sup>1</sup>, <sup>1</sup>*Mechanical and Aerospace Engineering, University of Central Florida, Orlando, FL, United States*, <sup>2</sup>*Communication Sciences and Disorders, University of Central Florida, Orlando, FL, United States*
- 5:00PM Measurement of the Diffusion Coefficient of Oxygen in the Vitreous Humor** SB<sup>3</sup>C2017-63  
Anita N. Penkova<sup>1</sup>, Komsan Rattanakijuntorn<sup>2</sup>, Anahid Khoobyar<sup>1</sup>, Karthik Murali<sup>3</sup>, Mark S. Humayun<sup>4</sup>, Satwindar S. Sadhal<sup>1</sup>, <sup>1</sup>*Aerospace & Mechanical Engineering, University of Southern California, Los Angeles, CA, United States*, <sup>2</sup>*Mechanical Engineering, Ubon Ratchathani University, Ubonratchathani, Thailand*, <sup>3</sup>*D-Health Lab, University of Southern California, Los Angeles, CA, United States*, <sup>4</sup>*Ophthalmology, Biomedical Engineering, University of Southern California, Los Angeles, CA, United States*
- 5:15PM A Simulation Framework Of Multiscale Flow In Lymphatic Vessel Networks** SB<sup>3</sup>C2017-64  
Lowell T. Edgar, Christopher J. Morris, James E. Moore, *Imperial College London, London, United Kingdom*

SCIENTIFIC SESSIONS

- 5:30PM Contraction of Collecting Lymphatics: Organization of Pressure-Dependent Rate for Multiple Lymphangions** SB<sup>3</sup>C2017-65  
**Christopher D. Bertram**<sup>1</sup>, Charlie Macaskill<sup>1</sup>, Michael J. Davis<sup>2</sup>, <sup>1</sup>*School of Mathematics and Statistics, University of Sydney, New South Wales, Australia*, <sup>2</sup>*Dept. of Medical Pharmacology and Physiology, University of Missouri School of Medicine, Columbia, MO, United States*
- 5:45PM Pulsatility Dictates Lymph Flow In Vivo** SB<sup>3</sup>C2017-66  
 Akshay Pujari<sup>1</sup>, Daniel T. Sweet<sup>2</sup>, Mark L. Kahn<sup>2</sup>, **Juan M. Jimenez**<sup>1</sup>, <sup>1</sup>*Mechanical and Industrial Engineering, University of Massachusetts, Amherst, MA, United States*, <sup>2</sup>*Medicine and Division of Cardiology, University of Pennsylvania, Philadelphia, PA, United States*

<b>Wednesday, June 21</b>	<b>4:30pm - 6:00pm</b>
---------------------------	------------------------

**Strategies to Improve Rehabilitation Treatments  
(DDR/IAB)**

**San Luis**

**Session Chair:** Anita Singh, *Rowan University, NJ, United States*  
**Session Co-Chair:** Paola Jaramillo, *Virginia Tech, VA, United States*

- 4:30PM Repetitive Small-Angle Flexion May Increase Injury Risk: An Ex-Vivo Study** SB<sup>3</sup>C2017-67  
 Nicole Corbiere-Gale, Stacey L. Zeigler, Christopher Towler, Kathleen A. Issen, Arthur J. Michalek, **Laurel Kuxhaus**, *Clarkson University, Potsdam, NY, United States*
- 4:45PM Walking Speed Changes in Response to User-Driven Treadmill Control** SB<sup>3</sup>C2017-68  
**Nicole Ray**<sup>1</sup>, Brian Knarr<sup>2</sup>, Jill Higginson<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of Delaware, Newark, DE, United States*, <sup>2</sup>*Biomechanics, University of Nebraska at Omaha, Omaha, NE, United States*
- 5:00PM Improvements In Gait After Combinational Treatment Strategy In Contused Rats** SB<sup>3</sup>C2017-69  
 Alexander Herman<sup>1</sup>, Rebecca Gomezrueda<sup>2</sup>, Jennifer Kadlowec<sup>1</sup>, Andrea J. Vernengo<sup>3</sup>, **Anita Singh**<sup>1,2</sup>, <sup>1</sup>*Mechanical Engineering, Rowan University, Glassboro, NJ, United States*, <sup>2</sup>*Biomedical Engineering, Widener University, Chester, PA, United States*, <sup>3</sup>*Chemical Engineering, Rowan University, Glassboro, NJ, United States*
- 5:15PM Soft Robotic Devices for Hand Rehabilitation: A Narrative Review** SB<sup>3</sup>C2017-70  
**Rita M. Patterson**<sup>1</sup>, Chia-Ye Chu<sup>2</sup>, <sup>1</sup>*Family Medicine, University of North Texas Health Science Center, Fort Worth, TX, United States*, <sup>2</sup>*Texas College of Osteopathic Medicine, University of North Texas Health Science Center, Fort Worth, TX, United States*
- 5:30PM Loading Patterns Associated With Postural Change** SB<sup>3</sup>C2017-71  
**Justin Scott**, Kelly Patterson, Lindsay Hoard, Michael Drost, Tamara Reid Bush, *Department of Mechanical Engineering, Michigan State University, East Lansing, MI, United States*
- 5:45PM The Psychophysical Effects of Haptic Feedback in the Perceptual Awareness of a Powered Transfemoral Limb** SB<sup>3</sup>C2017-72  
**J. Miles Canino**, Kevin B. Fite, *Mechanical and Aeronautical Engineering, Clarkson University, Potsdam, NY, United States*

<b>Wednesday, June 21</b>	<b>4:30pm - 6:00pm</b>
---------------------------	------------------------

**Micro-Engineered Physiologic Systems (CTE)**

**San Ignacio**

**Session Chair:** Sharan Ramaswamy, *Florida International University, FL, United States*  
**Session Co-Chair:** David Corr, *Rensselaer Polytechnic Institute, NY, United States*

- 4:30PM Skin-on-a-Chip: A Microengineered Platform for Studies in Skin Mechanobiology** SB<sup>3</sup>C2017-73  
**Megan J. Farrell**<sup>1</sup>, Thomas F. Seykora<sup>1</sup>, Susan W. Volk<sup>2</sup>, George Cotsarelis<sup>3</sup>, Dongeun (Dan) Huh<sup>1</sup>, <sup>1</sup>*Department of Bioengineering, University of Pennsylvania, Philadelphia, PA, United States*, <sup>2</sup>*Department of Clinical Studies, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA, United States*, <sup>3</sup>*Department of Dermatology, University of Pennsylvania, Philadelphia, PA, United States*

- 4:45PM Valve Interstitial Cell Mechanics Within a 3-D Poly(ethylene glycol) Hydrogel Environment** SB<sup>3</sup>C2017-74  
**Alex C. Khang**<sup>1</sup>, Andrea G. Rodriguez<sup>2</sup>, Megan Schroeder<sup>3</sup>, Kristi Anseth<sup>2,3,4</sup>, Michael S. Sacks<sup>1</sup>, <sup>1</sup>Center for Cardiovascular Simulation, Department of Biomedical Engineering, University of Texas at Austin, Austin, TX, United States, <sup>2</sup>Department of Chemical and Biological Engineering, University of Colorado at Boulder, Boulder, CO, United States, <sup>3</sup>Department of Materials Science and Engineering, University of Colorado at Boulder, Boulder, CO, United States, <sup>4</sup>Howard Hughes Medical Institute and the Biofrontiers Institute, University of Colorado at Boulder, Boulder, CO, United States
- 5:00PM Interplay of Multi-typed Hepatic Cells under Shear Flow** SB<sup>3</sup>C2017-75  
 Yu Du, Hao Yang, Ning Li, **Mian Long**, Institute of Mechanics, Chinese Academy of Sciences, Beijing, China
- 5:15PM A Chemogenetic Tool to Control Chondrocyte Activity in vitro** SB<sup>3</sup>C2017-76  
**Ryan C. McDonough**<sup>1</sup>, Janty Shoga<sup>2</sup>, Christopher Price<sup>1,2</sup>, <sup>1</sup>Biomedical Engineering, University of Delaware, Newark, DE, United States, <sup>2</sup>Biomechanics and Movement Science, University of Delaware, Newark, DE, United States
- 5:30PM Develop A High Throughput Flow Platform For Controlled Stem Cell Growth Activity** SB<sup>3</sup>C2017-77  
**Ansha Zhao**<sup>1,2</sup>, Yonghui Ding<sup>1</sup>, Michael Floren<sup>1</sup>, Cameron Morley<sup>1</sup>, Wei Tan<sup>1</sup>, <sup>1</sup>Department of Mechanical Engineering, University of Colorado at Boulder, Boulder, CO, United States, <sup>2</sup>Department of Material Science and Engineering, Southwest Jiaotong University, Chengdu, Sichuan, China
- 5:45PM Sprouting Lymphangiogenesis Regulated By Combined Biochemical And Mechanical Stimulation In A 3-D Microfluidic Device** SB<sup>3</sup>C2017-78  
**Chia-Wen Chang**<sup>1</sup>, Pawan Kumar<sup>2</sup>, Jonathan W. Song<sup>2,3</sup>, <sup>1</sup>Chemical and Biomolecular Engineering, The Ohio State University, Columbus, OH, United States, <sup>2</sup>The Comprehensive Cancer Center, The Ohio State University, Columbus, OH, United States, <sup>3</sup>Mechanical and Aerospace Engineering, The Ohio State University, Columbus, OH, United States

<b>Wednesday, June 21</b>	<b>4:30pm - 6:00pm</b>
---------------------------	------------------------

**Microenvironmental Control of Tissue Formation  
and Cell Function (CTE)**

**San Pedro**

**Session Chair: Brendon Baker**, University of Michigan, MI, United States

**Session Co-Chair: Wei Tan**, University of Colorado Boulder, CO, United States

- 4:30PM Interfacial Mechanics Determine Tissue Architecture of Normal and Diseased Breast** SB<sup>3</sup>C2017-79  
**Vasudha Srivastava**<sup>1</sup>, James C. Garbe<sup>1,2</sup>, Mark A. LaBarge<sup>3</sup>, Zev J. Gartner<sup>1</sup>, <sup>1</sup>Pharmaceutical Chemistry, University of California San Francisco, San Francisco, CA, United States, <sup>2</sup>Life Sciences Division, Lawrence Berkeley National Lab, Berkeley, CA, United States, <sup>3</sup>Population Sciences, City of Hope National Medical Center, Duarte, CA, United States
- 4:45PM A Computational Microstructural Network Model to Test Dunn's Hypotheses of Contact Guidance** SB<sup>3</sup>C2017-80  
**Victor K. Lai**<sup>1</sup>, Rohit Y. Dhume<sup>2</sup>, Lauren M. Bersie<sup>3</sup>, Victor H. Barocas<sup>3</sup>, Robert T. Tranquillo<sup>3</sup>, <sup>1</sup>Chemical Engineering, University of Minnesota - Duluth, Duluth, MN, United States, <sup>2</sup>Mechanical Engineering, University of Minnesota - Twin Cities, Minneapolis, MN, United States, <sup>3</sup>Biomedical Engineering, University of Minnesota - Twin Cities, Minneapolis, MN, United States
- 5:00PM A Coupled Chemo-mechanical Cell-matrix Model to Predict Mechanical Feedback Between Cells and Extracellular Matrices** SB<sup>3</sup>C2017-81  
**Farid Alisafaei**<sup>1</sup>, Matthew Hall<sup>2</sup>, Mingming Wu<sup>2</sup>, Vivek Shenoy<sup>1</sup>, <sup>1</sup>Department of Materials Science and Engineering, University of Pennsylvania, Philadelphia, PA, United States, <sup>2</sup>Department of Biological and Environmental Engineering, Cornell University, Ithaca, NY, United States
- 5:15PM Identification Of TRPV4 as a Pressure Mechanosensor In The Developing Lung** SB<sup>3</sup>C2017-82  
 Joshua T. Morgan, Wade G. Stewart, **Jason P. Gleghorn**, Biomedical Engineering, University of Delaware, Newark, DE, United States
- 5:30PM The Influence of Matrix Stiffness on Directed Cell Migration in Aligned Fibrous Microenvironments** SB<sup>3</sup>C2017-83  
**William Y. Wang**, Brendon M. Baker, Biomedical Engineering, University of Michigan, Ann Arbor, MI, United States
- 5:45PM Stretch Cannot Account for Enhanced Branching of Occluded Embryonic Lungs** SB<sup>3</sup>C2017-84  
 Uduak George<sup>1</sup>, Kishore Bokka<sup>1</sup>, David Warburton<sup>2</sup>, **Sharon Lubkin**<sup>1</sup>, <sup>1</sup>North Carolina State University, Raleigh, NC, United States, <sup>2</sup>Childrens Hospital Los Angeles, Los Angeles, CA, United States

<b>Thursday, June 22</b>	<b>12:30pm - 2:00pm</b>
--------------------------	-------------------------

### Multiscale Analysis of Cartilage and Intervertebral Disc (Solids)

**Tucson AB**

**Session Chair:** Daniel H. Cortes, *Penn State University, PA, United States*

**Session Co-Chair:** Grace D. O'Connell, *University of California, Berkeley, CA, United States*

- 12:30PM Development of Three-Dimensional Soft Materials Elastography Based on Magnetic Resonance Imaging and Topology Optimization** SB<sup>3</sup>C2017-85  
**Luyao Cai**<sup>1</sup>, Claus B. W. Pedersen<sup>2</sup>, Corey P. Neu<sup>3</sup>, <sup>1</sup>*Biomedical Engineering, Purdue University, West Lafayette, IN, United States*, <sup>2</sup>*Dassault Systèmes Deutschland GmbH, Hamburg, Germany*, <sup>3</sup>*Mechanical Engineering, University of Colorado Boulder, Boulder, CO, United States*
- 12:45PM Role of Pricellular Matrix In Modulating Chondrocyte Strains in Healthy and Osteoarthritic Cartilage** SB<sup>3</sup>C2017-86  
**Mehdi Khoshgofar**, Peter A. Torzilli, Suzanne A. Maher, *Orthopaedic Soft Tissue Research Program, Hospital for Special Surgery, New York, NY, United States*
- 1:00PM Effect of Biphasic Parameters and Fibril Orientation on Transient Cartilage Mechanics in the Hip** SB<sup>3</sup>C2017-87  
**Jocelyn Todd**<sup>1</sup>, Huashan Zou<sup>1</sup>, Travis G. Maak<sup>2</sup>, Jeffrey A. Weiss<sup>1</sup>, <sup>1</sup>*Department of Bioengineering, University of Utah, Salt Lake City, UT, United States*, <sup>2</sup>*Department of Orthopaedics, University of Utah, Salt Lake City, UT, United States*
- 1:15PM Fully Automated, Hexahedral Meshing of Patient-Specific Cartilage Structures: Data From the OAI** SB<sup>3</sup>C2017-88  
 Borja Rodriguez-Vila<sup>1</sup>, **David M. Pierce**<sup>2</sup>, <sup>1</sup>*Bioengineering and Telemedicine Centre, Universidad Politécnica de Madrid, Madrid, Spain*, <sup>2</sup>*Departments of Mechanical Engineering/Biomedical Engineering, University of Connecticut, Storrs, CT, United States*
- 1:30PM Does Regular Physical Activity Help Mitigate Cartilage Strains?** SB<sup>3</sup>C2017-89  
**Axel C. Moore**<sup>1</sup>, Brian T. Graham<sup>2</sup>, Christopher Price<sup>1</sup>, David L. Burris<sup>2</sup>, <sup>1</sup>*Biomedical Engineering, University of Delaware, Newark, DE, United States*, <sup>2</sup>*Mechanical Engineering, University of Delaware, Newark, DE, United States*
- 1:45PM Human Disc Nucleotomy: Annulus Fibrosus Internal Deformations are Only Altered at Low Loads** SB<sup>3</sup>C2017-90  
**Amy A. Claeson**<sup>1</sup>, Brent L. Showalter<sup>2</sup>, Edward J. Vresilovic<sup>3</sup>, Alexander C. Wright<sup>4</sup>, James C. Gee<sup>4</sup>, Neil R. Malhotra<sup>4</sup>, Dawn M. Elliott<sup>1</sup>, <sup>1</sup>*Department of Biomedical Engineering, University of Delaware, Newark, DE, United States*, <sup>2</sup>*Department of Bioengineering, University of Pennsylvania, Philadelphia, PA, United States*, <sup>3</sup>*Department of Orthopaedics and Rehabilitation, University of Pennsylvania, Hershey, PA, United States*, <sup>4</sup>*Department of Radiology, University of Pennsylvania, Philadelphia, PA, United States*

<b>Thursday, June 22</b>	<b>12:30pm - 2:00pm</b>
--------------------------	-------------------------

### Soft Tissue Mechanobiology (Solids)

**Tucson CD**

**Session Chair:** Jessica Wagenseil, *Washington University in St. Louis, MO, United States*

**Session Co-Chair:** Lik Chuan Lee, *Michigan State University, MI, United States*

- 12:30PM The Role of Mechanical Forces on Hemisphere Division in the Embryonic Forebrain** SB<sup>3</sup>C2017-91  
**Kara E. Garcia**, Larry A. Taber, *Biomedical Engineering, Washington University in St. Louis, St. Louis, MO, United States*
- 12:45PM Prestrain Regulates Cell Sensing Of Topo-mechanical Cues To Direct Annulus Fibrosus Mechanobiology** SB<sup>3</sup>C2017-92  
**Edward D. Bonnevie**<sup>1</sup>, Dawn Elliott<sup>2</sup>, Rob Mauck<sup>1</sup>, <sup>1</sup>*University of Pennsylvania, Philadelphia, PA, United States*, <sup>2</sup>*University of Delaware, Newark, DE, United States*
- 1:00PM Local Mechanical Properties of 3D Collagen Hydrogels Assessed via Optical Magnetic Twisting Cytometry** SB<sup>3</sup>C2017-93  
**Jacopo Ferruzzi**<sup>1</sup>, Haiyue Li<sup>2</sup>, Atena Irani Shemirani<sup>1</sup>, Yanhang Zhang<sup>2</sup>, Muhammad Hamid Zaman<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, Boston University, Boston, MA, United States*, <sup>2</sup>*Mechanical Engineering, Boston University, Boston, MA, United States*

- 1:15PM Mechanobiology of Healing: Modeling the Coordination Between Collagen Deposition and Wound Contraction** SB<sup>3</sup>C2017-94  
**Adrian Buganza Tepole**, *Mechanical Engineering, Purdue University, West Lafayette, IN, United States*
- 1:30PM Evaluation of Strain Energy Functions for the Development of a Growth and Remodeling Model of Age-Specific Murine Patellar Tendon Healing** SB<sup>3</sup>C2017-95  
**Akinjide R. Akintunde**, Kristin S. Miller, *Biomedical Engineering, Tulane University, New Orleans, LA, United States*
- 1:45PM Biomechanical Comparison of Anatomical Osteochondral Allograft vs. "Snowman" Configuration** SB<sup>3</sup>C2017-96  
**Ferris M. Pfeiffer**, Aaron Stoker, James P. Stannard, James L. Cook, *University of Missouri, Columbia, MO, United States*

<b>Thursday, June 22</b>	<b>12:30pm - 2:00pm</b>
--------------------------	-------------------------

### Heart Valve Flow and Function (Fluids/Solids)

**Tucson GH**

**Session Chair:** Amanda Buck, *Vanderbilt University, TN, United States*  
**Session Co-Chair:** Sharp Michael Keith, *University of Louisville, KY, United States*

- 12:30PM Pressure-Induced Changes in the Regional Structural Architecture of the Porcine Tricuspid Valve Leaflets** SB<sup>3</sup>C2017-97  
**Vineet S. Thomas**, Anup D. Pant, Anthony Black, Taylor Verba, Rouzbeh Amini, *Biomedical Engineering, The University of Akron, Akron, OH, United States*
- 12:45PM Effect of Geometric Remodeling on Mitral Valve Leaflet Mechanics: An Ex Vivo Investigation** SB<sup>3</sup>C2017-98  
**Charles H. Bloodworth**<sup>1</sup>, Eric L. Pierce<sup>1</sup>, Nancy J. Deaton<sup>1</sup>, Michael S. Sacks<sup>2</sup>, Ajit P. Yoganathan<sup>1</sup>, *Wallace H Coulter Department of Biomedical Engineering, Georgia Institute of Technology and Emory University, Atlanta, GA, United States*, <sup>2</sup>*Institute for Computational Engineering and Sciences, University of Texas at Austin, Austin, TX, United States*
- 1:00PM Hemodynamic Performance Of Valve-In-Valve In Calcified Bioprosthetic Valves Is Significantly Different Than In Non-calcified Valves** SB<sup>3</sup>C2017-99  
**Hoda Hatoum**<sup>1</sup>, Jennifer Dollery<sup>2</sup>, Pablo Maureira<sup>3</sup>, Juan A. Crestanello<sup>2</sup>, Lakshmi P. Dasi<sup>1</sup>, *Department of Biomedical Engineering, The Ohio State University, Columbus, OH, United States*, <sup>2</sup>*Division of Cardiac Surgery, The Ohio State University, Columbus, OH, United States*, <sup>3</sup>*Department of Cardiovascular Surgery, Lorraine University Hospital of Nancy, Nancy, France*
- 1:15PM Experimental Investigation of 3D Left Ventricular Flow Using a Novel Multiplane Scanning Stereo PIV Setup** SB<sup>3</sup>C2017-100  
**Hicham Saaid**<sup>1</sup>, **Patrick Segers**<sup>1</sup>, Tom Claessens<sup>2</sup>, Pascal Verdonck<sup>1</sup>, *1Institute Biomedical Technology, Ghent University, Ghent, Belgium*, <sup>2</sup>*Department of Materials Science and Engineering, Ghent University, Ghent, Belgium*
- 1:30PM MRI-based Fluid Structure Interaction of the Aortic Valve: Alteration of Nonlinear Valve Properties to Simulate Calcification and Bicuspid Aortic Valve** SB<sup>3</sup>C2017-101  
**Anvar Gilmanov**<sup>1</sup>, **Alex J. Barker**<sup>2</sup>, Henryk Stolarski<sup>1</sup>, Fotis Sotiropoulos<sup>3</sup>, *1University of Minnesota Minneapolis, Minneapolis, MN, United States*, <sup>2</sup>*Department of Radiology, Northwestern University, Chicago, IL, United States*, <sup>3</sup>*Stony Brook University, Stony Brook, NY, United States*
- 1:45PM Assessment of Thrombosis Potential of a Transcatheter Heart Valve Using a Novel Single-camera Volumetric PIV Technique** SB<sup>3</sup>C2017-102  
**Christopher Clifford**<sup>1</sup>, **Vrishank Raghav**<sup>1,2</sup>, Prem Midha<sup>3</sup>, Ikechukwu Okafor<sup>4,5</sup>, Camille Johnson<sup>2</sup>, Brian Thurow<sup>1</sup>, Ajit Yoganathan<sup>2</sup>, *1Aerospace Engineering, Auburn University, Auburn, AL, United States*, <sup>2</sup>*Biomedical Engineering, Georgia Institute of Technology, Atlanta, GA, United States*, <sup>3</sup>*Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, United States*, <sup>4</sup>*Chemical Engineering, Georgia Institute of Technology, Atlanta, GA, United States*, <sup>5</sup>*Exponent Inc, Philadelphia, PA, United States*

Thursday, June 22	12:30pm - 2:00pm
<b>Cardiovascular Devices (Fluids/Solids) Tucson IJ</b>	
<p><b>Session Chair:</b> Danny Bluestein, <i>Stony Brook University, NY, United States</i>  <b>Session Co-Chair:</b> Ender A. Finol, <i>University of Texas at San Antonio, TX, United States</i></p>	
12:30PM	<p><b>Influence of Inlet Boundary Conditions on the Evaluation of Aortic Wall Shear Stress for Patients With Abnormal Aortic Valves</b> SB<sup>3</sup>C2017-103  <b>Selene Pirola</b><sup>1</sup>, Omar A. Jarral<sup>2</sup>, Declan P. O'Regan<sup>3</sup>, Thanos Athanasiou<sup>2</sup>, Xiao Y. Xu<sup>1</sup>, <sup>1</sup><i>Chemical Engineering, Imperial College London, London, United Kingdom</i>, <sup>2</sup><i>Department of Surgery and Cancer, St. Mary's Hospital, Imperial College London, London, United Kingdom</i>, <sup>3</sup><i>Institute of Clinical Sciences, Hammersmith Hospital, Imperial College London, London, United Kingdom</i></p>
12:45PM	<p><b>Evaluation of Novel Polymeric Transcatheter and Surgical Aortic Valves with Fluid-structure Interaction Models and Experimental Analysis</b> SB<sup>3</sup>C2017-104  <b>Ram P. Ghosh</b><sup>1</sup>, Gil Marom<sup>1</sup>, Oren M. Rotman<sup>1</sup>, Matteo Bianchi<sup>1</sup>, Saurabh Prabhakar<sup>2</sup>, Marc Horner<sup>3</sup>, Marvin J. Slepian<sup>1,4</sup>, Danny Bluestein<sup>1</sup>, <sup>1</sup><i>Biomedical Engineering, Stony Brook University, Stony Brook, NY, United States</i>, <sup>2</sup><i>ANSYS Fluent India Pvt. Ltd, Pune, India</i>, <sup>3</sup><i>ANSYS Inc., Evanston, IL, United States</i>, <sup>4</sup><i>Sarver Heart Center, University of Arizona, Tucson, AZ, United States</i></p>
1:00PM	<p><b>Patient-specific Mitral Valve Annuloplasty Repair: The Optimal Ring Design for Treating Ischemic Mitral Regurgitation</b> SB<sup>3</sup>C2017-105  <b>Amir H. Khalighi</b><sup>1</sup>, Andrew Drach<sup>2</sup>, Michael S. Sacks<sup>2</sup>, <sup>1</sup><i>Mechanical Engineering, University of Texas at Austin, Austin, TX, United States</i>, <sup>2</sup><i>University of Texas at Austin, Austin, TX, United States</i></p>
1:15PM	<p><b>Positioning Of A Dedicated Stent For Coronary Bifurcations: An In Silico Study</b> SB<sup>3</sup>C2017-106  Claudio Chiastra<sup>1</sup>, Maik J. Grundeken<sup>2</sup>, Francesco Migliavacca<sup>1</sup>, Gabriele Dubini<sup>1</sup>, Patrick W. Serruys<sup>3</sup>, Robbert J. de Winter<sup>2</sup>, Joanna J. Wykrzykowska<sup>2</sup>, Ender A. Finol<sup>4</sup>, <b>Wei Wu</b><sup>4</sup>, <sup>1</sup><i>Department of Chemistry, Materials, and Chemical Engineering "Giulio Natta", Politecnico di Milano, Milan, Italy</i>, <sup>2</sup><i>The Heart Center, Academic Medical Center, University of Amsterdam, Amsterdam, Netherlands</i>, <sup>3</sup><i>International Centre for Circulatory Health, Imperial College London, London, United Kingdom</i>, <sup>4</sup><i>Department of Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, United States</i></p>
1:30PM	<p><b>Very Short Peripheral Catheter For Reduction Of Catheter-related Thrombophlebitis</b> SB<sup>3</sup>C2017-107  <b>Dar Weiss</b><sup>1</sup>, Oren M. Rotman<sup>2</sup>, Uri Zaretsky<sup>1</sup>, Shmuel Einav<sup>1,2</sup>, <sup>1</sup><i>Tel Aviv University, Tel Aviv, Israel</i>, <sup>2</sup><i>Stony Brook University, Stony Brook, NY, United States</i></p>
1:45PM	<p><b>Fluid-Structure Interaction Modeling of the Penn State Pediatric Ventricular Assist Device: Preliminary Computational Studies</b> SB<sup>3</sup>C2017-108  <b>Bryan Good</b>, Phil Crompton, Keefe Manning, <i>Bioengineering, The Pennsylvania State University, University Park, PA, United States</i></p>

Thursday, June 22	12:30pm - 2:00pm
<b>Active Learning in Biomechanical Engineering Education (EDU) San Ignacio</b>	
<p><b>Session Chair:</b> Ferris Pfeiffer, <i>University of Missouri, MO, United States</i>  <b>Session Co-Chair:</b> Anita Singh, <i>Rowan University, NJ, United States</i></p>	
12:30PM	<p><b>Real-world Problem Solving and Value Creation in the Biomechanics Classroom</b> SB<sup>3</sup>C2017-109  <b>Laurel Kuxhaus</b><sup>1</sup>, Karen L. Troy<sup>2</sup>, <sup>1</sup><i>Clarkson University, Potsdam, NY, United States</i>, <sup>2</sup><i>Worcester Polytechnic Institute, Worcester, MA, United States</i></p>
12:45PM	<p><b>Using Project-based Physical Computing to Teach Programming Concepts to Biomedical Engineers</b> SB<sup>3</sup>C2017-110  Trevor R. Ham, <b>Rouzbeh Amini</b>, <i>Biomedical Engineering, The University of Akron, Akron, OH, United States</i></p>
1:00PM	<p><b>Course Based Undergraduate Research Experiences in Biomechanical Engineering</b> SB<sup>3</sup>C2017-111  <b>Alisa Morss Clyne</b>, <i>Drexel University, Philadelphia, PA, United States</i></p>

- 1:15PM A New Approach to Teaching Biomechanics by Bridging the Gap Between Classroom and Clinic** SB<sup>3</sup>C2017-112  
Anita Singh, Dawn Ferry, Widener, Chester, PA, United States
- 1:30PM Encouraging an Entrepreneurial Mindset in Biomechanics** SB<sup>3</sup>C2017-113  
Kristen Billiar, Biomedical Engineering, Worcester Polytechnic Institute, Worcester, MA, United States
- 1:45PM UAB Solution Studios™ - A Collaboration Between Nursing, Biomedical Engineering, And Honors** SB<sup>3</sup>C2017-114  
Joel Berry<sup>1</sup>, Nancy Wingo<sup>2</sup>, Kristen Noles<sup>3</sup>, Alan Eberhardt<sup>1</sup>, <sup>1</sup>Biomedical Engineering, The University of Alabama at Birmingham, Birmingham, AL, United States, <sup>2</sup>School of Nursing, The University of Alabama at Birmingham, Birmingham, AL, United States, <sup>3</sup>UAB Hospital, The University of Alabama at Birmingham, Birmingham, AL, United States

<b>Thursday, June 22</b>	<b>12:30pm - 2:00pm</b>
--------------------------	-------------------------

### Hyperthermia, Cryotherapy, and Cryopreservation (BTR)

**San Luis**

**Session Chair:** Chris Rylander, Virginia Tech, VA, United States  
**Session Co-Chair:** Aili Zhang, Shanghai Jiaotong University, Shanghai, China

- 12:30PM Study Of Freezing Induced Radiofrequency Ablation Heating Pattern Change** SB<sup>3</sup>C2017-115  
Kangwei Zhang, Jincheng Zou, Aili Zhang, Lisa Xu, School of Biomedical Engineering, Shanghai Jiaotong University, Shanghai, China
- 12:45PM Behavior Of Interstitial Fluid Pressure In Tumors With Enhanced Blood Perfusion** SB<sup>3</sup>C2017-116  
Timothy Munuhe, Myo Min Zaw, Liang Zhu, Ronghui Ma, Mechanical Engineering, University of Maryland Baltimore County, Baltimore, MD, United States
- 1:00PM Temperature Field Measurement of Optical Thermocavitation for Enhanced Skin Surface Cooling** SB<sup>3</sup>C2017-117  
Vicente Robles, Darren Banks, Mahdi Akbarimoosavi, Luis Felipe Devia-Cruz, Santiago Camacho-López, Guillermo Aguilar, Mechanical Engineering, University of California Riverside, Riverside, CA, United States
- 1:15PM Medium-Term Stability of Cancer Biomarkers in Human Sera Stored by Isothermal Vitrification** SB<sup>3</sup>C2017-118  
Morwena J. Solivio, Alptekin Aksan, Mechanical Engineering, University of Minnesota, Minneapolis, MN, United States
- 1:30PM Heat Shock Protein Expression During Short Pulse Laser Therapy** SB<sup>3</sup>C2017-119  
Neda Parchami<sup>1</sup>, Amanda Oliveira<sup>2</sup>, Kenia Nunes<sup>2</sup>, Eric Guisbert<sup>2</sup>, Kunal Mitra<sup>1</sup>, <sup>1</sup>Biomedical Engineering, Florida Institute of Technology, Melbourne, FL, United States, <sup>2</sup>Biological Sciences, Florida Institute of Technology, Melbourne, FL, United States
- 1:45PM Initial Studies: A Novel Approach to Treating Acute Pancreatitis with Therapeutic Hypothermia** SB<sup>3</sup>C2017-120  
Daniel P. Meckes<sup>1</sup>, Matthew J. Skinner<sup>2</sup>, Keith T. Wilkins<sup>1</sup>, Gregory M. Donatelli<sup>1</sup>, Christopher C. Thompson<sup>2</sup>, Jennifer E. Mitchell<sup>1</sup>, Thomas L. Merrill<sup>1,3</sup>, <sup>1</sup>FocalCool, LLC., Mullica Hill, NJ, United States, <sup>2</sup>Harvard Medical School, Boston, MA, United States, <sup>3</sup>Mechanical Engineering, Rowan University, Glassboro, NJ, United States

<b>Thursday, June 22</b>	<b>12:30pm - 2:00pm</b>
--------------------------	-------------------------

### Disease Models and Engineered Therapies (CTE)

**San Pedro**

**Session Chair:** Jason Gleghorn, University of Delaware, DE, United States  
**Session Co-Chair:** Pat Alford, University of Minnesota, MN, United States

- 12:30PM Glial Cell Analysis in the Brain Tumor Microenvironment Elucidates Contributions to Glioblastoma Patient Progression** SB<sup>3</sup>C2017-121  
Robert C. Cornelison<sup>1</sup>, Jessica X. Yuan<sup>1</sup>, Bethany J. Horton<sup>2</sup>, Jennifer M. Munson<sup>1</sup>, <sup>1</sup>Biomedical Engineering, University of Virginia, Charlottesville, VA, United States, <sup>2</sup>Public Health Sciences, University of Virginia, Charlottesville, VA, United States

- 12:45PM Feasibility of a “Same-Day” Autologous Tissue-Engineered Vascular Graft Remodeling in a Seeded Elastomeric Scaffold** SB<sup>3</sup>C2017-122  
**Darren G. Haskett**<sup>1</sup>, Kamiel A. Saleh<sup>2</sup>, Jeffery T. Krawiec<sup>2</sup>, Justin S. Weinbaum<sup>2</sup>, Antonio D’Amore<sup>1</sup>, William R. Wagner<sup>1</sup>, Lauren E. Kokaj<sup>3</sup>, Kacey G. Marra<sup>3</sup>, J. Peter Rubin<sup>3</sup>, David A. Vorp<sup>2</sup>, <sup>1</sup>*Department of Surgery, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>2</sup>*Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>3</sup>*Department of Plastic Surgery, University of Pittsburgh, Pittsburgh, PA, United States*
- 1:00PM In Vivo Maturation and Integration of Engineered Endplate-Modified Disc-Like Angle Ply Structures (EDAPS)** SB<sup>3</sup>C2017-123  
**Sarah E. Gullbrand**<sup>1,2</sup>, Dong Hwa Kim<sup>1,2</sup>, Beth G. Ashinsky<sup>1,2</sup>, John T. Martin<sup>1,2</sup>, Lachlan J. Smith<sup>1,2</sup>, Dawn M. Elliott<sup>3</sup>, Harvey E. Smith<sup>1,2</sup>, Robert L. Mauck<sup>1,2</sup>, <sup>1</sup>*University of Pennsylvania, Philadelphia, PA, United States*, <sup>2</sup>*Philadelphia VA Medical Center, Philadelphia, PA, United States*, <sup>3</sup>*University of Delaware, Newark, DE, United States*
- 1:15PM Densification of Type I Collagen Matrices as a Model for Cardiac Fibrosis** SB<sup>3</sup>C2017-124  
**Benjamin Seelbinder**<sup>1</sup>, Logan J. Worke<sup>2</sup>, Jeanne E. Barthold<sup>1</sup>, Tyler Novak<sup>2</sup>, Russell P. Main<sup>2,3</sup>, Corey P. Neu<sup>1,2</sup>, <sup>1</sup>*Mechanical Engineering, University of Colorado Boulder, Boulder, CO, United States*, <sup>2</sup>*Biomedical Engineering, Purdue University, West Lafayette, IN, United States*, <sup>3</sup>*Department of Basic Medical Sciences, Purdue University, West Lafayette, IN, United States*
- 1:30PM Absence of Decorin Accelerates Cartilage Fibrillation and Aggrecan Depletion in Post-traumatic Osteoarthritis** SB<sup>3</sup>C2017-125  
**Qing Li**<sup>1</sup>, Liu Ouyang<sup>1</sup>, Basak Doyran<sup>1</sup>, Li Fan<sup>1</sup>, Wei Tong<sup>2</sup>, Wei-Ju Tseng<sup>2</sup>, X. Sherry Liu<sup>2</sup>, Renato V. Iozzo<sup>3</sup>, Ling Qin<sup>2</sup>, David E. Birk<sup>4</sup>, Lin Han<sup>1</sup>, <sup>1</sup>*Drexel University, Philadelphia, PA, United States*, <sup>2</sup>*Department of Orthopaedic Surgery, University of Pennsylvania, Philadelphia, PA, United States*, <sup>3</sup>*Department of pathology, Anatomy and Cell biology, Thomas Jefferson University, Philadelphia, PA, United States*, <sup>4</sup>*Department of Molecular Pharmacology and physiology, University of South Florida, Tampa, FL, United States*
- 1:45PM Controlling And Measuring The Spatial Extent Of Chondrocyte Death In A Non-invasive Murine Post-traumatic Osteoarthritis Model** SB<sup>3</sup>C2017-126  
**Alexander Kotelsky**, Edward F. Ruppel, Mark R. Buckley, *Biomedical Engineering, University of Rochester, Rochester, NY, United States*

Thursday, June 22

2:15pm - 3:45pm

### Mechanics and Modeling of Musculoskeletal Soft Tissues (Solids)

Tucson AB

**Session Chair:** David M. Pierce, *University of Connecticut, CT, United States*

**Session Co-Chair:** Deva Chan, *Henry M Jackson Foundation, MD, United States*

- 2:15PM Dynamic Compression of Human and Ovine Meniscal Tissue Compared to a Block Copolymer Material for Potential Meniscal Replacement** SB<sup>3</sup>C2017-127  
**Kristine M. Fischenich**<sup>1</sup>, Katie Boncell<sup>2</sup>, Travis S. Bailey<sup>1,3</sup>, Tammy L. Haut Donahue<sup>1,4</sup>, <sup>1</sup>*School of Biomedical Engineering, Colorado State University, Fort Collins, CO, United States*, <sup>2</sup>*Health and Exercise Science, Colorado State University, Fort Collins, CO, United States*, <sup>3</sup>*Chemical and Biological Engineering, Colorado State University, Fort Collins, CO, United States*, <sup>4</sup>*Mechanical Engineering, Colorado State University, Fort Collins, CO, United States*
- 2:30PM Roles Of Type V Collagen In The Structure And Mechanical Properties Of Mandibular Condyle Cartilage** SB<sup>3</sup>C2017-128  
**Prashant Chandrasekaran**<sup>1</sup>, Qing Li<sup>1</sup>, Mei Sun<sup>2</sup>, Louis J. Soslowsky<sup>3</sup>, David E. Birk<sup>2</sup>, Lin Han<sup>1</sup>, <sup>1</sup>*School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, PA, United States*, <sup>2</sup>*Department of Molecular Pharmacology and Physiology, University of South Florida, Tampa, FL, United States*, <sup>3</sup>*McKay Orthopaedic Research Laboratory, University of Pennsylvania, Philadelphia, PA, United States*
- 2:45PM Micromechanical Heterogeneity Of The Temporomandibular Joint Disc And Condyle Cartilage Surfaces** SB<sup>3</sup>C2017-129  
**Liu Ouyang**<sup>1</sup>, Chao Wang<sup>1</sup>, Qing Li<sup>1</sup>, Xin L. Lu<sup>2</sup>, Lin Han<sup>1</sup>, <sup>1</sup>*School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, PA, United States*, <sup>2</sup>*University of Delaware, Newark, DE, United States*
- 3:00PM Meniscal Entesis Collagen Fiber Orientation is Altered with Osteoarthritis** SB<sup>3</sup>C2017-130  
**Hannah Pauly**<sup>1</sup>, Tammy Haut Donahue<sup>1,2</sup>, <sup>1</sup>*School of Biomedical Engineering, Colorado State University, Fort Collins, CO, United States*, <sup>2</sup>*Mechanical Engineering, Colorado State University, Fort Collins, CO, United States*

- 3:15PM Rule-Based Approach for Assignment of Myofiber Distribution to Human Tongue Models** SB<sup>3</sup>C2017-131  
**Arnold D. Gomez**<sup>1</sup>, Nahla Elsaid<sup>2</sup>, Jiachen Zhuo<sup>2</sup>, Maureen L. Stone<sup>3</sup>, Jerry L. Prince<sup>1</sup>, <sup>1</sup>*Electrical and Computer Engineering, Johns Hopkins University, Baltimore, MD, United States*, <sup>2</sup>*Dept. of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine, Baltimore, MD, United States*, <sup>3</sup>*Department of Neural and Pain Sciences, University of Maryland School of Dentistry, Baltimore, MD, United States*
- 3:30PM Machine Learning for Estimation of Activation Patterns in Computational Models of the Tongue** SB<sup>3</sup>C2017-132  
**Arnold D. Gomez**<sup>1</sup>, Amod Jog<sup>1</sup>, Maureen L. Stone<sup>2</sup>, Jerry L. Prince<sup>1</sup>, <sup>1</sup>*Electrical and Computer Engineering, Johns Hopkins University, Baltimore, MD, United States*, <sup>2</sup>*Department of Neural and Pain Sciences, University of Maryland School of Dentistry, Baltimore, MD, United States*

<b>Thursday, June 22</b>	<b>2:15pm - 3:45pm</b>
--------------------------	------------------------

### Ocular Biomechanics (Solids)

Tucson CD

**Session Chair: Ian A. Sigal**, *University of Pittsburgh, PA, United States*

**Session Co-Chair: Andrew Feola**, *Georgia Institute of Technology, GA, United States*

- 2:15PM Biomechanical Characterizations of the Porcine Optic Nerve** SB<sup>3</sup>C2017-133  
 Sammira Rais-Rohani<sup>2</sup>, Sarah Fitzgerald<sup>2</sup>, Bryn Brazile<sup>2</sup>, Richard L. Summers<sup>3</sup>, Robert L. Hester<sup>3</sup>, Raj Prabhu<sup>2</sup>, Lakiesha N. Williams<sup>2</sup>, **Jun Liao**<sup>1,2</sup>, <sup>1</sup>*Department of Bioengineering, University of Texas at Arlington, Arlington, TX, United States*, <sup>2</sup>*Department of Biological Engineering, Mississippi State University, Mississippi State, MS, United States*, <sup>3</sup>*Department of Physiology and Biophysics, University of Mississippi Medical Center, Jackson, MS, United States*
- 2:30PM A New Geodesics Model of Collagen Fibers in the Globe; Better Than a Reinforced Sphere** SB<sup>3</sup>C2017-134  
**Ian A. Sigal**, Yi Hua, Ning-Jiun Jan, Andrew P. Voorhees, *Laboratory of Ocular Biomechanics, University of Pittsburgh, Pittsburgh, PA, United States*
- 2:45PM Anisotropic And Heterogeneous Finite Element Models Of The Human Lamina Cribrosa Using Nonlinear Optical Microscopy** SB<sup>3</sup>C2017-135  
**Reza Behkam**, Jonathan Vande Geest, *University of Pittsburgh, Pittsburgh, PA, United States*
- 3:00PM In-Vivo Iris Stiffness in Patients with Occludable Anterior Chamber Angle Following Laser Peripheral Iridotomy** SB<sup>3</sup>C2017-136  
**Anup D. Pant**<sup>1</sup>, Priyanka Gogte<sup>2</sup>, Cyril K. Dorairaj<sup>3</sup>, Vanita Pathak-Ray<sup>2</sup>, Rouzbeh Amini<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, The University of Akron, Akron, OH, United States*, <sup>2</sup>*LV Prasad Eye Institute, Hyderabad, India*, <sup>3</sup>*Department of Ophthalmology, Mayo Clinic, Jacksonville, FL, United States*
- 3:15PM Evaluating The Efficacy Of Crosslinking The Posterior Rat Sclera** SB<sup>3</sup>C2017-137  
**Bailey G. Hannon**<sup>1</sup>, Ian C. Campbell<sup>2,3</sup>, A. Thomas Read<sup>2</sup>, C. Ross Ethier<sup>1,2</sup>, <sup>1</sup>*George W. Woodruff School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, United States*, <sup>2</sup>*Coulter Department of Biomedical Engineering, Georgia Institute of Technology/Emory University, Atlanta, GA, United States*, <sup>3</sup>*Atlanta VA Medical Center, Atlanta, GA, United States*
- 3:30PM The Effect of the Removal of Glycosaminoglycans on the Deformation Response of the Human Lamina Cribrosa to Pressure** SB<sup>3</sup>C2017-138  
**Dan Midgett**<sup>1</sup>, Harry Quigley<sup>2</sup>, Thao Nguyen<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, Johns Hopkins University, Baltimore, MD, United States*, <sup>2</sup>*Wilmer Eye Institute, Johns Hopkins University, Baltimore, MD, United States*

<b>Thursday, June 22</b>	<b>2:15pm - 3:45pm</b>
--------------------------	------------------------

### Cardiac Mechanics (Solids)

Tucson IJ

**Session Chair: Yuan Feng**, *Soochow University, Suzhou, China*

**Session Co-Chair: Lik Chuan Lee**, *Michigan State University, MI, United States*

- 2:15PM Longitudinal Reinforcement Improves Post-Infarction Function by Redistributing Transmural Fiber Stress in the Border Zone** SB<sup>3</sup>C2017-139  
**Ana C. Estrada**<sup>1</sup>, Samantha A. Clarke<sup>1</sup>, Jeffrey W. Holmes<sup>1,2,3</sup>, <sup>1</sup>*Biomedical Engineering, University of Virginia, Charlottesville, VA, United States*, <sup>2</sup>*Department of Medicine, University of Virginia, Charlottesville, VA, United States*, <sup>3</sup>*Berne Cardiovascular Research Center, University of Virginia, Charlottesville, VA, United States*

SCIENTIFIC SESSIONS

- 2:30PM Characterization Of Biomechanical Properties Of Human Trabeculae Carneae** SB<sup>3</sup>C2017-140  
**Fatemeh Fatemifar**<sup>1</sup>, Marc D. Feldman<sup>2</sup>, Hai-Chao Han<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*, <sup>2</sup>*Medicine, The University of Texas Health Science Center at San Antonio, San Antonio, TX, United States*
- 2:45PM Characterizing the Three-Dimensional Mechanical Properties of Passive Myocardium Injected with Hydrogels Using a Novel Numerical-Experimental Inverse Modeling Approach** SB<sup>3</sup>C2017-141  
**David S. Li**<sup>1</sup>, Reza Avazmohammadi<sup>1</sup>, João S. Soares<sup>1</sup>, Jason A. Burdick<sup>2</sup>, Joseph H. Gorman<sup>3</sup>, Robert C. Gorman<sup>3</sup>, Michael S. Sacks<sup>1</sup>, <sup>1</sup>*Center for Cardiovascular Simulation, Institute for Computational Engineering and Sciences, The University of Texas at Austin, Austin, TX, United States*, <sup>2</sup>*Polymeric Biomaterials Laboratory, Department of Bioengineering, University of Pennsylvania, Philadelphia, PA, United States*, <sup>3</sup>*Gorman Cardiovascular Research Group, Department of Surgery, University of Pennsylvania, Philadelphia, PA, United States*
- 3:00PM Mesenchymal Stem Cell Delivery Via a Novel Cardiac Patch Improves Right Ventricular Function in Pulmonary Arterial Hypertensive Rats** SB<sup>3</sup>C2017-142  
**Zhijie Wang**<sup>1</sup>, Eric G. Schmuck<sup>2</sup>, David A. Schreier<sup>3</sup>, Timothy A. Hacker<sup>2</sup>, Naomi C. Chesler<sup>3</sup>, <sup>1</sup>*Mechanical Engineering, Colorado State University, Fort Collins, CO, United States*, <sup>2</sup>*Medicine, University of Wisconsin - Madison, Madison, WI, United States*, <sup>3</sup>*Biomedical Engineering, University of Wisconsin - Madison, Madison, WI, United States*
- 3:15PM Patient-specific Modeling of the Electro-mechano-fluidic Function of the Left Ventricle and the Aorta** SB<sup>3</sup>C2017-143  
**Christoph M. Augustin**<sup>1</sup>, Gernot Plank<sup>2</sup>, Shawn C. Shadden<sup>1</sup>, <sup>1</sup>*Department of Mechanical Engineering, University of California, Berkeley, Berkeley, CA, United States*, <sup>2</sup>*Institute of Biophysics, Medical University of Graz, Graz, Austria*
- 3:30PM Establishing Creditability of the Living Heart Porcine Model** SB<sup>3</sup>C2017-144  
**Brian P. Baillargeon**<sup>1</sup>, Kevin L. Sack<sup>2</sup>, Julius Guccione<sup>3</sup>, <sup>1</sup>*Dassault Systemes SIMULIA Corp, Oakley, CA, United States*, <sup>2</sup>*University of Cape Town, Cape Town, South Africa*, <sup>3</sup>*University of California San Francisco, San Francisco, CA, United States*

<b>Thursday, June 22</b>	<b>2:15pm - 3:45pm</b>
--------------------------	------------------------

**Don Giddens' Impact on Cardiovascular Fluid Dynamics and Atherosclerosis (Fluids)**

**Tucson GH**

**Session Chair:** Lucas H. Timmins, *Georgia Institute of Technology, GA, United States*  
**Session Co-Chair:** Ajit Yoganathan, *Georgia Institute of Technology, GA, United States*

- 2:15PM Building a Biomedical Imaging Clinical Applications Program: Fluid Dynamics And Disease - A Tribute To Don Giddens** SB<sup>3</sup>C2017-145  
**Diego R. Martin**, *Medical Imaging, University of Arizona, Tucson, AZ, United States*
- 2:30PM Don Giddens and Resolution of the Shear Stress Conundrum in Atherosclerosis** SB<sup>3</sup>C2017-146  
**Christopher K. Zarins**, *Surgery, Stanford University, Stanford, CA, United States*
- 2:45PM Micropatterning Drives Endothelial Cell Alignment and Function on Vascular Grafts** SB<sup>3</sup>C2017-147  
 Matthew W. Hagen, Deirdre E. Anderson, **Monica Hinds**, *Biomedical Engineering, Oregon Health & Science University, Portland, OR, United States*
- 3:00PM Paravalvular Leak in Transcatheter Aortic Valve Replacement** SB<sup>3</sup>C2017-148  
**Ajit P. Yoganathan**<sup>1</sup>, Ikay Okafor<sup>1</sup>, Prem Midha<sup>1</sup>, Vrishank Raghav<sup>2</sup>, Vasilis Babaliaros<sup>3</sup>, Gautam Kumar<sup>3</sup>, <sup>1</sup>*Georgia Tech, Atlanta, GA, United States*, <sup>2</sup>*Auburn University, Auburn, AL, United States*, <sup>3</sup>*Emory University, Atlanta, GA, United States*
- 3:15PM Tribomechanics of Bare and a-C:H Coated Metallic Biomaterials** SB<sup>3</sup>C2017-149  
 Konstantinos Kapnisis, Marios Constantinou, Maria Kyrkou, Petros Nikolaou, **Andreas S. Anayiotos**, Georgios Constantinides, *Mechanical Engineering and Materials Science and Engineering, Cyprus University of Technology, Limassol, Cyprus*

**3:30PM A Multipronged Approach Predicts Low Wall Shear Stress Regions that Correlate with Thrombosis Formation In Vivo** SB<sup>3</sup>C2017-150

**Amanda K. W. Buck**<sup>1</sup>, Joseph J. Groszek<sup>1</sup>, Daniel C. Colvin<sup>1</sup>, Sara B. Keller<sup>2</sup>, Clark D. Kensinger<sup>1</sup>, Rachel Forbes<sup>1</sup>, Seth Karp<sup>1</sup>, Phillip Williams<sup>1</sup>, Shuvo Roy<sup>3</sup>, William H. Fissell<sup>1</sup>, <sup>1</sup>*Vanderbilt University Medical Center, Nashville, TN, United States*, <sup>2</sup>*University of Washington, Seattle, WA, United States*, <sup>3</sup>*University of California San Francisco, San Francisco, CA, United States*

<b>Thursday, June 22</b>	<b>2:15pm - 3:45pm</b>
--------------------------	------------------------

**Measurement in Movement and Trauma (DDR/IAB)**

**San Luis**

**Session Chair: Joseph Iaquinto**, *VA Puget Sound Health Care System, VA, United States*

**Session Co-Chair: Steven Rowson**, *Virginia Tech, VA, United States*

**2:15PM Development of Low Cost Human Surrogates Using Additive Manufacturing** SB<sup>3</sup>C2017-151

**Travis Eliason**, Art Nicholls, Daniel Nicolella, *Southwest Research Institute, San Antonio, TX, United States*

**2:30PM Longitudinal Posture and Activity Tacking in the Home Enabled by Machine Learning and a Conformal, Wearable Sensor System** SB<sup>3</sup>C2017-152

**Ryan S. McGinnis**<sup>1</sup>, Steve DiCristofaro<sup>2</sup>, Nikhil Mahadevan<sup>2</sup>, Ellora Sen-Gupta<sup>2</sup>, Ikaro Silva<sup>2</sup>, Elise Jortberg<sup>2</sup>, Nirav Sheth<sup>2</sup>, John Wright<sup>2</sup>, Brian Murphy<sup>2</sup>, Bryan McGrane<sup>2</sup>, Milan Raj<sup>2</sup>, Melissa Ceruolo<sup>2</sup>, Jesus Pindado<sup>2</sup>, Roozbeh Ghaffari<sup>2</sup>, AJ Aranyosi<sup>2</sup>, Shyamal Patel<sup>2</sup>, <sup>1</sup>*University of Vermont, Burlington, VT, United States*, <sup>2</sup>*MC10, Inc., Lexington, MA, United States*

**2:45PM In-Vivo Tibiotalar and Subtalar Kinematics in Chronic Ankle Instability Patients and Asymptomatic Controls: A High-speed Dual Fluoroscopy Study** SB<sup>3</sup>C2017-153

**Koren E. Roach**<sup>1</sup>, K. Bo Foreman<sup>2</sup>, Alexej Barg<sup>3</sup>, Andrew E. Anderson<sup>3</sup>, <sup>1</sup>*Bioengineering, University of Utah, Salt Lake City, UT, United States*, <sup>2</sup>*Physical Therapy, University of Utah, Salt Lake City, UT, United States*, <sup>3</sup>*Orthopaedics, University of Utah, Salt Lake City, UT, United States*

**3:00PM Impact Performance of Bicycle Helmets During Real-World Oblique Impacts** SB<sup>3</sup>C2017-154

**Megan L. Bland**<sup>1</sup>, Craig McNally<sup>1</sup>, David S. Zuby<sup>2</sup>, Becky C. Mueller<sup>2</sup>, Steven Rowson<sup>1</sup>, <sup>1</sup>*Biomedical Engineering and Mechanics, Virginia Tech, Blacksburg, VA, United States*, <sup>2</sup>*Insurance Institute for Highway Safety, Ruckersville, VA, United States*

**3:15PM Improving Head Impact Kinematics Measurement Accuracy Using Sensor Fusion of Multiple Sensors** SB<sup>3</sup>C2017-155

**Calvin Kuo**<sup>1</sup>, Jake A. Sganga<sup>2</sup>, Michael G. Fanton<sup>1</sup>, David B. Camarillo<sup>2</sup>, <sup>1</sup>*Mechanical Engineering, Stanford University, Stanford, CA, United States*, <sup>2</sup>*Bioengineering, Stanford University, Stanford, CA, United States*

**3:30PM Exploring Novel Objective Functions for Simulating Muscle Coactivation in the Neck** SB<sup>3</sup>C2017-156

**Jonathan D. Mortensen**, Andrew S. Merryweather, *Mechanical Engineering, University of Utah, Salt Lake City, UT, United States*

<b>Thursday, June 22</b>	<b>2:15pm - 3:45pm</b>
--------------------------	------------------------

**Mechanical Regulation of Remodeling and Repair (CTE)**

**San Ignacio**

**Session Chair: Mariana Kersh**, *University of Illinois, IL, United States*

**Session Co-Chair: Nelly Andarawis-Puri**, *Cornell University, NY, United States*

**2:15PM The Timing of Mechanical Loading Modulates Endochondral Ossification of Chondrogenically Primed MSCs** SB<sup>3</sup>C2017-157

**Anna M. McDermott**<sup>1</sup>, Joel D. Boerckel<sup>1</sup>, Daniel J. Kelly<sup>2</sup>, <sup>1</sup>*University of Notre Dame, Notre Dame, IN, United States*, <sup>2</sup>*Trinity College Dublin, Dublin, Ireland*

**2:30PM Inhibition of Rho Kinase that Attenuates Pain Also Reduces Early Spinal Glial Activation & Neurotransmitter Expression After Mechanical Facet Capsule Injury In Vivo** SB<sup>3</sup>C2017-158

**Sijia Zhang**, Christine Weisshaar, Beth Winkelstein, *University of Pennsylvania, Philadelphia, PA, United States*

- 2:45PM Interdependence Driven Aging in Synthetic Tissues** SB<sup>3</sup>C2017-159  
Aylin Acun, Dervis Vural, Pinar Zorlutuna, *University of Notre Dame, Notre Dame, IN, United States*
- 3:00PM A Novel Bioreactor to Study the Driving Mechanical Stimuli of Tissue Growth and Remodeling** SB<sup>3</sup>C2017-160  
Mathieu A. J. van Kelle, Pim J. A. Oomen, Jurgen A. Bultink, Marloes W. J. T. Janssen-van den Broek, Richard G. P. Lopata, Marcel C. M. Rutten, Sandra Loerakker, Carlijn V. C. Bouten, *Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*
- 3:15PM Biological Intervention to Reduce Post-Traumatic Joint Contracture: Preliminary Evidence Supporting the Use of Simvastatin or Losartan** SB<sup>3</sup>C2017-161  
Alex Reiter<sup>1</sup>, Chelsey Dunham<sup>1</sup>, Ryan Castile<sup>1</sup>, Aaron Chamberlain<sup>1</sup>, Leesa Galatz<sup>2</sup>, Spencer Lake<sup>1</sup>, <sup>1</sup>*Washington University in St. Louis, St. Louis, MO, United States*, <sup>2</sup>*Mt. Sinai Hospital, New York, NY, United States*
- 3:30PM Proteolytic Beacon for Matrix Metalloproteinases Implicated in Extracellular Matrix Remodelling** SB<sup>3</sup>C2017-162  
Dominic Muli<sup>1</sup>, Oliver McIntyre<sup>2</sup>, Jonathan Vande Geest<sup>1</sup>, <sup>1</sup>*Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>2</sup>*Vanderbilt University Medical Center, Vanderbilt University, Nashville, TN, United States*

Thursday, June 22

2:15pm - 3:45pm

### Therapeutic Materials for Repair and Regeneration (CTE)

San Pedro

**Session Chair:** Matt Fisher, *North Carolina State University, NC, United States*

**Session Co-Chair:** Jessica Sparks, *Miami University, OH, United States*

- 2:15PM A Novel Antioxidant Porous Vesicle Treatment Prevents the Pain & Axonal Damage that Develop with Neuropathic Injury** SB<sup>3</sup>C2017-163  
Sonia Kartha, Christine Weisshaar, Andrew Tsourkas, Zhiliang Cheng, Beth Winkelstein, *University of Pennsylvania, Philadelphia, PA, United States*
- 2:30PM Mechanical Function of a Composite Nanofibrous Biomaterial Analogue of the Knee Meniscus Inclusive of Radial Tie Fiber-Like Elements** SB<sup>3</sup>C2017-164  
Sonia Bansal, Breanna N. Seiber, Niobra M. Keah, Robert L. Mauck, Miltiadis H. Zgonis, *McKay Orthopaedic Research Laboratory, University of Pennsylvania, Philadelphia, PA, United States*
- 2:45PM The Role of Carbonate on Protein-free Formation of Bone-like Apatite** SB<sup>3</sup>C2017-165  
Alix C. Deymier<sup>1</sup>, Arun Nair<sup>2</sup>, Baptiste Depalle<sup>3</sup>, Zhao Qin<sup>4</sup>, Kashyap Arcot<sup>5</sup>, Christophe Drouet<sup>6</sup>, Claude H. Yoder<sup>7</sup>, Markus J. Buehler<sup>4</sup>, Stavros Thomopoulos<sup>1</sup>, Guy M. Genin<sup>5</sup>, Jill D. Pasteris<sup>8</sup>, <sup>1</sup>*Orthopedic Surgery, Columbia University, New York, NY, United States*, <sup>2</sup>*Dept. of Mechanical Engineering, University of Arkansas, Fayetteville, AR, United States*, <sup>3</sup>*Dept. of Materials, Imperial College, London, United Kingdom*, <sup>4</sup>*Dept. of Civil and Envir Engr, MIT, Boston, MA, United States*, <sup>5</sup>*Dept. of Mech Engr and MatSci, Washington University, St Louis, MO, United States*, <sup>6</sup>*CIRIMAT, Universite de Toulouse, Toulouse, France*, <sup>7</sup>*Dept. of Chemistry, Franklin and Marshall College, Lancaster, PA, United States*, <sup>8</sup>*Dept. of Earth and Planetary Sci, Washington University, St Louis, MO, United States*
- 3:00PM A Tunable Flexible-PLA Scaffold Suitable for Complex 3D Printed Tissues** SB<sup>3</sup>C2017-166  
Timothy Jacobsen, Andrew Wong, Jacob Rigos, Nadeen Chahine, *The Feinstein Institute for Medical Research, Manhasset, NY, United States*
- 3:15PM Development and Testing of a Long Bone Segment Regenerating Scaffold for Patients** SB<sup>3</sup>C2017-167  
John A. Szivek, Jacqueline Buchak, Andrew M. Wojtanowski, David A. Gonzales, Adriana Barreda, Jordan L. Smith, David S. Margolis, *Orthopaedic Surgery, University of Arizona, Tucson, AZ, United States*
- 3:30PM Determination of the Mechanical Properties of De Novo Engineered Tissue in Needled-Nonwoven Scaffolds** SB<sup>3</sup>C2017-168  
Joao S. Soares, Will Zhang, Michael S. Sacks, *Institute for Computational Engineering and Sciences, University of Texas at Austin, Austin, TX, United States*

Friday, June 23

2:15pm - 3:45pm

**PhD Paper Competition: Imaging, Biofluid  
Mechanics, and Biotransport**

Tucson AB

**Session Chair:** Sarah Vigmostad, *University of Iowa, IA, United States*

**Session Co-Chair:** Philippe Sucusky, *Wright State, OH, United States*

- 2:15PM The Predictive Value of Transverse Shear Stress on Plaque Progression in Human Coronary Arteries** SB<sup>3</sup>C2017-169  
**Annette M. Kok**<sup>1</sup>, David S. Molony<sup>2</sup>, Lucas H. Timmins<sup>3</sup>, Yi-An Ko<sup>4</sup>, Parham Eshtehardi<sup>2</sup>, Jolanda J. Wentzel<sup>1</sup>, Habib Samady<sup>2</sup>, <sup>1</sup>*Biomedical Engineering, Erasmus MC, Rotterdam, Netherlands*, <sup>2</sup>*Medicine, Emory University School of Medicine, Atlanta, GA, United States*, <sup>3</sup>*Bioengineering, University of Utah, Salt Lake City, UT, United States*, <sup>4</sup>*Biostatistics and Bioinformatics, Emory University Rollins School of Public Health, Atlanta, GA, United States*
- 2:30PM Uncertainty Quantification in Multi-scale Coronary Simulations Using Multi-resolution Expansion** SB<sup>3</sup>C2017-170  
**Justin S. Tran**<sup>1</sup>, Daniele E. Schiavazzi<sup>2</sup>, Abhay B. Ramachandra<sup>3</sup>, Andrew M. Kahn<sup>4</sup>, Alison L. Marsden<sup>3</sup>, <sup>1</sup>*Mechanical Engineering, Stanford University, Stanford, CA, United States*, <sup>2</sup>*ACMS, University of Notre Dame, Notre Dame, IN, United States*, <sup>3</sup>*Bioengineering and Pediatrics, Stanford University, Stanford, CA, United States*, <sup>4</sup>*Medicine, University of California, San Diego, La Jolla, CA, United States*
- 2:45PM An Improved Micro-thermal Sensor For Planning And Guidance Of Pulmonary Vein Cryotherapy** SB<sup>3</sup>C2017-171  
**Harishankar Natesan**<sup>1</sup>, Limei Tian<sup>2</sup>, Wyatt Hodges<sup>4</sup>, Chris Dames<sup>4</sup>, John Rogers<sup>2,3</sup>, John Bischof<sup>1</sup>, <sup>1</sup>*Department of Mechanical Engineering, University of Minnesota, Minneapolis, MN, United States*, <sup>2</sup>*Department of Material Science and Engineering, University of Illinois, Urbana- Champaign, IL, United States*, <sup>3</sup>*Department of Material Science and Engineering, Northwestern University, Evanston, IL, United States*, <sup>4</sup>*Department of Mechanical Engineering, University of California, Berkeley, CA, United States*
- 3:00PM Enhanced Hyperthermia due to Gold Nano-particles During MR-guided High Intensity Focused Ultrasound (HIFU) Ablation Procedures** SB<sup>3</sup>C2017-172  
**S. Devarakonda**<sup>1</sup>, M. Myers<sup>2</sup>, C. Dumoulin<sup>3</sup>, M. Lanier<sup>3</sup>, R. Banerjee<sup>1</sup>, <sup>1</sup>*Department of Mechanical Engineering, University of Cincinnati, Cincinnati, OH, United States*, <sup>2</sup>*Division of Applied Mechanics, CDRH, US FDA, Silver Spring, MD, United States*, <sup>3</sup>*Department of Radiology, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States*
- 3:15PM In Vivo Quantification of Brain Tissue Displacement and Strain Using Cine-Dense MRI In a Healthy Subject and a Chiari Malformation Patient** SB<sup>3</sup>C2017-173  
**Soroush Heidari Pahlavian**<sup>1</sup>, Rouzbeh Amini<sup>2</sup>, Xiaodong Zhong<sup>3</sup>, John Oshinski<sup>4</sup>, Francis Loth<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, The University of Akron, Akron, OH, United States*, <sup>2</sup>*Biomedical Engineering, The University of Akron, Akron, OH, United States*, <sup>3</sup>*MR R&D Collaborations, Siemens Healthcare, Atlanta, GA, United States*, <sup>4</sup>*Radiology & Imaging Sciences and Biomedical Engineering, Emory University, School of Medicine, Atlanta, GA, United States*
- 3:30PM CFD Model < MRI Measurement Of Intrathecal Cerebrospinal Fluid Dynamics In A Cynomolgus Monkey** SB<sup>3</sup>C2017-174  
**Mohammadreza Khani**<sup>1</sup>, Tao Xing<sup>2</sup>, Christina Gibbs<sup>1</sup>, John Oshinski<sup>3</sup>, Gregory Stewart<sup>4</sup>, Jillynne Zeller<sup>5</sup>, Bryn A. Martin<sup>6</sup>, <sup>1</sup>*agricultural and biological engineering, University of Idaho, Moscow, ID, United States*, <sup>2</sup>*University of Idaho, Moscow, ID, United States*, <sup>3</sup>*Department of Radiology, Emory University, atlanta, GA, United States*, <sup>4</sup>*Alchemy Neuroscience, hanover, Germany*, <sup>5</sup>*Northern Biomedical Research, Spring Lake, MI, United States*, <sup>6</sup>*Agricultural and biological engineering, University of Idaho, Moscow, ID, United States*

<b>Friday, June 23</b>	<b>2:15pm - 3:45pm</b>
<b>PhD Paper Competition: Tissue Mechanics and Characterization</b>	
<b>Tucson CD</b>	
<b>Session Chair: Jeff Wolchok, University of Arkansas, AR, United States</b>	
<b>Session Co-Chair: Daniela Valdez-Jasso, University of Illinois at Chicago, IL, United States</b>	
<b>2:15PM</b>	<b>Shear Wave Elastography for Assessing Myocardial Material Properties: An In Vitro, Ex Vivo and In Silico Study</b> SB <sup>3</sup> C2017-175 <b>Annette Caenen</b> <sup>1</sup> , Mathieu Pernot <sup>2</sup> , Darya Shcherbakova <sup>1</sup> , Abdullah Thabit <sup>1</sup> , Luc Mertens <sup>3</sup> , Abigail Swillens <sup>1</sup> , Patrick Segers <sup>1</sup> , <sup>1</sup> <i>IBiTech-bioMMeda, Ghent University, Ghent, Belgium</i> , <sup>2</sup> <i>Langevin Institut, Ecole Supérieure de Physique et de Chimie Industrielles, Paris, France</i> , <sup>3</sup> <i>Hospital for Sick Children, University of Toronto, Toronto, ON, Canada</i>
<b>2:30PM</b>	<b>Quantification Of The Effect Of Calcification On The Tissue - Stent Interaction In A Stenosed Aortic Root</b> SB <sup>3</sup> C2017-176 <b>Orla M. McGee</b> <sup>1</sup> , Paul S. Gunning <sup>1</sup> , Wei Sun <sup>2</sup> , Laoise M. McNamara <sup>1</sup> , <sup>1</sup> <i>Biomedical Engineering, NUI Galway, Galway, Ireland</i> , <sup>2</sup> <i>Wallace H Coulter Department of Biomedical Engineering, Georgia Institute of Technology, Atlanta, GA, United States</i>
<b>2:45PM</b>	<b>Influence of Optic Nerve Head Material Properties on Rat Optic Nerve Strains Due to Elevated Intraocular Pressure</b> SB <sup>3</sup> C2017-177 <b>Stephen A. Schwaner</b> <sup>1</sup> , Marta Pazos <sup>2,3</sup> , Hongli Yang <sup>3</sup> , Elaine C. Johnson <sup>4</sup> , John C. Morrison <sup>4</sup> , Claude F. Burgoyne <sup>3</sup> , C. Ross Ethier <sup>1</sup> , <sup>1</sup> <i>Georgia Institute of Technology, Atlanta, GA, United States</i> , <sup>2</sup> <i>Hospital de l'Esperanca-Parc de Salut Mar., Barcelona, Spain</i> , <sup>3</sup> <i>Devers Eye Institute, Portland, OR, United States</i> , <sup>4</sup> <i>Oregon Health and Science University, Portland, OR, United States</i>
<b>3:00PM</b>	<b>Finite Element Modeling of Active Skeletal Muscle: Muscle Force and Intramuscular Pressure</b> SB <sup>3</sup> C2017-178 <b>Benjamin Wheatley</b> <sup>1</sup> , Gregory Odegard <sup>2</sup> , Kenton Kaufman <sup>3</sup> , Tammy Haut Donahue <sup>1</sup> , <sup>1</sup> <i>Colorado State University, Fort Collins, CO, United States</i> , <sup>2</sup> <i>Michigan Technological University, Houghton, MI, United States</i> , <sup>3</sup> <i>Mayo Clinic, Rochester, MN, United States</i>
<b>3:15PM</b>	<b>A Finite Element Algorithm for Large Deformation Frictional Contact of Biphasic Materials with Application to Contact of Articular Cartilage in Diarthrodial Joints</b> SB <sup>3</sup> C2017-179 <b>Brandon K. Zimmerman</b> <sup>1</sup> , Krista M. Durney <sup>2</sup> , Gerard A. Ateshian <sup>1</sup> , <sup>1</sup> <i>Mechanical Engineering, Columbia University, New York, NY, United States</i> , <sup>2</sup> <i>Biomedical Engineering, Columbia University, New York, NY, United States</i>
<b>3:30PM</b>	<b>Relationships Between Peak Bone Microstructure and Rate of Estrogen-Deficiency-Induced Bone Loss</b> SB <sup>3</sup> C2017-180 <b>Yihan Li</b> , Wei-Ju Tseng, Chantal M. J. de Bakker, Hongbo Zhao, X. Sherry Liu, <i>Upenn, Philadelphia, PA, United States</i>

<b>Friday, June 23</b>	<b>2:15pm - 3:45pm</b>
<b>PhD Paper Competition: Cellular Mechanics and Mechanobiology</b>	
<b>Tucson GH</b>	
<b>Session Chair: Jeffery Ruberti, Northeastern University, MA, United States</b>	
<b>Session Co-Chair: Ryan Pedrigi, University of Nebraska, NE, United States</b>	
<b>2:15PM</b>	<b>Anisotropic Hysteresis in Vascular Smooth Muscle Cells</b> SB <sup>3</sup> C2017-181 <b>Zaw Win</b> , Justin Buksa, Patrick Alford, <i>University of Minnesota, Minneapolis, MN, United States</i>
<b>2:30PM</b>	<b>Osteochondroprogenitor Primary Cilia Are Required For Juvenile Skeletal Development And Adult Bone Formation</b> SB <sup>3</sup> C2017-182 <b>Emily R. Moore</b> , Yuchen Yang, Ya Xing Zhu, Christopher R. Jacobs, <i>Columbia University, New York, NY, United States</i>
<b>2:45PM</b>	<b>Targeting Primary Cilia-Mediated Mechanotransduction To Enhance Whole Bone Adaptation</b> SB <sup>3</sup> C2017-183 <b>Milos Spasic</b> , Michael P. Duffy, Christopher R. Jacobs, <i>Columbia University, New York, NY, United States</i>

- 3:00PM YAP/TAZ Feedback Control of Cytoskeletal Tension and Adhesion Remodeling is Required for ECFC Motility** SB<sup>3</sup>C2017-184  
**Devon E. Mason**<sup>1</sup>, James H. Dawahare<sup>1</sup>, Sherry L. Voytik-Harbin<sup>2</sup>, Mervin C. Yoder<sup>3</sup>, Joel D. Boerckel<sup>1</sup>, <sup>1</sup>*Aerospace and Mechanical Engineering, University of Notre Dame, Notre Dame, IN, United States*, <sup>2</sup>*Weldon School of Biomedical Engineering and Dept. of Basic Medical Sciences, Purdue University, West Lafayette, IN, United States*, <sup>3</sup>*Herman B Wells Center for Pediatric Research, Indiana University School of Medicine, Indianapolis, IN, United States*
- 3:15PM TGFB Induces Primary Cilia Disassembly in Response to Cyclic Loading of Tenocytes** SB<sup>3</sup>C2017-185  
**Daniel T. Rowson**, Hazel R. C. Screen, Martin M. M. Knight, *School of Engineering and Materials Science, Institute of Bioengineering, Queen Mary University of London, London, United Kingdom*
- 3:30PM Insights into Tribological Rehydration of Articular Cartilage Via Analysis of Solute Transport In Situ** SB<sup>3</sup>C2017-186  
**Brian T. Graham**<sup>1</sup>, Axel C. Moore<sup>2</sup>, David L. Burris<sup>1</sup>, Christopher Price<sup>2</sup>, <sup>1</sup>*Mechanical Engineering, University of Delaware, Newark, DE, United States*, <sup>2</sup>*Biomedical Engineering, University of Delaware, Newark, DE, United States*

Friday, June 23

2:15pm - 3:45pm

### PhD Paper Competition: Diseases, Injury, and Remodeling

Tucson IJ

**Session Chair: Jonathan Wenk**, *University of Kentucky, KY, United States*

**Session Co-Chair: Joshua Gargac**, *University of Mount Union, OH, United States*

- 2:15PM Repeated Sub-Threshold Joint Loading Produces Pain and Alters Biomechanical & Spinal Glial Responses** SB<sup>3</sup>C2017-187  
**Sonia Kartha**, Ben Bulka, Nicholas Stiansen, Harrison Troche, Beth Winkelstein, *University of Pennsylvania, Philadelphia, PA, United States*
- 2:30PM Anterior Capsule is a Larger Contributor to Contracture Than Muscle in a Rat Elbow Model of Post-Traumatic Joint Contracture** SB<sup>3</sup>C2017-188  
**Chelsey Dunham**<sup>1</sup>, Ryan Castile<sup>2</sup>, Aaron Chamberlain<sup>3</sup>, Spencer Lake<sup>4</sup>, <sup>1</sup>*Biomedical Engineering, Washington University in St. Louis, St. Louis, MO, United States*, <sup>2</sup>*Mechanical Engineering & Materials Science, Washington University in St. Louis, St. Louis, MO, United States*, <sup>3</sup>*Orthopaedic Surgery, Washington University in St. Louis, St. Louis, MO, United States*, <sup>4</sup>*Mechanical Engineering & Materials Science, Biomedical Engineering, Orthopaedic Surgery, Washington University in St. Louis, St. Louis, MO, United States*
- 2:45PM Modeling Tendon Viscoelasticity, Plasticity, and Damage Using Reactive Inelasticity** SB<sup>3</sup>C2017-189  
**Babak N. Safa**<sup>1,2</sup>, Michael H. Santare<sup>1,2</sup>, Dawn M. Elliott<sup>1,2</sup>, <sup>1</sup>*Mechanical Engineering, University of Delaware, Newark, DE, United States*, <sup>2</sup>*Biomedical Engineering, University of Delaware, Newark, DE, United States*
- 3:00PM Arterial Damage Model Based On Empirical Stretch Thresholds Of Collagen Unfolding And Tissue Yielding** SB<sup>3</sup>C2017-190  
**Matthew I. Converse**<sup>1</sup>, Michele Marino<sup>2</sup>, Kenneth L. Monson<sup>3</sup>, <sup>1</sup>*Mechanical Engineering, University of Utah, Salt Lake City, UT, United States*, <sup>2</sup>*Institut für Kontinuumsmechanik, Leibniz Universität Hannover, Hannover, Germany*, <sup>3</sup>*Mechanical Engineering; Bioengineering, University of Utah, Salt Lake City, UT, United States*
- 3:15PM Statin Attenuates the Inflammatory Damage on Cartilage by Inhibiting Rho Activity in Chondrocytes** SB<sup>3</sup>C2017-191  
**Mengxi Lv**, Yilu Zhou, Shongshan Fan, Olivia Smith, X. Lucas Lu, *University of Delaware, Newark, DE, United States*
- 3:30PM Quantifying the Relative Importance of Maximum Myofilament Force and Metabolite Concentration in Right Ventricular Failure: A Multiscale Computational Approach** SB<sup>3</sup>C2017-192  
**Ryan J. Pewowaruk**<sup>1</sup>, Shivendra G. Tewari<sup>2</sup>, Guanying Wang<sup>3</sup>, Diana M. Tabima<sup>1</sup>, Anthony J. Baker<sup>3</sup>, Daniel A. Beard<sup>2</sup>, Naomi C. Chesler<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, University of Wisconsin-Madison, Madison, WI, United States*, <sup>2</sup>*Molecular & Integrative Physiology, University of Michigan-Ann Arbor, Ann Arbor, MI, United States*, <sup>3</sup>*Medicine, University of California-San Francisco, San Francisco, CA, United States*

<b>Friday, June 23</b>	<b>2:15pm - 3:45pm</b>
------------------------	------------------------

**PhD Paper Competition: Extracellular Matrix  
Biomechanics**

**San Luis**

**Session Chair:** Trevor Lujan, *Boise State University, ID, United States*

**Session Co-Chair:** Hamed Hatami-Marbini, *University of Illinois at Chicago, IL, United States*

- 2:15PM Micromechanics of Elastic Lamellae in Mouse Carotid Artery SB<sup>3</sup>C2017-193**  
Xunjie Yu<sup>1</sup>, Raphael Turcotte<sup>2</sup>, Francesca Seta<sup>3</sup>, Yanhang Zhang<sup>1,4</sup>, <sup>1</sup>*Department of Mechanical Engineering, Boston University, Boston, MA, United States*, <sup>2</sup>*Wellman Center for Photomedicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, United States*, <sup>3</sup>*Vascular Biology Section, Boston University School of Medicine, Boston, MA, United States*, <sup>4</sup>*Department of Biomedical Engineering, Boston University, Boston, MA, United States*
- 2:30PM Biomechanical and Biological Evaluation of Elastin Stabilization in Rat Abdominal Aortic Aneurysms Using Pentagalloyl Glucose SB<sup>3</sup>C2017-194**  
Mirunalini Thirugnanasambandam<sup>1</sup>, Dan T. Simionescu<sup>2</sup>, Eugene Sprague<sup>3</sup>, Beth Goins<sup>4</sup>, Geoffrey D. Clarke<sup>4</sup>, Hai-Chao Han<sup>5</sup>, Krysta H. Amezcua<sup>1</sup>, Oluwaseun R. Adeyinka<sup>1</sup>, Ender Finol<sup>5</sup>, <sup>1</sup>*Department of Biomedical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*, <sup>2</sup>*Department of Bioengineering, Clemson University, Clemson, SC, United States*, <sup>3</sup>*Department of Medicine, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States*, <sup>4</sup>*Department of Radiology, University of Texas Health Science Center at San Antonio, San Antonio, TX, United States*, <sup>5</sup>*Department of Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*
- 2:45PM Woven Collagen Biotextiles for Rotator Cuff Tendon Repair SB<sup>3</sup>C2017-195**  
Greg D. Learn<sup>1</sup>, Phillip E. McClellan<sup>2</sup>, Derrick M. Knapik<sup>3</sup>, Jameson L. Cumsky<sup>4</sup>, Robert J. Gillespie<sup>3</sup>, Ozan Akkus<sup>2</sup>, <sup>1</sup>*Biomedical Engineering, Case Western Reserve University, Cleveland, OH, United States*, <sup>2</sup>*Mechanical & Aerospace Engineering, Case Western Reserve University, Cleveland, OH, United States*, <sup>3</sup>*Orthopaedic Surgery, Case Western Reserve University, Cleveland, OH, United States*, <sup>4</sup>*School of Medicine, Case Western Reserve University, Cleveland, OH, United States*
- 3:00PM Effect of Osmotic Swelling in Soft Tissues is Dependent on Collagen Fiber Orientation SB<sup>3</sup>C2017-196**  
Bo Yang, Grace D. O'Connell, *Mechanical Engineering, University of California, Berkeley, Berkeley, CA, United States*
- 3:15PM Modeling the Effect of Spatially-Dependent ECM Fiber Deposition on Cell Tensional Homeostasis SB<sup>3</sup>C2017-197**  
Shannen B. Kizilski<sup>1</sup>, Rohit Y. Dhume<sup>1</sup>, Patrick W. Alford<sup>2</sup>, Victor H. Barocas<sup>2</sup>, <sup>1</sup>*Mechanical Engineering, University of Minnesota, Minneapolis, MN, United States*, <sup>2</sup>*Biomedical Engineering, University of Minnesota, Minneapolis, MN, United States*
- 3:30PM Planar Shear Characterization of the Facet Capsular Ligament SB<sup>3</sup>C2017-198**  
Emily A. Bermel<sup>1</sup>, Amy A. Claeson<sup>2</sup>, Alexander Safonov<sup>1</sup>, Victor H. Barocas<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, University of Minnesota - Twin Cities, Minneapolis, MN, United States*, <sup>2</sup>*Biomedical Engineering, University of Delaware, Newark, DE, United States*

<b>Friday, June 23</b>	<b>2:15pm - 3:45pm</b>
------------------------	------------------------

**PhD Paper Competition: Biomaterials and  
Material-Cellular Interaction**

**San Pedro**

**Session Chair:** Raffaella De Vita, *Virginia Tech, VA, United States*

**Session Co-Chair:** Ian A. Sigal, *University of Pittsburgh, PA, United States*

- 2:15PM Substrate Stiffness Dictates Macrophage Polarization And Their Cross-talk With Mesenchymal Stem Cells : Implications For Biomaterial Design SB<sup>3</sup>C2017-199**  
Rukmani Sridharan, Andrew R. Cameron, Daniel J. Kelly, Fergal J. O'Brien, *Anatomy, Royal College of Surgeons, Dublin, Ireland*

- 2:30PM The Roles Of Decorin In The Structure And Mechanics Of Cartilage Pericellular Matrix During Skeletal Development** SB<sup>3</sup>C2017-200  
**Daphney R. Chery**<sup>1</sup>, Biao Han<sup>1</sup>, Samuel Rozan<sup>1</sup>, Ling Qin<sup>2</sup>, David E. Birk<sup>3</sup>, Renato Iozzo<sup>4</sup>, Motomi Enomoto-Iwamoto<sup>5</sup>, Lin Han<sup>1</sup>, <sup>1</sup>*School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, PA, United States*, <sup>2</sup>*Department of Orthopaedic Surgery, University of Pennsylvania, Philadelphia, PA, United States*, <sup>3</sup>*Department of Molecular Pharmacology and Physiology, University of South Florida, Tampa, FL, United States*, <sup>4</sup>*Department of Pathology, Anatomy and Cell Biology, Jefferson University, Philadelphia, PA, United States*, <sup>5</sup>*Department of Orthopaedics, University of Maryland, Baltimore, MD, United States*
- 2:45PM Adhesive Films for Enhanced Tendon-to-Bone Repair** SB<sup>3</sup>C2017-201  
**Stephen W. Linderman**<sup>1,2</sup>, Mikhail Golman<sup>3,4</sup>, Thomas R. Gardner<sup>3</sup>, Donghwan Yoon<sup>5</sup>, Victor Birman<sup>6</sup>, William N. Levine<sup>3</sup>, Guy M. Genin<sup>5</sup>, Stavros Thomopoulos<sup>3,4</sup>, <sup>1</sup>*Biomedical Engineering, Washington University in St. Louis, St. Louis, MO, United States*, <sup>2</sup>*Orthopaedic Surgery, Washington University in St. Louis, St. Louis, MO, United States*, <sup>3</sup>*Orthopaedic Surgery, Columbia University, New York, NY, United States*, <sup>4</sup>*Biomedical Engineering, Columbia University, New York, NY, United States*, <sup>5</sup>*Mechanical Engineering, Washington University in St. Louis, St. Louis, MO, United States*, <sup>6</sup>*Missouri S&T Global, Missouri University of Science and Technology, St. Louis, MO, United States*
- 3:00PM Self-Assembled Micelle Enables Enhanced Delivery of CRISPR/Cas9 System** SB<sup>3</sup>C2017-202  
**Yeh-Hsing Lao**<sup>1</sup>, Mingqiang Li<sup>1</sup>, Madeleine A. Gao<sup>1</sup>, Kam W. Leong<sup>1,2</sup>, <sup>1</sup>*Department of Biomedical Engineering, Columbia University, New York, NY, United States*, <sup>2</sup>*Department of Systems Biology, Columbia University Medical Center, New York, NY, United States*
- 3:15PM A Thermodynamic Statistical Mechanics Model to Investigate the Influence of Ligand Density and Substrate Stiffness on Cell Spreading** SB<sup>3</sup>C2017-203  
**Eoin McEvoy**<sup>1</sup>, Siamak S. Shishvan<sup>2</sup>, Patrick McGarry<sup>1</sup>, Vikram S. Deshpande<sup>2</sup>, <sup>1</sup>*Discipline of Biomedical Engineering, National University of Ireland Galway, Galway, Ireland*, <sup>2</sup>*Department of Engineering, University of Cambridge, Cambridge, United Kingdom*
- 3:30PM Indispensable Roles Of Decorin In Cartilage Poroelasticity At The Nanoscale** SB<sup>3</sup>C2017-204  
**Biao Han**<sup>1</sup>, Qing Li<sup>1</sup>, Mei Sun<sup>2</sup>, Hadi T. Nia<sup>3</sup>, Ramin Oftadeh<sup>4</sup>, Ling Qin<sup>5</sup>, Renato V. Iozzo<sup>6</sup>, David E. Birk<sup>2</sup>, Lin Han<sup>1</sup>, <sup>1</sup>*School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, PA, United States*, <sup>2</sup>*Department of Molecular Pharmacology and Physiology, University of South Florida, Tampa, FL, United States*, <sup>3</sup>*Massachusetts General Hospital, Harvard Medical School, Boston, MA, United States*, <sup>4</sup>*Department of Orthopaedic Surgery, Beth Israel Deaconess Medical Center, Boston, MA, United States*, <sup>5</sup>*Department of Orthopaedic Surgery, University of Pennsylvania, Philadelphia, PA, United States*, <sup>6</sup>*Sidney Kimmel Cancer Center, Thomas Jefferson University, Philadelphia, PA, United States*

Friday, June 23

4:00pm - 5:30pm

**Undergraduate Design Competition****Tucson IJ****Session Chair:** Alan Eberhardt, *University of Alabama Birmingham, AL, United States***Session Co-Chair:** Laurel Kuxhaus, *Clarkson University, NY, United States*

- 4:00PM Prosthetic Bike Attachment for Children With Congenital Amputations** SB<sup>3</sup>C2017-205  
**Katherine Mavrommati**, Mark R. Oppenheimer, Marco G. Santini, Kurt K. Reed, Caroline E. Skae, Lily H. Laiho, *California Polytechnic State University, San Luis Obispo, CA, United States*
- 4:15PM Coughing for Better Health: A Prosthesis to Aid in Sputum Expectoration in Laryngectomees** SB<sup>3</sup>C2017-206  
 Nicole D'Ambrosio, **Matthew Haltermann**, Alden Mitchell, Kota Tamura, Kara Van Herwarde, Byron D. Erath, *Clarkson University, Potsdam, NY, United States*
- 4:30PM Wearable Gesture Recognition System with Applications to American Sign Language** SB<sup>3</sup>C2017-207  
**Isioma Kasi-Okonye**, Simranjit Ahluwalia, Dinithi Silva, Arturo Acuna, Oguz Yetkin, George Alexandrakis, *The University of Texas at Arlington, Arlington, TX, United States*
- 4:45PM An Adaptable Interim Prosthetic Socket as an Alternative for Below-The-Knee Amputation Rehabilitation** SB<sup>3</sup>C2017-208  
 Josh Marchese<sup>1</sup>, **Kenneth Muhart**<sup>1</sup>, Edward Cudjoe<sup>1</sup>, Joshua Gargac<sup>2</sup>, <sup>1</sup>*University of Mount Union, Alliance, OH, United States*, <sup>2</sup>*Department of Engineering, University of Mount Union, Alliance, OH, United States*

SCIENTIFIC SESSIONS

- 5:00PM Training Device For Wheelchair Racing** SB<sup>3</sup>C2017-209  
**Sarah C. Peden**, Marjelle F. Scheffers, Gnanadesikan Somasundaram, Dylan R. Wergelis-Isaacson, Sarah Rooney, *University of Delaware, Newark, DE, United States*
- 5:15PM Design And Analysis Of Soft-robotic Exoskeleton For Restoration Of Hand Function** SB<sup>3</sup>C2017-210  
**Vincent Castonguay-Siu**, Dalen Mimeault, Pratik Shah, Craig Trischuck, Heather Williams, Michael Lipsett, *University of Alberta, Edmonton, AB, Canada*

<b>Friday, June 23</b>	<b>4:00pm - 5:30pm</b>
------------------------	------------------------

**Upper and Lower Extremity Joint Mechanics  
(Solids)**

**Tucson AB**

**Session Chair:** Mark Miller, *University of Pittsburgh, PA, United States*  
**Session Co-Chair:** Antonis Stylianou, *University of Missouri-Kansas City, MO, United States*

- 4:00PM Muscle Driven Elbow Joint Simulation in a Multibody Framework** SB<sup>3</sup>C2017-211  
**Munsur Rahman**<sup>1</sup>, Mohsen Sharifi Renani<sup>1</sup>, Akin Cil<sup>1,2,3</sup>, Antonis Stylianou<sup>1</sup>, <sup>1</sup>*Civil and Mechanical Engineering, University of Missouri-Kansas City, Kansas City, MO, United States*, <sup>2</sup>*Orthopaedic Surgery, University of Missouri-Kansas City, Kansas City, MO, United States*, <sup>3</sup>*Orthopaedics, Truman Medical Centers, Kansas City, MO, United States*
- 4:15PM Kinematics of Glenohumeral Joint Following Multiple Anterior Dislocations** SB<sup>3</sup>C2017-212  
**Masahito Yoshida**<sup>1</sup>, Tetsuya Takenaga<sup>1</sup>, Calvin A. Chan<sup>2</sup>, Volker Musahl<sup>1,3</sup>, Albert Lin<sup>1</sup>, Richard E. Debski<sup>2,4</sup>, <sup>1</sup>*Department of Orthopaedic Surgery, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>2</sup>*Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>3</sup>*Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>4</sup>*Department of Orthopaedic Surgery, University of Pittsburgh, Pittsburgh, PA, United States*
- 4:30PM Inter-Limb Differences In Knee Gait And Quantitative Magnetic Resonance Imaging Variables 3 Months After Anterior Cruciate Ligament Reconstruction** SB<sup>3</sup>C2017-213  
 Ashutosh Khandha<sup>1</sup>, Kurt Manal<sup>2</sup>, Jacob J. Capin<sup>3</sup>, Kevin McGinnis<sup>1</sup>, Lynn Snyder-Mackler<sup>3</sup>, **Thomas S. Buchanan**<sup>4</sup>, <sup>1</sup>*Delaware Rehabilitation Institute, University of Delaware, Newark, DE, United States*, <sup>2</sup>*Department of Mechanical Engineering, University of Delaware, Newark, DE, United States*, <sup>3</sup>*Department of Physical Therapy, University of Delaware, Newark, DE, United States*, <sup>4</sup>*Department of Mechanical Engineering, Department of Biomedical Engineering, University of Delaware, Newark, DE, United States*
- 4:45PM Flexion-Pattern of Bi-Cruciate-Retaining Total Knee Arthroplasty-treated Knees** SB<sup>3</sup>C2017-214  
**Tetsuya Takagi**<sup>1</sup>, Yohei Okada<sup>2</sup>, Satoshi Yamakawa<sup>1</sup>, Atsushi Teramoto<sup>2</sup>, Toshihiko Yamashita<sup>2</sup>, Hiromichi Fujie<sup>1</sup>, <sup>1</sup>*Faculty of System Design, Tokyo Metropolitan University, Tokyo, Japan*, <sup>2</sup>*Department of Orthopaedic Surgery, Sapporo Medical University School of Medicine, Sapporo, Japan*
- 5:00PM Ligament Engagement Patterns in a Human Cadaveric Knee Model: A Basis for Precision Medicine in Orthopaedics** SB<sup>3</sup>C2017-215  
**Robert N. Kent**, James F. Boorman-Padgett, Ran Thein, Andrew D. Pearle, Thomas L. Wickiewicz, Carl W. Imhauser, *Biomechanics, Hospital for Special Surgery, New York, NY, United States*
- 5:15PM Analysis of Uncertainty in Superposition Testing: Implications for Robotically Controlled Knee Joint Testing:** SB<sup>3</sup>C2017-216  
 Nicholas J. Haas, Tara Bonner, Callan M. Gillespie, **Robb Colbrunn**, *BioRobotics and Mechanical Testing Core, Cleveland Clinic, Cleveland, OH, United States*

Friday, June 23

4:00pm - 5:30pm

**Head Injury & Injury Biomechanics 1 (Solids)****Tucson CD****Session Chair: Brittany Coats**, *University of Utah, UT, United States***Session Co-Chair: Jianguye Zhang**, *Johns Hopkins University, MD, United States*

- 4:00PM In Vivo Strains of Brain Deformation with Mild Angular and Posterior Head Acceleration using Tagged MRI** SB<sup>3</sup>C2017-217  
**Yuan-Chiao Lu**<sup>1</sup>, Deva C. Chan<sup>2</sup>, Andrew K. Knutsen<sup>1</sup>, Sarah H. Yang<sup>1</sup>, Philip V. Bayly<sup>3</sup>, Wen-Tung Wang<sup>1</sup>, John A. Butman<sup>4</sup>, Dzung L. Pham<sup>1</sup>, <sup>1</sup>*Center for Neuroscience and Regenerative Medicine, Henry M. Jackson Foundation, Bethesda, MD, United States*, <sup>2</sup>*Department of Biomedical Engineering, Rensselaer Polytechnic Institute, Troy, NY, United States*, <sup>3</sup>*Mechanical Engineering and Materials Science, Washington University at St. Louis, St. Louis, MO, United States*, <sup>4</sup>*Radiology and Imaging Sciences, National Institutes of Health Clinical Center, Bethesda, MD, United States*
- 4:15PM Validation Of FE Hybrid III, THOR, And GHBMC M50-OS For Spaceflight Configuration Testing** SB<sup>3</sup>C2017-218  
**Derek Jones**<sup>1</sup>, James Gaewsky<sup>1</sup>, Mona Saffarzadeh<sup>1</sup>, F. Scott Gayzik<sup>1</sup>, Ashley Weaver<sup>1</sup>, Jacob Putnam<sup>2</sup>, Jeffrey Somers<sup>2</sup>, Jessica Wells<sup>3</sup>, N. Newby<sup>2</sup>, Joel Stitzel<sup>1</sup>, <sup>1</sup>*Wake Forest University School of Medicine, Winston-Salem, NC, United States*, <sup>2</sup>*KBRwyle, Houston, TX, United States*, <sup>3</sup>*Leidos, Houston, TX, United States*
- 4:30PM Collagen Alignment Differentially Increases Neuronal Regulation after Stretch of Neuron-Collagen Constructs** SB<sup>3</sup>C2017-219  
**Sagar Singh**, Sijia Zhang, Beth Winkelstein, *University of Pennsylvania, Philadelphia, PA, United States*
- 4:45PM Disruption of Capillary-Like Structure by Impulsive Pressure Loading** SB<sup>3</sup>C2017-220  
**Hironichi Nakadate**, Shinichi Nakamura, Shigeru Aomura, *Graduate School of System Design, Tokyo Metropolitan University, Hino, Tokyo, Japan*
- 5:00PM Computational Simulations of Lateral Ankle Sprains in Tennis** SB<sup>3</sup>C2017-221  
Paul D. Heeder<sup>1</sup>, **Feng Wei**<sup>2</sup>, Roger C. Haut<sup>2</sup>, <sup>1</sup>*Mechanical Engineering, Michigan State University, East Lansing, MI, United States*, <sup>2</sup>*Radiology, Michigan State University, East Lansing, MI, United States*
- 5:15PM Performance Assessment Of A Pre-computed Brain Response Atlas In Dummy Head Impacts** SB<sup>3</sup>C2017-222  
**Wei Zhao**<sup>1</sup>, Calvin Kuo<sup>2</sup>, Lyndia C. Wu<sup>3</sup>, David B. Camarillo<sup>2,3</sup>, Songbai Ji<sup>1,4</sup>, <sup>1</sup>*Department of Biomedical Engineering, Worcester Polytechnic Institute, Worcester, MA, United States*, <sup>2</sup>*Department of Mechanical Engineering, Stanford University, Stanford, CA, United States*, <sup>3</sup>*Department of Bioengineering, Stanford University, Stanford, CA, United States*, <sup>4</sup>*Thayer School of Engineering, Dartmouth College, Hanover, NH, United States*

Friday, June 23

4:00pm - 5:30pm

**Vascular Mechanics (Solids)****San Ignacio****Session Chair: Lucas H. Timmins**, *Georgia Institute of Technology, GA, United States***Session Co-Chair: Susan Lessner**, *University of South Carolina School of Medicine, SC, United States*

- 4:00PM Patient-Specific Mapping of 2D In Vivo Aortic Wall Strain in the Thoracic and Abdominal Aorta Using DENSE MRI** SB<sup>3</sup>C2017-223  
**John S. Wilson**<sup>1</sup>, Xiaodong Zhong<sup>1</sup>, W. Robert Taylor<sup>2</sup>, John Oshinski<sup>1</sup>, <sup>1</sup>*Radiology, Emory University, Atlanta, GA, United States*, <sup>2</sup>*Cardiology, Emory University, Atlanta, GA, United States*
- 4:15PM Transmural Variation in Fiber Orientation and Its Association with the Anisotropic Behavior of Arterial Elastin** SB<sup>3</sup>C2017-224  
**Xunjie Yu**<sup>1</sup>, Yunjie Wang<sup>1</sup>, Yanhang Zhang<sup>1,2</sup>, <sup>1</sup>*Department of Mechanical Engineering, Boston University, Boston, MA, United States*, <sup>2</sup>*Department of Biomedical Engineering, Boston University, Boston, MA, United States*
- 4:30PM Arterial Stiffness, Aging, and Elastin Deficiency** SB<sup>3</sup>C2017-225  
**Jie Hawes**<sup>1</sup>, Robert P. Mecham<sup>2</sup>, Jessica E. Wagenseil<sup>1</sup>, <sup>1</sup>*Mechanical Engineering and Materials Science, Washington University, St. Louis, MO, United States*, <sup>2</sup>*Cell Biology and Physiology, Washington University, St. Louis, MO, United States*

- 4:45PM Modeling the Pulmonary Arteries With a Four Fiber Family Constitutive Model** SB<sup>3</sup>C2017-226  
Erica R. Pursell, Daniela Velez-Rendon, Daniela Valdez-Jasso, *Bioengineering, University of Illinois at Chicago, Chicago, IL, United States*
- 5:00PM Tortuosity And Curvature Of Cerebral Arteries In Posterior Fossa** SB<sup>3</sup>C2017-227  
D. Nakagawa<sup>1,2</sup>, A. Schumacher<sup>1</sup>, B. Berkowitz<sup>1</sup>, D. Hasan<sup>2</sup>, M. Raghavan<sup>1</sup>, *<sup>1</sup>Department of Biomedical Engineering, University of Iowa, Iowa City, IA, United States, <sup>2</sup>Department of Neurosurgery, University of Iowa, Iowa City, IA, United States*
- 5:15PM A Triphasic Fluid Transport Model of the Arterial Wall** SB<sup>3</sup>C2017-228  
Manuel K. Rausch<sup>1,2</sup>, Jay D. Humphrey<sup>3</sup>, *<sup>1</sup>Department of Aerospace Engineering & Engineering Mechanics, University of Texas at Austin, Austin, TX, United States, <sup>2</sup>Department of Biomedical Engineering, Yale University, New Haven, CT, United States, <sup>3</sup>Biomedical Engineering, Yale University, New Haven, CT, United States*

Friday, June 23

4:00pm - 5:30pm

## Imaging and Diagnostics (Fluids)

Tucson GH

Session Chair: Craig Goergen, *Purdue University, NC, United States*Session Co-Chair: Alejandro Roldán-Alzate, *University of Wisconsin, WI, United States*

- 4:00PM Computational Fluid Dynamics of Aortic Dissection: 4D Flow MRI-Based Inlet Boundary Conditions** SB<sup>3</sup>C2017-229  
Sylvana García-Rodríguez<sup>1</sup>, Rafael Medero<sup>2</sup>, Christopher J. François<sup>1</sup>, Alejandro Roldán-Alzate<sup>1,2,3</sup>, *<sup>1</sup>Radiology, University of Wisconsin, Madison, WI, United States, <sup>2</sup>Mechanical Engineering, University of Wisconsin, Madison, WI, United States, <sup>3</sup>Biomedical Engineering, University of Wisconsin, Madison, WI, United States*
- 4:15PM PC-MRI Derived Inlet Boundary Conditions for CFD Models of Human Aorta: Uncertainty Propagation** SB<sup>3</sup>C2017-230  
Silvia Bozzi<sup>1</sup>, Giuseppe De Nisco<sup>2</sup>, Diego Gallo<sup>2</sup>, Raffaele Ponzini<sup>3</sup>, Giovanna Rizzo<sup>4</sup>, Cristina Bignardi<sup>2</sup>, Umberto Morbiducci<sup>2</sup>, Giuseppe Passoni<sup>1</sup>, *<sup>1</sup>Department of Electronics, Information Science, and Bioengineering, Politecnico di Milano, Milan, Italy, <sup>2</sup>Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Turin, Italy, <sup>3</sup>HPC and Innovation Unit, CINECA, Milan, Italy, <sup>4</sup>IBFM, Research National Council, Milan, Italy*
- 4:30PM Noninvasive Estimation of Coronary Fractional Flow Reserve (FFR) Using Magnetic Resonance Imaging: Methodology and Preliminary Results** SB<sup>3</sup>C2017-231  
Jackson B. Hair<sup>1</sup>, Lucas H. Timmins<sup>2</sup>, John N. Oshinski<sup>1,3</sup>, *<sup>1</sup>Biomedical Engineering, Georgia Institute of Technology and Emory University, Atlanta, GA, United States, <sup>2</sup>Bioengineering, University of Utah, Salt Lake City, UT, United States, <sup>3</sup>Department of Radiology & Imaging Sciences, Emory University School of Medicine, Atlanta, GA, United States*
- 4:45PM Fluid-Structure-Interaction Simulations of Hemodynamics in Data Driven Models of Wild Type and Fibulin-5 Deficient Mice** SB<sup>3</sup>C2017-232  
Federica Cuomo<sup>1</sup>, Jacopo Ferruzzi<sup>2</sup>, Pradyumn Agarwal<sup>1</sup>, Chen Li<sup>1</sup>, Jay D. Humphrey<sup>2</sup>, C. Alberto Figueroa<sup>3,4</sup>, *<sup>1</sup>Biomedical Engineering, University of Michigan, Ann Arbor, MI, United States, <sup>2</sup>Biomedical Engineering, Yale University, New Haven, CT, United States, <sup>3</sup>Biomedical Engineering and Vascular Surgery, University of Michigan, Ann Arbor, MI, United States, <sup>4</sup>Imaging Sciences and Biomedical Engineering, King's College London, London, United Kingdom*
- 5:00PM Mapping Left Ventricular Blood Stasis Using Conventional Doppler-Echocardiography in Acute Myocardial Infarction** SB<sup>3</sup>C2017-233  
Lorenzo Rossini<sup>1</sup>, Pablo Martinez-Legazpi<sup>2</sup>, Candelas Perez del Villar<sup>2</sup>, Yolanda Benito<sup>2</sup>, Carolina Devesa-Cordero<sup>2</sup>, Raquel Yotti<sup>2</sup>, Antonia Delgado-Montero<sup>2</sup>, Ana Gonzalez-Mansilla<sup>2</sup>, Andrew M. Kahn<sup>3</sup>, Francisco Fernandez-Avilés<sup>2</sup>, Javier Bermejo<sup>2</sup>, Juan Carlos del Alamo<sup>1</sup>, *<sup>1</sup>Mechanical and Aerospace Engineering, UC San Diego, La Jolla, CA, United States, <sup>2</sup>Department of Cardiology, Hospital Universitario Gregorio Marañón, Madrid, Spain, <sup>3</sup>Department of Cardiovascular Medicine, UC San Diego, La Jolla, CA, United States*
- 5:15PM Color Doppler Echocardiogram Velocimetry Flow Reconstruction Using Streamfunction-Vorticity Formulation** SB<sup>3</sup>C2017-234  
Brett A. Meyers<sup>1</sup>, Craig Goergen<sup>2</sup>, Carlo Scalò<sup>1</sup>, Pavlos Vlachos<sup>1</sup>, *<sup>1</sup>Mechanical Engineering, Purdue University, West Lafayette, IN, United States, <sup>2</sup>Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN, United States*

<b>Friday, June 23</b>	<b>4:00pm - 5:30pm</b>
------------------------	------------------------

**Nano and Microtherapeutics (BTR)****San Luis****Session Chair: Shannon Stott**, *Harvard University, MA, United States***Session Co-Chair: Zhenpeng Qin**, *University of Texas at Dallas, TX, United States*

- 4:00PM Enhance Delivery Of Nanoparticles Across The Blood-brain Barrier In Brain Tumors Through Autocatalysis** SB<sup>3</sup>C2017-235  
Gang Deng<sup>1</sup>, Liang Han<sup>1</sup>, Sasidhar Murikinati<sup>2</sup>, Jaime Grutzendler<sup>2</sup>, Joseph Piepmeier<sup>1</sup>, **Jiangbing Zhou**<sup>3</sup>, <sup>1</sup>*Department of Neurosurgery, Yale University, New Haven, CT, United States*, <sup>2</sup>*Department of Neurology, Yale University, New Haven, CT, United States*, <sup>3</sup>*Department of Neurosurgery, Department of Biomedical Engineering, Yale University, New Haven, CT, United States*
- 4:15PM Ultrafast Near-infrared Light-triggered Uncaging Technique For Probing Cellular Signaling** SB<sup>3</sup>C2017-236  
Xiuying Li<sup>1</sup>, Zifan Che<sup>2</sup>, Khadijah Mazhar<sup>3</sup>, Theodore Price<sup>3</sup>, **Zhenpeng Qin**<sup>1,4,5</sup>, <sup>1</sup>*Departments of Mechanical Engineering, University of Texas at Dallas, Richardson, TX, United States*, <sup>2</sup>*Departments of Materials Science and Engineering, University of Texas at Dallas, Richardson, TX, United States*, <sup>3</sup>*School of Behavioral and Brain Sciences, University of Texas at Dallas, Richardson, TX, United States*, <sup>4</sup>*Department of Surgery, University of Texas Southwestern Medical Center, Dallas, TX, United States*, <sup>5</sup>*Department of Bioengineering, University of Texas at Dallas, Richardson, TX, United States*
- 4:30PM Motion of a Nano-Spheroid in a Cylindrical Vessel Flow: Brownian and Hydrodynamic Interactions; Implications for Targeted Drug Delivery** SB<sup>3</sup>C2017-237  
N. Ramakrishnan<sup>1</sup>, Y. Wang<sup>2</sup>, D. M. Eckmann<sup>1,3</sup>, R. Radhakrishnan<sup>1,4</sup>, **P. S. Ayyaswamy**<sup>2</sup>, <sup>1</sup>*Department of Bioengineering, University of Pennsylvania, Philadelphia, PA, United States*, <sup>2</sup>*Department of Mechanical Engineering and Applied Mechanics, University of Pennsylvania, Philadelphia, PA, United States*, <sup>3</sup>*Department of Anesthesiology and Critical Care, University of Pennsylvania, Philadelphia, PA, United States*, <sup>4</sup>*Department of Chemical and Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA, United States*
- 4:45PM Synthetic Secoisoiricinol Diglucoside Attenuates Mechanical Hyperalgesia & Spinal Inflammation in a Rat Model of Painful Radiculopathy** SB<sup>3</sup>C2017-238  
Christine Weisshaar, Melpo Christofidou-Solomidou, **Beth Winkelstein**, *University of Pennsylvania, Philadelphia, PA, United States*
- 5:00PM The Role of Nanoparticles Design In Determining Analytical Performance of Lateral Flow Assays** SB<sup>3</sup>C2017-239  
**Li Zhan**<sup>1</sup>, Yan Gong<sup>2</sup>, David Boulware<sup>3</sup>, Feng Xu<sup>2</sup>, Warren Chan<sup>4</sup>, John Bischof<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of Minnesota, Minneapolis, MN, United States*, <sup>2</sup>*Xi'an Jiaotong University, Xi'an, China*, <sup>3</sup>*University of Minnesota, Minneapolis, MN, United States*, <sup>4</sup>*University of Toronto, Toronto, ON, Canada*
- 5:15PM Controlled Ice Nucleation Using Freeze-Dried Pseudomonas Syringe Encapsulated in Hydrogel Beads** SB<sup>3</sup>C2017-240  
**Lindong Weng**, Shannon N. Tessier, Anisa Swei, Shannon L. Stott, Mehmet Toner, *Massachusetts General Hospital, Boston, MA, United States*

<b>Friday, June 23</b>	<b>4:00pm - 5:30pm</b>
------------------------	------------------------

**Mechanical Regulation of Morphogenesis (CTE)****San Pedro****Session Chair: Nandan L. Nerurkar**, *Harvard Medical School, MA, United States***Session Co-Chair: Lance Davidson**, *University of Pittsburgh, PA, United States*

- 4:00PM BMP Signaling Regulates Differential Growth to Drive Buckling During Looping Morphogenesis of the Small Intestine** SB<sup>3</sup>C2017-241  
**Nandan L. Nerurkar**<sup>1</sup>, L. Mahadevan<sup>2</sup>, Cliff Tabin<sup>1</sup>, <sup>1</sup>*Genetics, Harvard Medical School, Boston, MA, United States*, <sup>2</sup>*Harvard University, Cambridge, MA, United States*
- 4:15PM Cytoskeletal Dynamics Underlie Growth Plate Cartilage Morphogenesis** SB<sup>3</sup>C2017-242  
**Alek Erickson**<sup>1</sup>, Sarah Romereim<sup>2</sup>, Nicholas Conoan<sup>3</sup>, Andrew Dudley<sup>1</sup>, <sup>1</sup>*Genetics, Cell Biology, and Anatomy, University Nebraska Medical Center, Omaha, NE, United States*, <sup>2</sup>*Reproductive Endocrinology, University Nebraska Lincoln, Lincoln, NE, United States*, <sup>3</sup>*University Nebraska Medical Center, Omaha, NE, United States*

SCIENTIFIC SESSIONS

- 4:30PM Direct In-vivo Quantification of Differential Mechanical Properties in Developing Tissues** SB<sup>3</sup>C2017-243  
Friedhelm Serwane, Alessandro Mongera, Payam Rowghanian, David A. Kealhofer, Adam A. Lucio, Zachary M. Hockenbery, **Otger Campas**, *University of California, Santa Barbara, Santa Barbara, CA, United States*
- 4:45PM Long-Range Patterning by the Vertebrate Tail Organizer via Mechanical Information** SB<sup>3</sup>C2017-244  
Jamie Schwendinger-Schreck<sup>1</sup>, Dörthe Jülich<sup>1</sup>, Dipjyoti Das<sup>1</sup>, Andrew Lawton<sup>1</sup>, Nicolas Dray<sup>1</sup>, Corey O'Hern<sup>2,3</sup>, Thierry Emonet<sup>1,3</sup>, **Scott Holley**<sup>1</sup>, *<sup>1</sup>Department of Molecular, Cellular and Developmental Biology, Yale University, New Haven, CT, United States, <sup>2</sup>Department of Mechanical Engineering and Materials Science, Yale University, New Haven, CT, United States, <sup>3</sup>Department of Physics, Yale University, New Haven, CT, United States*
- 5:00PM Buckling During Morphogenesis Of The Lung** SB<sup>3</sup>C2017-245  
Katharine Goodwin, James W. Spurlin, **Celeste M. Nelson**, *Princeton University, Princeton, NJ, United States*
- 5:15PM Mechanical Control Of Cardiogenesis: How Mechanical Cues Guide The Cell Phenotype Of Heart Precursor Cells As They Form A Beating Heart.** SB<sup>3</sup>C2017-246  
Lance Davidson, *University of Pittsburgh, Pittsburgh, PA, United States*

<b>Saturday, June 24</b>	<b>2:15pm - 3:45pm</b>
--------------------------	------------------------

**Head Injury & Injury Biomechanics 2 (Solids)**

**Tucson AB**

**Session Chair:** Francis Gayzik, *Wake Forest University School of Medicine, NC, United States*  
**Session Co-Chair:** Mehmet Kurt, *Stevens Institute of Technology, NJ, United States*

- 2:15PM A Deep Learning Approach To Predict Mild Traumatic Brain Injury In Contact Sports** SB<sup>3</sup>C2017-247  
**Yunliang Cai**<sup>1</sup>, Wei Zhao<sup>1</sup>, Zhigang Li<sup>2</sup>, Songbai Ji<sup>1,3</sup>, *<sup>1</sup>Biomedical Engineering, Worcester Polytechnic Institute, Worcester, MA, United States, <sup>2</sup>Department of Biomedical Data Science, Dartmouth College, Hanover, NH, United States, <sup>3</sup>Thayer School of Engineering, Dartmouth College, Hanover, NH, United States*
- 2:30PM Multi-fidelity Modeling Of Traumatic Head Injury In Accident Reconstruction** SB<sup>3</sup>C2017-248  
**X. Gary Tan**, Amit Bagchi, *Multifunctional Materials Branch, U.S. Naval Research Laboratory, Washington, DC, United States*
- 2:45PM Mechanical Properties of Porcine Brain Tissue In Vivo and Ex Vivo Estimated by MR Elastography** SB<sup>3</sup>C2017-249  
**Charlotte A. Guertler**<sup>1</sup>, Ruth J. Okamoto<sup>1</sup>, John L. Schmidt<sup>1</sup>, Andrew A. Badachhape<sup>2</sup>, Curtis L. Johnson<sup>3</sup>, Philip V. Bayly<sup>1</sup>, *<sup>1</sup>Mechanical Engineering, Washington University in St. Louis, St. Louis, MO, United States, <sup>2</sup>Biomedical Engineering, Washington University in St. Louis, St. Louis, MO, United States, <sup>3</sup>Biomedical Engineering, University of Delaware, Newark, DE, United States*
- 3:00PM Measurement of Intraocular Pressure During Blast Wave Loading** SB<sup>3</sup>C2017-250  
**Nikolaus A. Benko**, Daniel F. Shedd, Brittany Coats, *Mechanical Engineering, University of Utah, Salt Lake City, UT, United States*
- 3:15PM Two Phase Thoracic Organ Response Due to Blast Overpressure Loading on Post-Mortem Human Surrogates** SB<sup>3</sup>C2017-251  
**Alexander S. Iwaskiw**, Constantine K. Demtropolis, Connor O. Pyles, Timothy P. Harrigan, Edwin B. Gienger, Connor A. Bradfield, Eyal Bar-Kochba, Joseph A. Andrist, Mary E. Luongo, Andrew C. Merkle, Robert S. Armiger, *The Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States*
- 3:30PM Influence of Compressive Strain Rate Dependency on Structure-Property Relations of Fetal Porcine Brain** SB<sup>3</sup>C2017-252  
**Courtney White**<sup>1</sup>, Jun Liao<sup>2</sup>, Michaela Beasley<sup>1</sup>, Michael Jones<sup>3</sup>, Raj Prabhu<sup>1</sup>, Lakiesha Williams<sup>1</sup>, *<sup>1</sup>Mississippi State University, Starkville, MS, United States, <sup>2</sup>University of Texas at Arlington, Arlington, TX, United States, <sup>3</sup>Cardiff University, Cardiff, United Kingdom*

Saturday, June 24

2:15pm - 3:45pm

## Reproductive Biomechanics (Solids)

Tucson CD

Session Chair: Kristin Miller, Tulane University, LA, United States

Session Co-Chair: Raffaella De Vita, Virginia Tech, VA, United States

- 2:15PM Vascular Distensibility And Constitutive Modeling Of Normal And Pathological Placental Chorionic Arteries** SB<sup>3</sup>C2017-253  
**Shier Nee Saw**<sup>1</sup>, Nurfarah Zaini Mattar<sup>2</sup>, Arijit Biswas<sup>2</sup>, Choon Hwai Yap<sup>1</sup>, <sup>1</sup>Biomedical Engineering, National University of Singapore, Singapore, Singapore, <sup>2</sup>Department of Obstetrics and Gynecology, National University Health Systems, Singapore, Singapore
- 2:30PM A Computational Study of the Contribution of the Commonly Ignored Superficial Perineal Structures During Vaginal Delivery** SB<sup>3</sup>C2017-254  
**Megan R. Routhong**<sup>1</sup>, Spandan Maiti<sup>2</sup>, Raffaella De Vita<sup>3</sup>, Pamela A. Moalli<sup>4</sup>, Steven D. Abramowitch<sup>1</sup>, <sup>1</sup>Musculoskeletal Research Center, Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States, <sup>2</sup>Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States, <sup>3</sup>Department of Biomedical Engineering and Mechanics, Virginia Tech, Blacksburg, VA, United States, <sup>4</sup>Magee-Womens Research Institute, Pittsburgh, PA, United States
- 2:45PM Comparing In Vivo Ultrasound Geometry against In Vitro Calculations for Biaxial Testing in the Nonpregnant Murine Cervix** SB<sup>3</sup>C2017-255  
**Cassandra K. Conway**<sup>1</sup>, Hamna J. Qureshi<sup>2</sup>, Leise Knoepp<sup>3</sup>, Laurephile Desrosiers<sup>3</sup>, Craig J. Goergen<sup>2</sup>, Kristin S. Miller<sup>1</sup>, <sup>1</sup>Biomedical Engineering, Tulane University, New Orleans, LA, United States, <sup>2</sup>Biomedical Engineering, Purdue University, West Lafayette, IN, United States, <sup>3</sup>Urogynecology, Ochsner Clinical School, New Orleans, LA, United States
- 3:00PM Mechanical Integrity Of The Cervix Is Impaired In A Mouse Model Of Intrauterine Inflammation And Preterm Birth** SB<sup>3</sup>C2017-256  
**Carrie E. Barnum**<sup>1</sup>, Stephanie N. Weiss<sup>1</sup>, Guillermo Barila<sup>2</sup>, Amy G. Brown<sup>2</sup>, Snehal S. Shetye<sup>1</sup>, Michal A. Elovitz<sup>2</sup>, Louis J. Soslowsky<sup>1</sup>, <sup>1</sup>McKay Orthopaedic Research Laboratory, University of Pennsylvania, Philadelphia PA, PA, United States, <sup>2</sup>Maternal and Child Health Research Center, Department OBGYN, University of Pennsylvania, Philadelphia PA, PA, United States
- 3:15PM Biomechanical Simulations of Pregnancy: The Influence of Fetal Membrane Mechanics on Uterine and Cervical Tissue Stretch** SB<sup>3</sup>C2017-257  
**Andrea R. Westervelt**<sup>1</sup>, Edoardo Mazza<sup>2</sup>, Alexander E. Ehret<sup>2</sup>, Joy Vink<sup>3</sup>, Chia-Ling Nhan-Chang<sup>3</sup>, Ronald J. Wapner<sup>3</sup>, George Gallos<sup>4</sup>, Michael House<sup>5</sup>, Kristin Myers<sup>1</sup>, <sup>1</sup>Mechanical Engineering, Columbia University, New York, NY, United States, <sup>2</sup>Mechanical and Process Engineering, ETH Zurich, Zurich, Switzerland, <sup>3</sup>Obstetrics and Gynecology, Columbia University Medical Center, New York, NY, United States, <sup>4</sup>Columbia University Medical Center, New York, NY, United States, <sup>5</sup>Obstetrics and Gynecology, Tufts Medical Center, Boston, MA, United States
- 3:30PM Mechanical and Histological Characterisation of the Human Male Urethra for the Purposes of Tissue Engineering an Appropriate Regenerative Graft** SB<sup>3</sup>C2017-258  
**Eoghan M. Cunnane**<sup>1,2,3</sup>, Niall F. Davis<sup>4</sup>, Alan J. Ryan<sup>1</sup>, David A. Vorp<sup>3,5</sup>, Fergal J. O'Brien<sup>1</sup>, Michael T. Walsh<sup>2</sup>, <sup>1</sup>Tissue Engineering Research Group, Royal College of Surgeons Ireland, Dublin 2, Ireland, <sup>2</sup>Health Research Institute, School of Engineering, Bernal Institute, University of Limerick, Limerick, Ireland, <sup>3</sup>McGowan Institute for Regenerative Medicine and the Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States, <sup>4</sup>Department of Urology, St. Vincent's University Hospital, Dublin 2, Ireland, <sup>5</sup>Division of Cardiac Surgery and the Department of Surgery, University of Pittsburgh, Pittsburgh, PA, United States

<b>Saturday, June 24</b>	<b>2:15pm - 3:45pm</b>
--------------------------	------------------------

**Tendon Tissue Engineering and Regeneration  
(CTE/Solids)**

**San Ignacio**

**Session Chair:** Alice Huang, *Mt Sinai School of Medicine, NY, United States*

**Session Co-Chair:** Ellen Arruda, *University of Michigan, MI, United States*

- 2:15PM Comparison of Human Cell Populations on Tendon Repair** SB<sup>3</sup>C2017-259  
Felix Dyrna<sup>1</sup>, Leo Pauzenberger<sup>2</sup>, Phillip Zakko<sup>2</sup>, Mary Beth McCarthy<sup>2</sup>, David Rowe<sup>2</sup>, Augustus Mazzocca<sup>2</sup>, **Nathaniel Dymont**<sup>3</sup>, <sup>1</sup>*Technical University of Munich, Munich, Germany*, <sup>2</sup>*UConn Health, Farmington, CT, United States*, <sup>3</sup>*University of Pennsylvania, Philadelphia, PA, United States*
- 2:30PM Leveraging Local Biomaterial Properties and Mechanical Stimulation for Tendon-bone-junction Engineering** SB<sup>3</sup>C2017-260  
William K. Grier, **Raul A. Sun Han Chang**, Brendan A. C. Harley, *Chemical and Biomolecular Engineering, University of Illinois at Urbana, Champaign, Urbana, IL, United States*
- 2:45PM Cyclic Uniaxial Strain Increases Collagen III Deposition in Early Development of Scaffold-Free Engineered Tendon Fibers** SB<sup>3</sup>C2017-261  
Kuwabo Mubyana<sup>1</sup>, Connie S. Chamberlain<sup>2</sup>, **David T. Corr**<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, Rensselaer Polytechnic Institute, Troy, NY, United States*, <sup>2</sup>*Orthopedics and Rehabilitation, University of Wisconsin, Madison, WI, United States*
- 3:00PM Mechanical Stimulation Prevents MMP13-Driven Degradation of Engineered Tendon Tissue** SB<sup>3</sup>C2017-262  
**Andreas Herchenhan**, Stefano Boccardo, Matteo Centola, Olivier Leupin, *Novartis Pharma AG, Basel, Switzerland*
- 3:15PM Deletion Of Smad4 In Adult Tenocytes Enables Tendon Cell Recruitment And Functional Recovery After Injury** SB<sup>3</sup>C2017-263  
**Chun Chien**, Kristen Howell, Alice H. Huang, *Orthopaedics, Icahn School of Medicine at Mount Sinai, New York, NY, United States*
- 3:30PM Elastin is Localised to the Interfascicular Matrix of Energy Storing Tendons and Becomes More Disorganised With Ageing** SB<sup>3</sup>C2017-264  
**Marta S. Godinho**<sup>1</sup>, Chavaunne T. Thorpe<sup>2</sup>, Steve E. Greenwald<sup>3</sup>, Hazel R. Screen<sup>1</sup>, <sup>1</sup>*School of Engineering and Materials Science, Queen Mary University of London, London, United Kingdom*, <sup>2</sup>*Comparative Biomedical Sciences, The Royal Veterinary College, London, United Kingdom*, <sup>3</sup>*Blizard Institute, Barts and The London School of Medicine and Dentistry, London, United Kingdom*

<b>Saturday, June 24</b>	<b>2:15pm - 3:45pm</b>
--------------------------	------------------------

**Aneurysm (Fluids)**

**Tucson GH**

**Session Chair:** Kristian Valen-Sendstad, *Simula Research Laboratory, Lysaker, Norway*

**Session Co-Chair:** C. Alberto Figueroa, *University of Michigan, MI, United States*

- 2:15PM Computer Simulations Of Blood Flow In Aortic Dissections With Fluid Structure Interaction (FSI)** SB<sup>3</sup>C2017-265  
**Kathrin Baeumler**, Anna M. Sailer, Vijay Vedula, Alison Marsden, Dominik Fleischmann, *Stanford University, Stanford, CA, United States*
- 2:30PM Unsteady Cerebral Blood Flow Simulation Based on Feedback Control-Data Assimilation Method Using 4D PC-MRI Velocity Field** SB<sup>3</sup>C2017-266  
**Satoshi Ii**, Yoshiyuki Watanabe, Shigeo Wada, *Osaka University, Osaka, Japan*
- 2:45PM Image-based Computational Assessment Of Vascular Wall Mechanics And Hemodynamics In Pulmonary Arterial Hypertension Patients** SB<sup>3</sup>C2017-267  
**Byron A. Zambrano**<sup>1</sup>, Nathan McLean<sup>1</sup>, Xiaodan Zhao<sup>2</sup>, Liang Zhong<sup>2</sup>, Lik Chuan Lee<sup>1</sup>, Seungik Baek<sup>1</sup>, <sup>1</sup>*Mechanical Engineering department, Michigan State University, East Lansing, MI, United States*, <sup>2</sup>*National Heart Center, Singapore, Singapore*

- 3:00PM Implications of Singular Intracranial Aneurysm Repair in the Presence of Closely-Spaced Multiple Aneurysms: A CFD Simulation Study** SB<sup>3</sup>C2017-268  
**Kevin Sunderland**<sup>1</sup>, Jingfeng Jiang<sup>1</sup>, Qinghai Huang<sup>2</sup>, Gouthami Chintalapani<sup>3</sup>, Charles Strother<sup>4</sup>, <sup>1</sup>*Biomedical Engineering, Michigan Technological University, Houghton, MI, United States*, <sup>2</sup>*Neurosurgery, Changhai Hospital, Shanghai, China*, <sup>3</sup>*Siemens Medical Solution (USA) Inc., Hoffman Estate, IL, United States*, <sup>4</sup>*Radiology, University of Wisconsin, Madison, WI, United States*
- 3:15PM Physiologically-Relevant Measurements of Flow Through Stents: Towards Improved Models of Endovascular Cerebral Aneurysm Treatments** SB<sup>3</sup>C2017-269  
**Michael C. Barbour**<sup>1</sup>, Michael R. Levitt<sup>2</sup>, Luke Johnson<sup>1</sup>, Keshav Venkat<sup>1</sup>, Christian Geindreau<sup>3</sup>, Sabine Rolland du Roscoat<sup>3</sup>, Ryan P. Morton<sup>2</sup>, Louis J. Kim<sup>2</sup>, Alberto Aliseda<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of Washington, SEATTLE, WA, United States*, <sup>2</sup>*Neurological Surgery, University of Washington, SEATTLE, WA, United States*, <sup>3</sup>*SR, Universite Grenoble Alps, Grenoble, France*
- 3:30PM Morphometric and Hemodynamic Impact of Post Endovascular AAA Repair: Comparison with Infrarenal Physiological Blood Flow** SB<sup>3</sup>C2017-270  
**Paola Tasso**<sup>1</sup>, Anastasios Raptis<sup>2</sup>, Michalis Xenos<sup>3</sup>, Diego Gallo<sup>1</sup>, Miltiadis Matsagkas<sup>4</sup>, Umberto Morbiducci<sup>1</sup>, <sup>1</sup>*Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Turin, Italy*, <sup>2</sup>*Laboratory for Vascular Simulations, Institute of Vascular Diseases, Ioannina, Greece*, <sup>3</sup>*Department of Mathematics, University of Ioannina, Ioannina, Greece*, <sup>4</sup>*Department of Vascular Surgery, University of Thessaly, Larissa, Greece*

Saturday, June 24

2:15pm - 3:45pm

### Experimental Modeling for Clinical Surgical Applications (DDR/IAB)

San Luis

**Session Chair: Sara E. Wilson**, *University of Kansas, KS, United States*

**Session Co-Chair: Chung-Hao Lee**, *University of Oklahoma, OK, United States*

- 2:15PM Spring Assisted Cranioplasty: A Parametric Analysis of Surgical Outcomes Using Statistical Shape Modeling and Finite Element Analysis** SB<sup>3</sup>C2017-271  
**Alessandro Borghi**<sup>1</sup>, Kunhou He<sup>1</sup>, Jan Bruse<sup>2</sup>, Naiara Rodriguez Florez<sup>1</sup>, David Dunaway<sup>3</sup>, Owase Jeelani<sup>3</sup>, Silvia Schievano<sup>1</sup>, <sup>1</sup>*UCL Great Ormond Street Institute of Child Health, University College London, London, United Kingdom*, <sup>2</sup>*UCL Institute of Cardiovascular Science, University College London, London, United Kingdom*, <sup>3</sup>*Craniofacial Unit, Great Ormond Street Hospital, London, United Kingdom*
- 2:30PM New Approach for Worst Case Determination of Hip Stem using FEA and Abaqus GUI** SB<sup>3</sup>C2017-272  
 Mohsen Renani<sup>1</sup>, **Jeff Bischoff**<sup>2</sup>, <sup>1</sup>*University of Missouri - Kansas City, Kansas City, MO, United States*, <sup>2</sup>*Zimmer Biomet, Inc., Warsaw, IN, United States*
- 2:45PM Finite Element Simulation and Experimental Characterization of Surgical Knot Performance** SB<sup>3</sup>C2017-273  
**Arz Y. Qwam Alden**<sup>1</sup>, Peter A. Gustafson<sup>1,2</sup>, <sup>1</sup>*Mechanical and Aeronautical Engineering, Western Michigan University, Kalamazoo, MI, United States*, <sup>2</sup>*Homer Stryker M.D. School of Medicine, Western Michigan University, Kalamazoo, MI, United States*
- 3:00PM Abstract Withdrawn** SB<sup>3</sup>C2017-274
- 3:15PM Evaluation of Metaphyseal Reconstructive Knee Revision Implant Impaction with Surgical Cadaveric Operation** SB<sup>3</sup>C2017-275  
**Gregg Schmidig**, Mayur Thakore, Damon Servidio, *Device Evaluation, Stryker, Mahwah, NJ, United States*

**3:30PM Performance Testing of Tissue Containment Bags for Power Morcellation SB<sup>3</sup>C2017-276**

**Alexander Herman**<sup>1</sup>, Nandini Duraiswamy<sup>1</sup>, Thomas E. Claiborne<sup>2</sup>, George J. Gibeily<sup>3</sup>, Veronica A. Price<sup>4</sup>, Prasanna Hariharan<sup>1</sup>, <sup>1</sup>*Division of Applied Mechanics, Office of Science and Engineering Laboratories, U.S. Food and Drug Administration, Silver Spring, MD, United States*, <sup>2</sup>*General Surgery Devices Branch II, Division of Surgical Devices, Office of Device Evaluation, U.S. Food and Drug Administration, Silver Spring, MD, United States*, <sup>3</sup>*Plastic & Reconstructive Surgery Branch I, Division of Surgical Devices, Office of Device Evaluation, U.S. Food and Drug Administration, Silver Spring, MD, United States*, <sup>4</sup>*Obstetrics & Gynecology Devices Branch, Division of Reproductive, Gastro-Renal and Urology Devices, U.S. Food and Drug Administration, Silver Spring, MD, United States*

**Saturday, June 24****2:15pm - 3:45pm****Vascular, Lymphatic, and Ocular Transport (BTR)****Tucson IJ**

**Session Chair: Malisa Sarntinoranont**, *University of Florida, FL, United States*

**Session Co-Chair: M. Nichole Rylander**, *University of Texas, TX, United States*

**2:15PM Elastic Fiber Network Structure Affects Mass Transport into the Arterial Wall SB<sup>3</sup>C2017-277**

**Austin Cocciolone**<sup>1</sup>, Jessica Wagenseil<sup>2</sup>, <sup>1</sup>*Biomedical Engineering, Washington University, St. Louis, MO, United States*, <sup>2</sup>*Mechanical Engineering and Materials Science, Washington University, St. Louis, MO, United States*

**2:30PM Effect of Vascular Heterogeneity on Fluid Flow and Transport in Solid Tumors SB<sup>3</sup>C2017-278**

**Moath Alamer**, Xiao Yun Xu, *Chemical Engineering, Imperial College London, London, United Kingdom*

**2:45PM A Parallel Fluid Solid Coupling Tool With Applications In Particle Transport In Blood Cell Suspensions SB<sup>3</sup>C2017-279**

**Jifu Tan**, Talid Sinno, Scott Diamond, *University of Pennsylvania, Philadelphia, PA, United States*

**3:00PM 'Grayscale' Lithography to Create 3-D Channels: Application to High Shear Thrombosis Assays SB<sup>3</sup>C2017-280**

**Michael T. Griffin**, David N. Ku, *Georgia Institute of Technology, Atlanta, GA, United States*

**3:15PM Using CFD to Quantify Changes in Wall Shear Stress Between Common and Innovative Cell Seeding Techniques SB<sup>3</sup>C2017-281**

**Jake E. Ravidou**<sup>1</sup>, Andrew W. Holt<sup>2</sup>, William E. Howard<sup>1</sup>, Elizabeth T. Ables<sup>3</sup>, David A. Tulis<sup>2</sup>, Stephanie M. George<sup>1</sup>, <sup>1</sup>*Department of Engineering, East Carolina University, Greenville, NC, United States*, <sup>2</sup>*Department of Physiology, Brody School of Medicine, East Carolina University, Greenville, NC, United States*, <sup>3</sup>*Department of Biology, East Carolina University, Greenville, NC, United States*

**3:30PM Coefficient of Friction Between Carboxymethylated Hyaluronic Acid (CMHA-S) Films and the Ocular Surface SB<sup>3</sup>C2017-282**

**Jourdan Colter**<sup>1</sup>, Hee-Kyoung Lee<sup>2</sup>, Brenda Mann<sup>2</sup>, Barbara Wirostko<sup>2</sup>, Brittany Coats<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of Utah, Salt Lake City, UT, United States*, <sup>2</sup>*EyeGate Pharma, Waltham, MA, United States*

**Saturday, June 24****2:15pm - 3:45pm****Measuring and Modeling Cell Mechanics and the Microenvironment (CTE)****Tucson EF**

**Session Chair: Nadeen Chahine**, *Columbia University, NY, United States*

**Session Co-Chair: Patrick McGarry**, *National University of Ireland Galway, Galway, Ireland*

**2:15PM Finite Element Formulation of Multiphasic Shell Elements for Cell Membrane Analyses in FEBio finite Element Formulation Of Multiphasic Shell Elements For Cell Membrane Analyses In Febio SB<sup>3</sup>C2017-283**

**Chieh(Jay) Hou**<sup>1</sup>, Steve Mass<sup>2</sup>, Jeffrey Weiss<sup>2</sup>, Gerard Ateshian<sup>1</sup>, <sup>1</sup>*Columbia University, New York, NY, United States*, <sup>2</sup>*University of Utah, Salt Lake City, UT, United States*

- 2:30PM A Multi-scale Model Predicts Increasing Focal Adhesion Size With Decreasing Stiffness In Fibrous Matrices**  
SB<sup>3</sup>C2017-284  
**Xuan Cao**<sup>1</sup>, Ehsan Ban<sup>1</sup>, Brendon M. Baker<sup>2</sup>, Yuan Lin<sup>3</sup>, Jason A. Burdick<sup>4</sup>, Christopher S. Chen<sup>5</sup>, Vivek B. Shenoy<sup>4,6</sup>, <sup>1</sup>Materials Science and Engineering, University of Pennsylvania, Philadelphia, PA, United States, <sup>2</sup>Department of Biomedical Engineering, University of Michigan, Ann Arbor, MI, United States, <sup>3</sup>Department of Mechanical Engineering, University of Hong Kong, Hong Kong, Hong Kong, <sup>4</sup>Department of Bioengineering, University of Pennsylvania, Philadelphia, PA, United States, <sup>5</sup>Department of Biomedical Engineering, Boston University, Boston, MA, United States, <sup>6</sup>Materials Science and Engineering, University of Pennsylvania, Philadelphia, PA, United States
- 2:45PM Effects of Inflammation on Cellular Deformation of Nucleus Pulposus Cells: A Biphasic Finite Element Model**  
SB<sup>3</sup>C2017-285  
**Quynhhoa T. Nguyen**, Nadeen O. Chahine, *Biomechanics and Bioengineering, Feinstein Institute for Medical Research, Manhasset, NY, United States*
- 3:00PM Cell Force Generation in Biaxially and Uniaxially Loaded Tissues** SB<sup>3</sup>C2017-286  
Noel Reynolds, Eoin McEvoy, Vikram Deshpande, **Patrick McGarry**, *National University of Ireland Galway, Galway, Ireland*
- 3:15PM Modeling the Two-Way Feedback Between Contractility and Matrix Realignment Reveals a Non-Linear Mode of Cancer Cell Invasion** SB<sup>3</sup>C2017-287  
**Hossein Ahmadzadeh**<sup>1</sup>, Marie Webster<sup>2</sup>, Reeti Behera<sup>2</sup>, Ashani Weeraratna<sup>2</sup>, Vivek Shenoy<sup>1</sup>, <sup>1</sup>Materials Science and Engineering, University of Pennsylvania, Philadelphia, PA, United States, <sup>2</sup>Tumor Microenvironment and Metastasis Program, The Wistar Institute, Philadelphia, PA, United States
- 3:30PM In Situ Characterization of Native Extracellular Matrix Fibril Deformation** SB<sup>3</sup>C2017-288  
**Andrea Acuna**, Michael A. Drakopoulos, Benjamin J. Sather, Craig J. Goergen, Sarah Calve, *Biomedical Engineering, Purdue University, West Lafayette, IN, United States*

Saturday, June 24

4:00pm - 5:30pm

**Head Injury & Injury Biomechanics 3 (Solids)****Tucson AB****Session Chair:** Songbai Ji, *Dartmouth College, NH, United States***Session Co-Chair:** Deva Chan, *Henry M Jackson Foundation, MD, United States*

- 4:00PM Injury Prediction Using Strain And Susceptibility Measures Of The Deep White Matter Via Repeated Random Subsampling** SB<sup>3</sup>C2017-289  
**Wei Zhao**<sup>1</sup>, Yunliang Cai<sup>1</sup>, Zhigang Li<sup>2</sup>, Songbai Ji<sup>1,3</sup>, <sup>1</sup>Department of Biomedical Engineering, Worcester Polytechnic Institute, Worcester, MA, United States, <sup>2</sup>Department of Biomedical Data Science, Geisel School of medicine, Dartmouth College, Lebanon, NH, United States, <sup>3</sup>Thayer School of Engineering, Dartmouth College, Hanover, NH, United States
- 4:15PM Pros and Cons of Arbitrary Lagrangian Eulerian Method for Flesh Simulation in a Whole Body Finite Element Model for Accelerative Vertical Loading** SB<sup>3</sup>C2017-290  
**Jiangyue Zhang**, Timothy P. Harrigan, Connor Pyles, Connor Bradfield, Edna Wong, Emily Crane, Drew Seker, Robert Armiger, Andrew Merkle, *Research & Exploratory Development Department, The Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States*
- 4:30PM Modular Use Of Human Body Models Of Varying Complexity For Thoracic Organs** SB<sup>3</sup>C2017-291  
**William Decker**<sup>1,2</sup>, Bharath Koya<sup>1</sup>, F. Scott Gayzik<sup>1</sup>, <sup>1</sup>Virginia Tech-Wake Forest Center for Injury Biomechanics, Winston Salem, NC, United States, <sup>2</sup>Biomedical Engineering, Wake Forest University School of Medicine, Winston Salem, NC, United States
- 4:45PM Brain Morphometrics that Provide a Better Understanding of Chiari Type I Malformation** SB<sup>3</sup>C2017-292  
**Maggie Eppelheimer**<sup>1</sup>, James Houston<sup>1</sup>, Soroush Heidari Pahlavian<sup>1</sup>, Audrey Braun<sup>1</sup>, Dipankar Biswas<sup>1</sup>, Dorothy Loth<sup>1</sup>, Aintzane Urbizu<sup>1,2</sup>, Richard Labuda<sup>3</sup>, Philip Allen<sup>1</sup>, Francis Loth<sup>1</sup>, <sup>1</sup>The University of Akron, Akron, OH, United States, <sup>2</sup>Duke University Medical Center, Durham, NC, United States, <sup>3</sup>Conquer Chiari, Wexford, PA, United States
- 5:00PM Mechanical Properties of Injured Mouse Brain Tissue** SB<sup>3</sup>C2017-293  
**Yuan Feng**<sup>1</sup>, Yuan Gao<sup>2</sup>, Tao Wang<sup>2</sup>, Luyang Tao<sup>2</sup>, Suhao Qiu<sup>1</sup>, Xuefeng Zhao<sup>1</sup>, <sup>1</sup>School of Radiological and Interdisciplinary Sciences (RAD-X), Soochow University, Suzhou, China, <sup>2</sup>Department of Forensic Science, Soochow University, Suzhou, China

- 5:15PM Viscoelastic Behavior of Isolated Cervical Spinal Cord and Pia Mater Tissues** SB<sup>3</sup>C2017-294  
**Nicole L. Ramo**<sup>1</sup>, Kevin L. Troyer<sup>2</sup>, Christian M. Puttlitz<sup>1,3</sup>, <sup>1</sup>*School of Biomedical Engineering, Colorado State University, Fort Collins, CO, United States*, <sup>2</sup>*Component Science and Mechanics, Sandia National Laboratories, Albuquerque, NM, United States*, <sup>3</sup>*Mechanical Engineering, Colorado State University, Fort Collins, CO, United States*

<b>Saturday, June 24</b>	<b>4:00pm - 5:30pm</b>
--------------------------	------------------------

**Reproductive, Ocular, and Gastrointestinal  
Biomechanics (Solids)**

**Tucson CD**

**Session Chair:** Steven Abramowitch, *University of Pittsburgh, PA, United States*  
**Session Co-Chair:** Jonathan Vande Geest, *University of Pittsburgh, PA, United States*

- 4:00PM Planar Biaxial Mechanical Properties of Swine Vaginal Tissue** SB<sup>3</sup>C2017-295  
**Jeffrey McGuire**<sup>1</sup>, Raffaella De Vita<sup>1</sup>, Steve Abramowitch<sup>2</sup>, Spandan Maiti<sup>2</sup>, <sup>1</sup>*Virginia Tech, Blacksburg, VA, United States*, <sup>2</sup>*University of Pittsburgh, Pittsburgh, PA, United States*
- 4:15PM Changes in the Time-Dependent Mechanical Behavior of the Cervix in a Normal Mouse Pregnancy** SB<sup>3</sup>C2017-296  
**Kyoko Yoshida**<sup>1</sup>, Mala Mahendroo<sup>2</sup>, Kristin Myers<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, Columbia University, New York, NY, United States*, <sup>2</sup>*Obstetrics and Gynecology, UT Southwestern Medical Center, Dallas, TX, United States*
- 4:30PM Finite Element (FE) Modeling Of Monkey Optic Nerve Head (ONH) Biomechanics: Methods And Preliminary Results** SB<sup>3</sup>C2017-297  
**Fanwei Kong**<sup>1</sup>, Andrew Feola<sup>1</sup>, Stephen A. Schwaner<sup>2</sup>, Hongli Yang<sup>3</sup>, Howard Lockwood<sup>3</sup>, Juan Reynaud<sup>3</sup>, Claude F. Burgoyne<sup>3</sup>, Ross Ethier<sup>1,2</sup>, <sup>1</sup>*Coulter Department of Biomedical Engineering, Georgia Institute of Technology/Emory, Atlanta, GA, United States*, <sup>2</sup>*George W. Woodruff School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, United States*, <sup>3</sup>*Devers Eye Institute, Portland, OR, United States*
- 4:45PM Posterior Sclera and Optic Nerve Deformation Comparison Between Glaucomatous and Normal Human Eyes** SB<sup>3</sup>C2017-298  
**Ehab A. Tamimi**<sup>1</sup>, Jeffery D. Pyne<sup>2</sup>, Stephen J. Howerton<sup>3</sup>, Jonathan P. Vande Geest<sup>1</sup>, <sup>1</sup>*Bioengineering Department, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>2</sup>*Department of Mechanical Engineering, University of California Berkeley, Berkeley, CA, United States*, <sup>3</sup>*Department of Aerospace and Mechanical Engineering, University of Arizona, Tucson, AZ, United States*
- 5:00PM Biaxial Mechanical Response of Small Bowel Mesentery: Experimental Measurements and Constitutive Modeling** SB<sup>3</sup>C2017-299  
**Keyvan Amini Khoi**<sup>1</sup>, Sophia Abdulhai<sup>2</sup>, Ian C. Glenn<sup>2</sup>, Todd A. Ponsky<sup>2</sup>, Rouzbeh Amini<sup>1</sup>, <sup>1</sup>*The University of Akron, Akron, OH, United States*, <sup>2</sup>*Akron Children's Hospital, Akron, OH, United States*
- 5:15PM Stenting the Patient-Specific, Actively Contracting and Buckling Esophagus: A Finite Element Analysis** SB<sup>3</sup>C2017-300  
**Mathias Peirlinck**<sup>1</sup>, Nic Debusschere<sup>1</sup>, Francesco Iannaccone<sup>1</sup>, Peter Siersema<sup>2</sup>, Benedict Verheghe<sup>1</sup>, Patrick Segers<sup>1</sup>, Matthieu De Beule<sup>1</sup>, <sup>1</sup>*Biofluid, Tissue and Solid Mechanics for Medical Applications Lab (IBiTech, bioMMeda), Ghent University, Ghent, Belgium*, <sup>2</sup>*Department of Gastroenterology and Hepatology, University Medical Center Utrecht, Utrecht, Netherlands*

<b>Saturday, June 24</b>	<b>4:00pm - 5:30pm</b>
--------------------------	------------------------

**Aneurysm Mechanics (Solids)**

**Tucson IJ**

**Session Chair:** Ender A. Finol, *University of Texas at San Antonio, TX, United States*  
**Session Co-Chair:** Hai-Chao Han, *University of Texas, San Antonio, TX, United States*

- 4:00PM A Structure-based Constitutive Model of Arterial Tissue** SB<sup>3</sup>C2017-301  
**Tarek Shazly**, Alexander Rachev, *University of South Carolina, Columbia, SC, United States*

- 4:15PM Collagen Network Microstructure of the Ascending Thoracic Aortic Media Predicts Experimental Uniaxial Failure Behavior** SB<sup>3</sup>C2017-302  
**James R. Thunes**<sup>1</sup>, Julie A. Philippj<sup>1,2,3</sup>, Thomas G. Gleason<sup>1,2,3</sup>, David A. Vorp<sup>1,2,3</sup>, Spandan Maiti<sup>1</sup>, <sup>1</sup>*Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>2</sup>*Department of Cardiothoracic Surgery, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>3</sup>*McGowan Institute for Regenerative Medicine, University of Pittsburgh, Pittsburgh, PA, United States*
- 4:30PM Correlations of Wall Stress and Geometry in Symptomatic and Ruptured Abdominal Aortic Aneurysms** SB<sup>3</sup>C2017-303  
**Sathyajeeth Chauhan**<sup>1</sup>, Carlos Gutierrez<sup>1</sup>, Mirunalini Thirugnanasambandam<sup>1</sup>, Victor De Oliveira<sup>2</sup>, Satish Muluk<sup>3</sup>, Mark Eskandari<sup>4</sup>, Ender A. Finol<sup>5</sup>, <sup>1</sup>*Biomedical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*, <sup>2</sup>*Management Science and Statistics, University of Texas at San Antonio, San Antonio, TX, United States*, <sup>3</sup>*Thoracic & Cardiovascular Surgery, Allegheny Health Network, Pittsburgh, PA, United States*, <sup>4</sup>*Feinberg School of Medicine, Northwestern University, Chicago, IL, United States*, <sup>5</sup>*Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*
- 4:45PM Crosslinked Elastic Fibers are Necessary for Resistance to Stretch at Low Pressure and for Low Energy Loss in the Ascending Aorta** SB<sup>3</sup>C2017-304  
 Jungsil Kim<sup>1</sup>, Marius Staiculescu<sup>1</sup>, Robert Mecham<sup>1</sup>, Hiromi Yanagisawa<sup>2</sup>, **Jessica Wagenseil**<sup>1</sup>, <sup>1</sup>*Washington University, St. Louis, MO, United States*, <sup>2</sup>*University of Tsukuba, Tsukuba, Japan*
- 5:00PM Patient-Specific Mechanical Characterization of Abdominal Aortic Aneurysms and Healthy Aortas using 4D Ultrasound: An In Vivo Comparison Study** SB<sup>3</sup>C2017-305  
**Emiel M. J. van Disseldorp**<sup>1,2</sup>, Niels J. Petterson<sup>1</sup>, Frans N. van de Vosse<sup>1</sup>, Marc R. H. M. van Sambeek<sup>2</sup>, Richard G. P. Lopata<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*, <sup>2</sup>*Vascular Surgery, Catharina Hospital Eindhoven, Eindhoven, Netherlands*
- 5:15PM Failure Behavior Of Human Ascending Thoracic Aortic Aneurysms In Shear Lap Versus Uniaxial Loading** SB<sup>3</sup>C2017-306  
**Christopher Korenczuk**<sup>1</sup>, Rohit Dhume<sup>2</sup>, Colleen Witzenburg<sup>2</sup>, Victor Barocas<sup>1</sup>, <sup>1</sup>*Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN, United States*, <sup>2</sup>*Department of Mechanical Engineering, University of Minnesota, Minneapolis, MN, United States*

Saturday, June 24

4:00pm - 5:30pm

**Tendon Mechanics and Structure (Solids/CTE)****San Ignacio****Session Chair:** Spencer Lake, *Washington University in St. Louis, MO, United States***Session Co-Chair:** Ray Vanderby, *University of Wisconsin, WI, United States*

- 4:00PM Aged Supraspinatus Tendons Have Altered Dynamic Compressive and Poroelastic Properties** SB<sup>3</sup>C2017-307  
**Brianne K. Connizzo**, Alan J. Grodzinsky, *Biological Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States*
- 4:15PM The Human Achilles Tendon Shows Specialisation Towards Energy Storage That Is Affected By Ageing** SB<sup>3</sup>C2017-308  
 Dharmesh Patel<sup>1</sup>, Ewa M. Spiesz<sup>2</sup>, **Chavaunne T. Thorpe**<sup>3</sup>, Helen L. Birch<sup>4</sup>, Graham P. Riley<sup>5</sup>, Peter D. Clegg<sup>6</sup>, Hazel R. C. Screen<sup>1</sup>, <sup>1</sup>*School of Engineering and Materials Science, Queen Mary University of London, London, United Kingdom*, <sup>2</sup>*Department of Bionanoscience, Delft University of Technology, Delft, Netherlands*, <sup>3</sup>*Comparative Biomedical Sciences, Royal Veterinary College, London, United Kingdom*, <sup>4</sup>*Institute of Orthopaedics and Musculoskeletal Science, University College London, London, United Kingdom*, <sup>5</sup>*School of Biological Sciences, University of East Anglia, Norwich, United Kingdom*, <sup>6</sup>*Department of Musculoskeletal Biology, University of Liverpool, Liverpool, United Kingdom*
- 4:30PM Structural Remodeling of Fatigue Damaged Tendons by Exercise is Associated with Integrin Subunits  $\alpha$ V and  $\alpha$ 5** SB<sup>3</sup>C2017-309  
**Rebecca Bell**<sup>1</sup>, Remi Gendron<sup>2</sup>, Jack Brenneman<sup>1</sup>, Evan L. Flatow<sup>2</sup>, Nelly Andarawis-Puri<sup>1,3,4</sup>, <sup>1</sup>*Sibley School of Mechanical and Aerospace Engineering, Cornell University, Ithaca, NY, United States*, <sup>2</sup>*Department of Orthopaedics, Icahn School of Medicine at Mount Sinai, New York, NY, United States*, <sup>3</sup>*Nancy E. and Peter C. Meinig School of Biomedical Engineering, Cornell University, Ithaca, NY, United States*, <sup>4</sup>*Hospital of Special Surgery, Ithaca, NY, United States*

SCIENTIFIC SESSIONS

- 4:45PM Multiscale Structure and Function of Rat Achilles Tendon** SB<sup>3</sup>C2017-310  
 Andrea H. Lee, Dawn M. Elliott, *University of Delaware, Newark, DE, United States*
- 5:00PM Structural and Mechanical Consequences of Unloading on the Tendon-to-Bone Attachment** SB<sup>3</sup>C2017-311  
 Alix C. Deymier<sup>1</sup>, Andrea G. Schwartz<sup>2</sup>, Zhonghou Cai<sup>3</sup>, Guy M. Genin<sup>4</sup>, Stavros Thomopoulos<sup>5</sup>, <sup>1</sup>*Columbia University, New York, NY, United States*, <sup>2</sup>*Orthopedic Surgery, Washington University, St Louis, MO, United States*, <sup>3</sup>*Advanced Photon Source, Argonne National Laboratory, Argonne, IL, United States*, <sup>4</sup>*Dept. of Mech Engr and MatSci, Washington University, St Louis, MO, United States*, <sup>5</sup>*Orthopedic Surgery and Biomedical Engineering, Columbia University, New York, NY, United States*
- 5:15PM Absence of Estrogen During Maturation Uniquely Affects Progesterone Receptor in Extra-articular Ligament and Tendon: Potential Mechanism for Mechanical Changes** SB<sup>3</sup>C2017-312  
 Devin B. Lemmex, Natalie C. Rollick, Yohei Ono, David A. Hart, Ian K. Y. Lo, Gail M. Thornton, *University of Calgary, Calgary, AB, Canada*

<b>Saturday, June 24</b>	<b>4:00pm - 5:30pm</b>
--------------------------	------------------------

**Pediatric Flow (Fluids)**

**Tucson GH**

**Session Chair:** Vijay Vedula, *Stanford University, CA, United States*  
**Session Co-Chair:** Anayiotos Andreas, *Cyprus University of Technology, Cyprus*

- 4:00PM Effects Of Aortic Coarctation On Ventricular Energetics in Hypoplastic Left Heart Syndrome** SB<sup>3</sup>C2017-313  
 Lauren Carter<sup>1</sup>, Tianqi Hang<sup>1</sup>, Giovanni Biglino<sup>2</sup>, Chad Smith<sup>1</sup>, Tain Yen Hsia<sup>3</sup>, Richard Figliola<sup>1</sup>, <sup>1</sup>*Department of Mechanical Engineering and Bioengineering, Clemson University, Clemson, SC, United States*, <sup>2</sup>*Bristol Heart Institute, University of Bristol, Bristol, United Kingdom*, <sup>3</sup>*Cardiorespiratory Unit, Great Ormond Street Hospital for Children, London, United Kingdom*
- 4:15PM Effect of Peristalsis Like Motion of the Right Ventricle on the Fluid Dynamics in 20 Weeks Old Human Fetal Right Ventricle** SB<sup>3</sup>C2017-314  
 Hadi Wiputra, Kong Chun Chua, Nivetha Raju, Hwa Liang Leo, Choon Hwai Yap, *National University of Singapore, Singapore, Singapore*
- 4:30PM Porcine Small Intestinal Submucosa Mitral Valve Functionality Under Pediatric Conditions** SB<sup>3</sup>C2017-315  
 Omkar V. Mankame<sup>1</sup>, Sharan Ramaswamy<sup>1</sup>, Lilliam Valdes-Cruz<sup>2</sup>, Steven Bibevski<sup>2</sup>, Frank Scholl<sup>2</sup>, Ivan Baez<sup>2</sup>, <sup>1</sup>*Biomedical Engineering, Florida International University, Miami, FL, United States*, <sup>2</sup>*Joe DiMaggio Children's Hospital, Hollywood, FL, United States*
- 4:45PM A 4-D Computational Study Of Developmental Cardiac Mechanics In Zebrafish Embryos** SB<sup>3</sup>C2017-316  
 Vijay Vedula<sup>1</sup>, Juhyun Lee<sup>2</sup>, Hao Xu<sup>3</sup>, C.-C Jay Kuo<sup>3</sup>, Tzung Hsiai<sup>4</sup>, Alison Marsden<sup>5</sup>, <sup>1</sup>*Department of Pediatrics (Cardiology), Stanford University, Stanford, CA, United States*, <sup>2</sup>*Department of Bioengineering, University of California Los Angeles, Los Angeles, CA, United States*, <sup>3</sup>*Department of Electrical Engineering, University of Southern California, Los Angeles, CA, United States*, <sup>4</sup>*Department of Bioengineering and Division of Cardiology (Medicine), University of California Los Angeles, Los Angeles, CA, United States*, <sup>5</sup>*Department of Pediatrics (Cardiology) and Department of Bioengineering, Stanford University, Stanford, CA, United States*
- 5:00PM Population Based Characterization of Early Avian Great Vessel Morphogenesis** SB<sup>3</sup>C2017-317  
 Stephanie Lindsey<sup>1</sup>, Irene Vignon-Clementel<sup>2</sup>, Jonathan Butcher<sup>1</sup>, <sup>1</sup>*Cornell University, Ithaca, NY, United States*, <sup>2</sup>*INRIA-Paris, Paris, France*
- 5:15PM Respiratory Changes in Pulmonary Flow Distribution in Fontan Circulation: A Comparison between "5-D" MRI and CFD Simulation** SB<sup>3</sup>C2017-318  
 David R. Rutkowski<sup>1,2</sup>, Christopher J. Francois<sup>2</sup>, Oliver Wieben<sup>2,3</sup>, Alejandro Roldán-Alzate<sup>1,2,4</sup>, <sup>1</sup>*Mechanical Engineering, University of Wisconsin-Madison, Madison, WI, United States*, <sup>2</sup>*Radiology, University of Wisconsin-Madison, Madison, WI, United States*, <sup>3</sup>*Medical Physics, University of Wisconsin-Madison, Madison, WI, United States*, <sup>4</sup>*Biomedical Engineering, University of Wisconsin-Madison, Madison, WI, United States*

Saturday, June 24

4:00pm - 5:30pm

**Surgical Device Design Applications (DDR/IAB)****San Luis****Session Chair:** Jeff Bischoff, *Zimmer Biomet, Inc., IN, United States***Session Co-Chair:** Scott Pierce, *Western Carolina University, NC, United States*

- 4:00PM Using Artificial Muscle To Fabricate Artificial Hearts – Harnessing Gigantic Deformation Of Dielectric Elastomers For Large Volume Fluid Pumping** SB<sup>3</sup>C2017-319  
Zhe Li<sup>1</sup>, Yingxi Wang<sup>2</sup>, Choon Chiang Foo<sup>3</sup>, Jian Zhu<sup>2</sup>, Choon Hwai Yap<sup>1</sup>, <sup>1</sup>*Department of Biomedical Engineering, National University of Singapore, Singapore*, <sup>2</sup>*Department of Mechanical Engineering, National University of Singapore, Singapore*, <sup>3</sup>*Institute of High Performance Computing, Singapore, Singapore*
- 4:15PM Abstract Withdrawn** SB3C2017-320
- 4:30PM Validation Of Experimental Setup To Simulate And Model Non-Valved Glaucoma Drainage Devices** SB<sup>3</sup>C2017-321  
Tabitha H. T. Teo<sup>1</sup>, Paul M. Munden<sup>2</sup>, Sara E. Wilson<sup>1</sup>, Ronald L. Dougherty<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of Kansas, Lawrence, KS, United States*, <sup>2</sup>*Department of Ophthalmology, University of Kansas, Kansas City, KS, United States*
- 4:45PM Characterization of Aliphatic Urethane Shape Memory Polymers for Biomedical Device Design** SB<sup>3</sup>C2017-322  
Jingyu Wang<sup>1</sup>, Shoieb Chowdhury<sup>1</sup>, Yingtao Liu<sup>1</sup>, Bradley Bohnstedt<sup>2</sup>, Chung-Hao Lee<sup>1</sup>, <sup>1</sup>*Aerospace and Mechanical Engineering, University of Oklahoma, Norman, OK, United States*, <sup>2</sup>*Neurosurgery, University of Oklahoma Health Sciences Center, Oklahoma City, OK, United States*
- 5:00PM Improving Tissue Manipulation in Laparoscopic Resection Training Using Visual Force Feedback** SB<sup>3</sup>C2017-323  
Rafael Hernandez<sup>1</sup>, Arzu Onar-Thomas<sup>2</sup>, Francesco Travascio<sup>1</sup>, Shihab Asfour<sup>1</sup>, <sup>1</sup>*Industrial Engineering, University of Miami, Coral Gables, FL, United States*, <sup>2</sup>*Biostatistics, St. Jude Children's Research Hospital, Memphis, TN, United States*
- 5:15PM Improved Suction Device for Airway Management in Emergency and Military Clinical Scenarios** SB<sup>3</sup>C2017-324  
Forhad Akhter<sup>1</sup>, Michael Lasch<sup>1</sup>, Eric Liu<sup>1</sup>, Ricardo Pescador<sup>1</sup>, Robert A. DeLorenzo<sup>2</sup>, Bruce D. Adams<sup>2</sup>, R. Lyle Hood<sup>1</sup>, Yusheng Feng<sup>1</sup>, <sup>1</sup>*University of Texas at San Antonio, San Antonio, TX, United States*, <sup>2</sup>*University of Texas Health Science Center at San Antonio, San Antonio, TX, United States*

Saturday, June 24

4:00pm - 5:30pm

**Multi-Scale Measures and Models of Engineered Materials and Tissues (CTE)****Tucson EF****Session Chair:** Sara Roccabianca, *Michigan State University, MI, United States***Session Co-Chair:** Ed Sander, *University of Iowa, IA, United States*

- 4:00PM Fibrous Double Network Model to Match Observed Failure Behavior of Collagen-Fibrin Co-gels** SB<sup>3</sup>C2017-325  
David S. Nedrelow<sup>1</sup>, Danesh Bankwala<sup>1</sup>, Jeffrey D. Hyypio<sup>1</sup>, Victor K. Lai<sup>2</sup>, Victor H. Barocas<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, University of Minnesota, Minneapolis, MN, United States*, <sup>2</sup>*Chemical Engineering, University of Minnesota, Minneapolis, MN, United States*
- 4:15PM Plasticity of Fibrous Collagen Tracts Formed by Contractile Cell Clusters** SB<sup>3</sup>C2017-326  
Ehsan Ban<sup>1</sup>, Matthew Franklin<sup>2</sup>, Hailong Wang<sup>1</sup>, Lucas Smith<sup>1</sup>, Rebecca G. Wells<sup>1</sup>, Jan T. Liphardt<sup>2</sup>, Vivek B. Shenoy<sup>1</sup>, <sup>1</sup>*University of Pennsylvania, Philadelphia, PA, United States*, <sup>2</sup>*Stanford University, Stanford, CA, United States*
- 4:30PM Type III Collagen Is Critical To The Proper Functioning Of Knee Cartilage And Meniscus During Skeletal Development** SB<sup>3</sup>C2017-327  
Chao Wang<sup>1</sup>, Becky K. Brisson<sup>2</sup>, Qing Li<sup>1</sup>, Kev'ther Hoxha<sup>1</sup>, Motomi Enomoto-Iwamoto<sup>3</sup>, Susan W. Volk<sup>2</sup>, Lin Han<sup>1</sup>, <sup>1</sup>*School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, PA, United States*, <sup>2</sup>*University of Pennsylvania, Philadelphia, PA, United States*, <sup>3</sup>*University of Maryland, Baltimore, MD, United States*

SCIENTIFIC SESSIONS

- 4:45PM On the 3D Microenvironment of Valve Interstitial Cells Under Physiological Load** SB<sup>3</sup>C2017-328  
**Salma Ayoub**, Karen C. Tsai, Amir H. Khalighi, Michael S. Sacks, *The University of Texas at Austin, Austin, TX, United States*
- 5:00PM Biological Tissues Show Poroelastic and Viscoelastic Behavior at Different Frequency Spectrums** SB<sup>3</sup>C2017-329  
**Ramin Oftadeh**, Alan Grodzinsky, *Massachusetts Institute of Technology, Cambridge, MA, United States*
- 5:15PM A Novel Small-Specimen Planar Biaxial Testing Device for Inverse Model Validation of Soft Tissues** SB<sup>3</sup>C2017-330  
**Samuel Potter**<sup>1</sup>, Jordan Graves<sup>2</sup>, Borys Drach<sup>3</sup>, Tim Woodard<sup>2</sup>, Thomas Leahy<sup>2</sup>, Chris Hammel<sup>2</sup>, Aaron Feng<sup>2</sup>, Aaron Baker<sup>2</sup>, Michael Sacks<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of Texas at Austin, Austin, TX, United States*, <sup>2</sup>*Biomedical Engineering, University of Texas at Austin, Austin, TX, United States*, <sup>3</sup>*Mechanical & Aerospace Engineering, New Mexico State University, Las Cruces, NM, United States*

**Poster Sessions**

Posters will be presented in two sessions. Poster Session I will take place on Thursday June 22nd from 5:30-7:30 PM. Poster Session II will take place on Friday June 23rd from 12:30-2:00 PM. Please see the 'Instructions for Poster Presenters' on page 5 and the 'Poster Room Layout' on page 3 for details on placement of posters and individual presentation times.

The Poster viewing area is located in the Arizona Ballroom and will be open throughout the conference.

<b>Thursday, June 22 and Friday, June 23</b>	<b>5:30pm - 7:30pm</b>
	<b>12:30pm - 2:00pm</b>

**Bachelors Level Student Paper Competition I --  
Dynamics & Injury, Devices, and Imaging**

- The Effect of Floor Stiffness on Standing Posture and Sway** SB<sup>3</sup>C2017-P1  
**Daiane Aizen Grill**<sup>1</sup>, Sara E. Wilson<sup>1</sup>, <sup>1</sup>*Department of Mechanical Engineering, The University of Kansas, Lawrence, KS, United States*
- Principal Component Analysis Of Gait And Cycling Experiments: Crosstalk Error Reduction And Corrected Knee Axes** SB<sup>3</sup>C2017-P2  
**Jordan Skaro**<sup>1</sup>, Harsh Goel<sup>1</sup>, Scott Hazelwood<sup>2</sup>, Stephen Klisch<sup>2</sup>, <sup>1</sup>*Mechanical Engineering, California Polytechnic State University San Luis Obispo, San Luis Obispo, CA, United States*, <sup>2</sup>*Mechanical Engineering, Biomedical Engineering, California Polytechnic State University San Luis Obispo, San Luis Obispo, CA, United States*
- Development of Head Impact Device for the Study of Indirect Traumatic Optic Neuropathy** SB<sup>3</sup>C2017-P3  
**Elizabeth M. Konopacki**, Yik Tung Tracy Ling, Thao D. Nguyen, Kalia T. Ramesh, *HEMI: Hopkins Extreme Material Institute, Johns Hopkins University, Baltimore, MD, United States*
- EMG-Driven Inverse Dynamic Analysis of Knee Joint Contact Forces During Gait and Cycling Using OpenSim** SB<sup>3</sup>C2017-P4  
**Megan V. Pottinger**<sup>1</sup>, Katherine Mavrommati<sup>1</sup>, Scott J. Hazelwood<sup>1,2</sup>, Stephen M. Klisch<sup>1,2</sup>, <sup>1</sup>*Biomedical Engineering Department, California Polytechnic State University, San Luis Obispo, CA, United States*, <sup>2</sup>*Mechanical Engineering Department, California Polytechnic State University, San Luis Obispo, CA, United States*
- Differences in Material Properties of Thigh and Gluteal Soft Tissue Between Males and Females** SB<sup>3</sup>C2017-P5  
**Zachary J. Sadler**, Joshua Drost, Wu Pan, Tamara Bush, *Mechanical Engineering, Michigan State University, East Lansing, MI, United States*
- Measurement of Retinal Blood Vessel Strain During Cyclic Rotation** SB<sup>3</sup>C2017-P6  
**Kendall R. McMillan**, Brittany Coats, *Department of Mechanical Engineering, University of Utah, Salt Lake City, UT, United States*

**Identification of Hysteresis Behavior of Pressure-Measuring Insoles** SB<sup>3</sup>C2017-P7

**Anthony Ghanem**, Jessica DeBerardinis, Mohamed Trabia, Janet Dufek, Daniel Lidstone, *University of Nevada, Las Vegas, Las Vegas, NV, United States*

**Heat and Mass Trends within a Rebuildable Drip Atomizer Electronic Cigarette** SB<sup>3</sup>C2017-P8

**Phoebe C. Belser**<sup>1</sup>, Timothy M. Raymond<sup>1</sup>, Dabrina D Dutcher<sup>2</sup>, James W. Baish<sup>3</sup>, <sup>1</sup>*Chemical Engineering, Bucknell University, Lewisburg, PA, United States*, <sup>2</sup>*Chemistry and Chemical Engineering, Bucknell University, Lewisburg, PA, United States*, <sup>3</sup>*Biomedical Engineering, Bucknell University, Lewisburg, PA, United States*

**A Clinical Study: Thermal Contrast Amplification Reader Improves the Detection of Strep Throat for Lateral Flow Assays** SB<sup>3</sup>C2017-P9

**Erin Louwagie**<sup>1</sup>, Yiru Wang<sup>1</sup>, Daniel Larkin<sup>2</sup>, David Boulware<sup>3</sup>, John Bischof<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of Minnesota - Twin Cities, Minneapolis, MN, United States*, <sup>2</sup>*HealthEast Clinic, St. Paul, MN, United States*, <sup>3</sup>*Medicine, University of Minnesota - Twin Cities, Minneapolis, MN, United States*

**Experimental Motion Tracking of the Membrane in the Penn State Pediatric Ventricular Assist Device** SB<sup>3</sup>C2017-P10

**Philip E. Crompton**, Bryan Good, Keefe Manning, *Department of Biomedical Engineering, Pennsylvania State University, University Park, PA, United States*

**Design and Characterization of a Helmholtz Resonator for Brain Magnetic Resonance Elastography** SB<sup>3</sup>C2017-P11

**Rachel E. Mickelson**, Charlotte A. Guertler, Dennis J. Tweten, Ruth J. Okamoto, Philip V. Bayly, *Mechanical Engineering and Materials Science, Washington University in St. Louis, St. Louis, MO, United States*

**Neuroculus® Virtual Reality Simulator of the Cerebrospinal Fluid System** SB<sup>3</sup>C2017-P12

**Gabryel A. Conley Natividad**<sup>1</sup>, Brian Cleveley<sup>2</sup>, Lucas R. Sass<sup>1</sup>, Tao Xing<sup>3</sup>, Olivier Baledent<sup>4</sup>, Vartan Kurtcuoglu<sup>5</sup>, Bryn A. Martin<sup>1</sup>, <sup>1</sup>*Biological Engineering, University of Idaho, Moscow, ID, United States*, <sup>2</sup>*Virtual Technology and Design, University of Idaho, Moscow, ID, United States*, <sup>3</sup>*Mechanical Engineering, University of Idaho, Moscow, ID, United States*, <sup>4</sup>*BioFlow Image, University of Picardy Jules Verne, Amiens, France*, <sup>5</sup>*Institute of Physiology, University of Zurich, Zurich, Switzerland*

**Modeling the Skull-Brain Interface Using Sylgard 527 Phantoms** SB<sup>3</sup>C2017-P13

**Jake A. Ireland**<sup>1</sup>, Andrew A. Badachhape<sup>2</sup>, Ruth J. Okamoto<sup>1</sup>, Ramona S. Durham<sup>2</sup>, Philip V. Bayly<sup>1,2</sup>, <sup>1</sup>*Mechanical Engineering and Materials Science, Washington University in St. Louis, St. Louis, MO, United States*, <sup>2</sup>*Biomedical Engineering, Washington University in St. Louis, St. Louis, MO, United States*

**MR Elastography as Technique for Investigation of Blast Induced Traumatic Brain Injury** SB<sup>3</sup>C2017-P14

**Shannon N. Ingram**<sup>1</sup>, Grady Burnett<sup>1</sup>, Joshua VanCura<sup>2</sup>, David Tighe<sup>2</sup>, Andrew B. Robbins<sup>1</sup>, Michael R. Moreno<sup>3</sup>, <sup>1</sup>*Biomedical Engineering, Texas A&M University, College Station, TX, United States*, <sup>2</sup>*Mechanical Engineering, Texas A&M University, College Station, TX, United States*, <sup>3</sup>*Biomedical Engineering and Mechanical Engineering, Texas A&M University, College Station, TX, United States*

**High Frequency Magnetic Resonance Elastography In-Vivo of the Spine** SB<sup>3</sup>C2017-P15

**Sean M. Rothenberger**<sup>1</sup>, Dooman Akbarian<sup>1</sup>, Daniel Cortes<sup>1</sup>, Thomas Neuberger<sup>2</sup>, Corina Drapaca<sup>2</sup>, <sup>1</sup>*Department of Mechanical and Nuclear Engineering, Pennsylvania State University, University Park, PA, United States*, <sup>2</sup>*Pennsylvania State University, University Park, PA, United States*

**Automated Optical Thickness Measurement System** SB<sup>3</sup>C2017-P16

**Raghav Malik**<sup>1,2,3</sup>, Ahmet Erdemir<sup>1</sup>, <sup>1</sup>*Department of Biomedical Engineering and Computational Biomodeling (CoBi) Core, Lerner Research Institute, Cleveland Clinic, Cleveland, OH, United States*, <sup>2</sup>*Electrical and Computer Engineering, Purdue University, West Lafayette, IN, United States*, <sup>3</sup>*Mentor High School, Mentor, OH, United States*

**Dynamic Changes in Iris Biometrics in Normal and Glaucomatous Eyes Following Physiological Dilation** SB<sup>3</sup>C2017-P17

**Matthew Wojcik**<sup>1</sup>, Anup D. Pant<sup>1</sup>, Priyanka Gogte<sup>2</sup>, Chidiebere Aninweze<sup>1</sup>, Allie Stanley<sup>1</sup>, Syril K. Dorairaj<sup>3</sup>, Vanita Pathak-Ray<sup>2</sup>, Rouzbeh Amini<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, The University of Akron, Akron, OH, United States*, <sup>2</sup>*LV Prasad Eye Institute, Hyderabad, India*, <sup>3</sup>*Department of Ophthalmology, Mayo Clinic, Jacksonville, FL, United States*

**Error Analysis and Optimization of Noninvasive Ultrasound Elasticity Imaging for Estimating Mechanical Properties of Human Tendon** SB<sup>3</sup>C2017-P18

**Hannah Schmitz**<sup>1</sup>, Liang Gao<sup>2</sup>, Andres Nuncio Zuniga<sup>1</sup>, Cindy Fastje<sup>1</sup>, Mihra Talijanovic<sup>1</sup>, Daniel Latt<sup>1</sup>, Russell Witte<sup>1</sup>, <sup>1</sup>*University of Arizona, Tucson, AZ, United States*, <sup>2</sup>*University of Washington, Seattle, WA, United States*

## Bachelors Level Student Paper Competition II -- Fluids & Microfluidics, Cellular & Tissue Mechanics, Physiology & Diseases

### Impact of Shear Rate on Von Willebrand Factor Unfolding SB<sup>3</sup>C2017-P19

**Joshua M. Riley**<sup>1</sup>, Xavier J. Candela<sup>1</sup>, William O. Hancock<sup>1</sup>, Peter J. Butler<sup>1</sup>, Keefe B. Manning<sup>1,2</sup>, <sup>1</sup>*Department of Biomedical Engineering, The Pennsylvania State University, University Park, PA, United States*, <sup>2</sup>*Department of Surgery, Penn State Hershey Medical Center, Hershey, PA, United States*

### Left Coronary Artery Thermal Modeling During Targeted Hypothermic Cooling SB<sup>3</sup>C2017-P20

**Tyler C. Diorio**<sup>1</sup>, Nesrine Bouhrira<sup>2,3</sup>, Jennifer E. Mitchell<sup>2</sup>, Thomas L. Merrill<sup>2,3</sup>, <sup>1</sup>*Department of Chemical Engineering, Rowan University, Glassboro, NJ, United States*, <sup>2</sup>*FocalCool, LLC, Mullica Hill, NJ, United States*, <sup>3</sup>*Department of Mechanical Engineering, Rowan University, Glassboro, NJ, United States*

### In Vivo Biomechanics Of Trapeziometacarpal Joint SB<sup>3</sup>C2017-P21

**Ryan Downing**<sup>1</sup>, Ken Fischer<sup>1</sup>, Lance Frazer<sup>1</sup>, Nolan Norton<sup>1</sup>, E. Bruce Toby<sup>2</sup>, Phil Lee<sup>2</sup>, Terrence E. McIff<sup>2</sup>, <sup>1</sup>*University of Kansas, Lawrence, KS, United States*, <sup>2</sup>*University of Kansas Medical Center, Kansas City, KS, United States*

### An Examination of Stress Concentrations Due to Myocardial Infarction in the Wall of the Human Left Ventricle

SB<sup>3</sup>C2017-P22

**Arlynn C. Baker**<sup>1</sup>, Sudhir Kaul<sup>1</sup>, Heather B. Coan<sup>2</sup>, Martin L. Tanaka<sup>1</sup>, <sup>1</sup>*Engineering and Technology, Western Carolina University, Cullowhee, NC, United States*, <sup>2</sup>*Biology, Western Carolina University, Cullowhee, NC, United States*

### Developing and Evaluating a Mechanical Bioreactor System to Investigate Tendon Mechanics and Mechanobiology

SB<sup>3</sup>C2017-P23

**Abigail R. Raveling**, Nathan R. Schiele, *Biological Engineering, University of Idaho, Moscow, ID, United States*

### The Effect Of Fiber Orientation On Failure Patterns In The Bovine Meniscus During Tensile Loading SB<sup>3</sup>C2017-P24

**Derek Q. Nesbitt**, Madison E. Krentz, Trevor J. Lujan, *Department of Mechanical & Biomedical Engineering, Boise State University, Boise, ID, United States*

### Viscoelastic Heating Of Bovine Intervertebral Disc SB<sup>3</sup>C2017-P25

**Harrah Newman**<sup>1</sup>, Robby D. Bowles<sup>2</sup>, Mark R. Buckley<sup>1</sup>, <sup>1</sup>*Department of Biomedical Engineering, University of Rochester, Rochester, NY, United States*, <sup>2</sup>*Department of Bioengineering, Department of Orthopaedics, University of Utah, Salt Lake City, UT, United States*

### Using ASTM Standards To Reduce Clampsite Failures In Tensile Tests Of Soft Fibrous Tissue SB<sup>3</sup>C2017-P26

**Madison E. Krentz**, Derek Q. Nesbitt, Jeremy J. Creechley, Trevor J. Lujan, *Mechanical and Biomedical Engineering, Boise State University, Boise, ID, United States*

### Change in Skeletal Muscle Stiffness After Running Competition Is Dependent on Both Running Distance and Recovery Time SB<sup>3</sup>C2017-P27

**Cassidy Newman**<sup>1</sup>, Seyedali Sadeghi<sup>2</sup>, Daniel H. Cortes<sup>1,2</sup>, <sup>1</sup>*Pennsylvania State University, State College, PA, United States*, <sup>2</sup>*Mechanical and Nuclear Engineering Department, Pennsylvania State University, State College, PA, United States*

### Steady-State Characterization of the Mechanical Properties of the Pacinian Corpuscle SB<sup>3</sup>C2017-P28

**Ellen T. Bloom**<sup>1</sup>, Julia C. Quindlen<sup>1</sup>, Amy A. Claeson<sup>1</sup>, Laura E. Ortega<sup>1</sup>, Amy Moeller<sup>2</sup>, Victor H. Barocas<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, University of Minnesota, Minneapolis, MN, United States*, <sup>2</sup>*Orthopaedic Surgery, University of Minnesota, Minneapolis, MN, United States*

### An Experimental Setup To Quantify Pressure-induced Microstructural Changes in Tricuspid Valve Anterior Leaflets SB<sup>3</sup>C2017-P29

**Anthony Black**, Anup D. Pant, Vineet S. Thomas, Taylor Verba, Rouzbeh Amini, *The University of Akron, Akron, OH, United States*

### Contribution of Collagen Fibers and Myocytes to Residual Stress in the Left Ventricular Wall SB<sup>3</sup>C2017-P30

**Marissa R. Grobbel**<sup>1</sup>, Sheikh M. Shavik<sup>1</sup>, Emma Darios<sup>2</sup>, Stephanie W. Watts<sup>2</sup>, Lik Chuan Lee<sup>1</sup>, Sara Roccabianca<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, Michigan State University, East Lansing, MI, United States*, <sup>2</sup>*Pharmacology and Toxicology, Michigan State University, East Lansing, MI, United States*

**Optic Nerve Axon Count And Strain Comparisons between Normal And Glaucomatous Human Eyes** SB<sup>3</sup>C2017-P31

**Kelsey T. Sadlek**<sup>1</sup>, Katelyn F. Axman<sup>2</sup>, Ehab A. Tamimi<sup>2</sup>, Jonathan P. Vande Geest<sup>2,3,4</sup>, <sup>1</sup>*Department of Chemical Engineering, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>2</sup>*Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>3</sup>*McGowan Institute for Regenerative Medicine, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>4</sup>*Louis J. Fox Center for Vision Restoration, University of Pittsburgh, Pittsburgh, PA, United States*

**Finite Element Based Simulation of Growth Morphomechanics of the Pharyngeal Arch Arteries** SB<sup>3</sup>C2017-P32

**Mark A. Lantieri**, Jonathan T. Butcher, *Cornell University, Ithaca, NY, United States*

**Characterization Of Transmural Morphological Properties In Porcine Thoracic Descending Aorta Using Multiphoton Fluorescent Microscopy And Image Processing** SB<sup>3</sup>C2017-P33

**T. Gillin**<sup>2</sup>, A. Hemmasizadeh<sup>1</sup>, B. Gligorijevic<sup>2</sup>, K. Darvish<sup>1</sup>, <sup>1</sup>*Department of Mechanical Engineering, Temple University, Philadelphia, PA, United States*, <sup>2</sup>*Department of Bioengineering, Temple University, Philadelphia, PA, United States*

**TRPV1 Ion Channel Mediated Thermal Response of CA3 Hippocampal Pyramidal Neuron - A Simulation Study** SB<sup>3</sup>C2017-P34

**Renato Rios**<sup>1</sup>, Jun Xu<sup>2</sup>, <sup>1</sup>*Department of Biology, Tarleton State University, Stephenville, TX, United States*, <sup>2</sup>*Department of Engineering Technology, Tarleton State University, Stephenville, TX, United States*

**Characterizing a Magnetic Bead Microrheometry System to Study the Regional Elasticity of Thrombi** SB<sup>3</sup>C2017-P35

**Ryan J. Betzold**<sup>1</sup>, Peter J. Butler<sup>1</sup>, Keefe B. Manning<sup>1,2</sup>, <sup>1</sup>*Biomedical Engineering, Pennsylvania State University, University Park, PA, United States*, <sup>2</sup>*Surgery, Penn State Hershey Medical Center, Hershey, PA, United States*

## **Masters Level Student Paper Competition I -- Physiology & Diseases, Cellular & Tissue Mechanics, Devices**

**Bone Properties Surrounding Surface Modified Dental Implants: A Nanoindentation Study** SB<sup>3</sup>C2017-P36

**Ryan Doud**, Ramzi Abou-Arraj, Jack Lemons, Alan Eberhardt, *UAB, Birmingham, AL, United States*

**Tissue Coring Through Un-Retracted Cannula Insertion** SB<sup>3</sup>C2017-P37

**Alexandro Gonzalez**, Malisa Sarntinoranont, *University of Florida, Gainesville, FL, United States*

**Contribution of Repetitive Stretching to Neurite Injury in Cortex Primary Neuronal Cells** SB<sup>3</sup>C2017-P38

**Shota Shirasaki**, Hiromichi Nakadate, Shigeru Aomura, Akira Kakuta, *Tokyo Metropolitan University, Tokyo, Japan*

**Local Discontinuities in Aligned Fibrous Networks Attenuate Tissue-to-Nuclear Strain Transmission** SB<sup>3</sup>C2017-P39

**Tonia Tsinman**<sup>1</sup>, John M. Peloquin<sup>2</sup>, Spencer E. Szczesny<sup>1</sup>, Su-Jin Heo<sup>1</sup>, Dawn M. Elliott<sup>2</sup>, Robert L. Mauck<sup>1</sup>, <sup>1</sup>*Bioengineering, University of Pennsylvania, Philadelphia, PA, United States*, <sup>2</sup>*Biomedical Engineering, University of Delaware, Newark, DE, United States*

**A Computational Analysis of Aortic Pulsatile Flow Conditions for Valve Tissue Formation** SB<sup>3</sup>C2017-P40

**Alexander T. Williams**<sup>1</sup>, Manuel Perez<sup>1</sup>, Arash Moshkforoush<sup>1</sup>, Omkar Mankame<sup>1</sup>, Manuel Salinas<sup>2</sup>, Nikalaos Tsoukias<sup>1</sup>, Sharan Ramaswamy<sup>1</sup>, <sup>1</sup>*Florida International University, Miami, FL, United States*, <sup>2</sup>*Nova Southeastern University, Fort Lauderdale, FL, United States*

**Validity Of Dynamic Mechanical Analysis For Shaped Meniscus** SB<sup>3</sup>C2017-P41

**Reo Tanabe**<sup>1</sup>, Seido Yarimitsu<sup>2</sup>, Hiromichi Fujie<sup>2</sup>, <sup>1</sup>*Division of Human Mechatronics Systems, Graduate School of System Design, Tokyo Metropolitan University, Tokyo, Japan*, <sup>2</sup>*Department of Intelligent Mechanical Systems, Faculty of System Design, Tokyo Metropolitan University, Tokyo, Japan*

**Effect of Fiber Architecture on Tissue Failure Dynamics: A Finite Element Study** SB<sup>3</sup>C2017-P42

**Minhao Zhou**, Benjamin Werbner, Grace O'Connell, *Mechanical Engineering, University of California, Berkeley, Berkeley, CA, United States*

**Mechanical Analysis of Heterogeneous Pulmonary Acinus Structure Using Image-based and Mathematical Models** SB<sup>3</sup>C2017-P43

**Keisuke Nishimoto**, Kenichiro Koshiyama, Satoshi Ii, Shigeo Wada, *Osaka University, Osaka, Japan*

**Geometric Modeling of Abdominal Aortic Aneurysms under Surveillance: A Retrospective Study** SB<sup>3</sup>C2017-P44  
**Shalin Parikh**<sup>1</sup>, Aura Teasley<sup>1</sup>, Mirunalini Thirugnanasambandam<sup>1</sup>, Victor De Oliveira<sup>2</sup>, Satish Muluk<sup>3</sup>, Ender A. Finol<sup>4</sup>,  
<sup>1</sup>*Biomedical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*, <sup>2</sup>*Management Science and Statistics, University of Texas at San Antonio, San Antonio, TX, United States*, <sup>3</sup>*Thoracic & Cardiovascular Surgery, Allegheny Health Network, Pittsburgh, PA, United States*, <sup>4</sup>*Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*

**Pulmonary Artery and Somatic Growth in Fontan Patients** SB<sup>3</sup>C2017-P45  
**Akash Gupta**<sup>1,2</sup>, Ethan Kung<sup>1,2</sup>, <sup>1</sup>*Department of Mechanical Engineering, Clemson University, Clemson, SC, United States*, <sup>2</sup>*Department of Bioengineering, Clemson University, Clemson, SC, United States*

**Clinical Outcomes in Microvascular Disease Patient-Subgroup With Epicardial Stenosis: A Pilot Study to Assess a Newly Developed Pressure-Flow Diagnostic Endpoint** SB<sup>3</sup>C2017-P46

**Ullhas U. Hebbar**<sup>1</sup>, Mohamed A. Effat<sup>2</sup>, Srikara V. Peelukhana<sup>1</sup>, Imran Arif<sup>2</sup>, Rupak K. Banerjee<sup>1</sup>, <sup>1</sup>*Department of Mechanical and Materials Engineering, University of Cincinnati, Cincinnati, OH, United States*, <sup>2</sup>*Division of Cardiovascular Diseases, University of Cincinnati Medical Center, Cincinnati, OH, United States*

**Device to Apply Loads at Targeted Magnitudes and Stroke Frequencies During Instrument Assisted Soft-Tissue Mobilization** SB<sup>3</sup>C2017-P47

**John B. Everingham**, Peter T. Martin, Trevor J. Lujan, *Department of Mechanical and Biomedical Engineering, Boise State University, Boise, ID, United States*

**Design, Testing, and Implementation of Controls and Interface for an Adaptable Exercise Device for People with Physical Disabilities** SB<sup>3</sup>C2017-P48

**John M. Hoyle**, Alan W. Eberhardt, *University of Alabama at Birmingham, Birmingham, AL, United States*

## **Masters Level Student Paper Competition II -- Dynamics & Injury, Fluids & Microfluidics, Biotransport & Heat Transfer**

**High Magnitude Head Impact Exposure in Youth Football Games** SB<sup>3</sup>C2017-P49

**Eamon Campolettano**, Ryan Gellner, Steven Rowson, *Virginia Tech, Blacksburg, VA, United States*

**Characterization of Elevated Head Impact Exposure Between Individual Youth Football Players** SB<sup>3</sup>C2017-P50

**Ryan A. Gellner**, Eamon T. Campolettano, Steven Rowson, *Virginia Tech, Blacksburg, VA, United States*

**Morphometric Analysis of the Human Ankle Joint** SB<sup>3</sup>C2017-P51

**Tia Arvaneh**<sup>1,2</sup>, William E. Lee<sup>1</sup>, Roy Sanders<sup>3</sup>, Peter Simon<sup>1,2,3</sup>, <sup>1</sup>*Department of Chemical and Biomedical Engineering, University of South Florida, Tampa, FL, United States*, <sup>2</sup>*Department of Biomechanics, Foundation for Orthopaedic Research and Education, Tampa, FL, United States*, <sup>3</sup>*Department of Orthopaedics and Sports Medicine, University of South Florida, Tampa, FL, United States*

**Morphological Analysis of Ovine Retina as a Function of Age** SB<sup>3</sup>C2017-P52

**Matt Byrne**, Brittany Coats, *University of Utah, SLC, UT, United States*

**Knee Biomechanics During Cycling are Similar for Normal Weight and Obese Subjects** SB<sup>3</sup>C2017-P53

**Juan D. Gutierrez-Franco**<sup>1</sup>, Jordan M. Skaro<sup>1</sup>, Scott Hazelwood<sup>1,2</sup>, Stephen M. Klisch<sup>1,2</sup>, <sup>1</sup>*Mechanical Engineering, California Polytechnic State University, San Luis Obispo, CA, United States*, <sup>2</sup>*Biomedical Engineering, California Polytechnic State University, San Luis Obispo, CA, United States*

**Development of a Numerical Method for Assessment of Cerebrovascular Reserve Using 1D-0D Hemodynamic Simulation with Cerebral Autoregulation Model** SB<sup>3</sup>C2017-P54

**Changyoung Yuhn**<sup>1</sup>, Marie Oshima<sup>2</sup>, <sup>1</sup>*Department of Mechanical Engineering, The University of Tokyo, Tokyo, Japan*, <sup>2</sup>*Interfaculty Initiative in Information Studies, The University of Tokyo, Tokyo, Japan*

**Improvement of Simulated Arterial Waveforms Using Measured Parameters by Ultrasonography** SB<sup>3</sup>C2017-P55

**Kodai Hirayama**<sup>1</sup>, Kiyomi Niki<sup>1</sup>, Marie Oshima<sup>2</sup>, Motoaki Sugawara<sup>3</sup>, <sup>1</sup>*Department of Biomedical Engineering, Tokyo City University, Tokyo, Japan*, <sup>2</sup>*Interfaculty Initiative in Information Studies, The University of Tokyo, Tokyo, Japan*, <sup>3</sup>*Department of Medical Engineering, Himeji Dokkyo University, Himeji, Japan*

**Stereo and Tomographic Particle Image Velocimetry - 4D Flow MRI Validation** SB<sup>3</sup>C2017-P56

**Rafael Medero**<sup>1,2</sup>, Alejandro Roldán-Alzate<sup>1,2,3</sup>, <sup>1</sup>*Mechanical Engineering, University of Wisconsin-Madison, Madison, WI, United States*, <sup>2</sup>*Department of Radiology, University of Wisconsin, Madison, WI, United States*, <sup>3</sup>*Department of Biomedical Engineering, University of Wisconsin, Madison, WI, United States*

**A Novel Right-Side Assist Implementation Could Bring Potential Hemodynamic Improvements in Fontan Patients**  
SB<sup>3</sup>C2017-P57

**Ehsan Mirzaei**<sup>1</sup>, Minoos Kavarana<sup>2</sup>, Dimitrios Georgakopoulos<sup>3</sup>, Ethan Kung<sup>1,4</sup>, <sup>1</sup>*Mechanical Engineering, Clemson University, Clemson, SC, United States*, <sup>2</sup>*Medical University of South Carolina, Charleston, SC, United States*, <sup>3</sup>*Sunshine Heart, Inc., Eden Prairie, MN, United States*, <sup>4</sup>*Bioengineering, Clemson University, Clemson, SC, United States*

**Network Model of Extracellular Fluid Flow Through Rat Cerebral Cortex Parenchyma and Perivascular Spaces**  
SB<sup>3</sup>C2017-P58

**Julian Rey**, Malisa Sarntinoranont, *Mechanical Engineering, University of Florida, Gainesville, FL, United States*

**Stochastic Modeling Of Biotransport In A Tumor With Uncertain Material Properties** SB<sup>3</sup>C2017-P59

**Miao Lu**<sup>1</sup>, Alen Alexanderian<sup>2</sup>, Maher Salloum<sup>3</sup>, Liang Zhu<sup>1</sup>, Ronghui Ma<sup>1</sup>, Meilin Yu<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of Maryland, Baltimore County, Baltimore, MD, United States*, <sup>2</sup>*Mathematics, North Carolina State University, Raleigh, NC, United States*, <sup>3</sup>*Extreme Scale Data Science & Analytics Department, Sandia National Labs, Livermore, CA, United States*

**Extracellular Matrix Composition Modulates the Migratory Response of Breast Cancer Cells in a 3D Microfluidic Culture** SB<sup>3</sup>C2017-P60

**Karina M. Lugo-Cintrón**, Lucas Tomko, Patrick Ingram, Patricia Keely, David Beebe, *University of Wisconsin-Madison, Madison, WI, United States*

**Cancer Associated Fibroblast-Induced Spatiotemporal Contraction in Pancreatic Ductal Adenocarcinoma**  
SB<sup>3</sup>C2017-P61

**Michael Bradley**<sup>1</sup>, Yi Yang<sup>2</sup>, Stephen Konieczny<sup>2</sup>, Bumsoo Han<sup>1</sup>, <sup>1</sup>*School of Mechanical Engineering, Purdue University, Lafayette, IN, United States*, <sup>2</sup>*Department of Biological Sciences, Purdue University, Lafayette, IN, United States*

## Biotransport Posters

**Distribution Of Encapsulated Cells In A Phase-separated Ormosil Gel To Optimize Biodegradation** SB<sup>3</sup>C2017-P62

**Joey J. Benson**<sup>1</sup>, Lawrence P. Wackett<sup>2,3</sup>, Alptekin Aksan<sup>1,3</sup>, <sup>1</sup>*Department of Mechanical Engineering, University of Minnesota, Minneapolis, MN, United States*, <sup>2</sup>*Department of Biochemistry, Molecular Biology, and Biophysics, University of Minnesota, Minneapolis, MN, United States*, <sup>3</sup>*BioTechnology Institute, University of Minnesota, St. Paul, MN, United States*

**Charactering Intracellular Ice Formation During Freezing and Thawing of Lymphoblasts Using Low Temperature Raman Spectroscopy** SB<sup>3</sup>C2017-P63

**Guanglin Yu**, Allison Hubel, *Mechanical Engineering, University of Minnesota, Minneapolis, MN, United States*

**Thermal Fluid Models of a Temperature Controlled Sheath Used to Deliver Thermosensitive Hydrogel Inside Pancreatic Cancer Lesions** SB<sup>3</sup>C2017-P64

**Nesrine Bouhria**<sup>1,2</sup>, Thomas L. Merrill<sup>1,2</sup>, <sup>1</sup>*Mechanical Engineering, Rowan University, Glassboro, NJ, United States*, <sup>2</sup>*FocalCool, LLC., Mullica Hill, NJ, United States*

**Tuning The Gold Nanoparticle Colorimetric Assay By Nanoparticle Size And Concentration** SB<sup>3</sup>C2017-P65

**Varsha S. Godakhindi**<sup>1</sup>, Peiyuan Kang<sup>2</sup>, Maud Serre<sup>3</sup>, Naga Arvind Revuru<sup>2</sup>, Michael Roner<sup>4</sup>, Jeffrey Kahn<sup>5</sup>, Jaona Randrianalisoa<sup>6</sup>, Zhenpeng Qin<sup>2</sup>, <sup>1</sup>*Bioengineering, University of Texas at Dallas, Richardson, TX, United States*, <sup>2</sup>*Mechanical Engineering, University of Texas at Dallas, Richardson, TX, United States*, <sup>3</sup>*Ecole Supérieure d'Ingénieurs de Reims (ESIReims), University of Reims Champagne, Reims, France*, <sup>4</sup>*Biology, University of Texas at Arlington, Arlington, TX, United States*, <sup>5</sup>*Pediatrics & Microbiology, University of Texas Southwestern Medical Center, Dallas, TX, United States*, <sup>6</sup>*University of Reims Champagne - Ardenne, Reims, France*

**Shear-Augmented Dispersion Affects Cerebrospinal Fluid Solute Transport within the Subarachnoid Space but not within the Basement Membranes of the Brain** SB<sup>3</sup>C2017-P66

**M. Keith Sharp**<sup>1</sup>, Roxana O. Carare<sup>2</sup>, Bryn Martin<sup>3</sup>, <sup>1</sup>*University of Louisville, Louisville, KY, United States*, <sup>2</sup>*University of Southampton, Southampton, United Kingdom*, <sup>3</sup>*University of Idaho, Moscow, ID, United States*

**Using Micro-CT To Investigate Nanoparticle Distribution In Solid Tumors After Intratumoral Infusion** SB<sup>3</sup>C2017-P67

**Myo Min Zaw**<sup>1</sup>, Timothy Munuhe<sup>1</sup>, Jeffrey Li<sup>2</sup>, Liang Zhu<sup>1</sup>, Ronghui Ma<sup>1</sup>, <sup>1</sup>*Department of Mechanical Engineering, University of Maryland Baltimore County, Baltimore, MD, United States*, <sup>2</sup>*Centennial High School, Ellicott City, MD, United States*

**Nano-bio-thermal Interface: Nanosecond Plasmonic Heating Induced Selective Protein Inactivation** SB<sup>3</sup>C2017-P68  
**Peiyuan Kang**<sup>1</sup>, Zhuo Chen<sup>2</sup>, Steven O. Nielsen<sup>2</sup>, Kenneth Hoyt<sup>3,4</sup>, Sheena D'Arcy<sup>2</sup>, Jeremiah J. Gassensmith<sup>2</sup>, Zhenpeng Qin<sup>1,3,5</sup>, <sup>1</sup>*Department of Mechanical Engineering, The University of Texas at Dallas, Dallas, TX, United States*, <sup>2</sup>*Department of Chemistry and Biochemistry, The University of Texas at Dallas, Dallas, TX, United States*, <sup>3</sup>*Department of Bioengineering, The University of Texas at Dallas, Dallas, TX, United States*, <sup>4</sup>*Department of Radiology, The University of Texas at Southwestern Medical Center, Dallas, TX, United States*, <sup>5</sup>*Department of Surgery, The University of Texas at Southwestern Medical Center, Dallas, TX, United States*

**Feasibility Study Of A New Thermal Plasty Balloon** SB<sup>3</sup>C2017-P69  
 Shiqing Zhao<sup>1</sup>, JinCheng Zou<sup>1</sup>, Yuntao Ma<sup>1</sup>, **Aili Zhang**<sup>1,2</sup>, Lisa Xu<sup>1,2</sup>, <sup>1</sup>*School of Biomedical Engineering, Shanghai Jiao Tong University, Shanghai, China*, <sup>2</sup>*Med-X Institute, Shanghai Jiao Tong University, Shanghai, China*

**Pro-angiogenic Hematopoietic Cells Mediate Pathologic Remodeling During Pulmonary Hypertension Through Serotonin 2B Receptor Signaling** SB<sup>3</sup>C2017-P70  
**Nathaniel C. Bloodworth**<sup>1</sup>, James D. West<sup>2</sup>, Christa Gaskill<sup>2</sup>, Santhi Gladson<sup>2</sup>, Sheila Shay<sup>2</sup>, Susan Majka<sup>2</sup>, and W. David Merryman<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, Vanderbilt University, Nashville, TN, United States*, <sup>2</sup>*Allergy, Pulmonary, and Critical Care Medicine, Vanderbilt University, Nashville, TN, United States*

**Constructing Analysis Suitable NURBS from Discrete Image-Based Models** SB<sup>3</sup>C2017-P71  
**Adam R. Updegrove**<sup>1</sup>, Nathan M. Wilson<sup>2</sup>, Shawn Shadden<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of California, Berkeley, Berkeley, CA, United States*, <sup>2</sup>*Open Source Medical Software Corporation, Santa Monica, CA, United States*

**Nanoparticle Re-Distribution in Tissue-Equivalent Gels Induced by Magnetic Nanoparticle Hyperthermia** SB<sup>3</sup>C2017-P72  
**Qimei Gu**, Myo Min Zaw, Timothy Munuhe, Ronghui Ma, Liang Zhu, *Mechanical Engineering, University of Maryland Baltimore County, Baltimore, MD, United States*

**Thermal Expansion of The Cryoprotective Agent Cocktail DP6 in Combination with Various Synthetic Ice Modulators** SB<sup>3</sup>C2017-P73  
**Prem K. Solanki**, Yoed Rabin, *Department of Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, United States*

**Preferential Entrapment of Solutes in Ice Phase During Freezing of Protein-Cryoprotectant Solutions** SB<sup>3</sup>C2017-P74  
**Sampreeti Jena**<sup>1</sup>, Raj Suryanarayanan<sup>2</sup>, Alptekin Aksan<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of Minnesota, Minneapolis, MN, United States*, <sup>2</sup>*Pharmaceutics, University of Minnesota, Minneapolis, MN, United States*

**Bioheat Transfer in Lactating Human Breast** SB<sup>3</sup>C2017-P75  
**Mohammad Aliakbari Miyanmahaleh**<sup>1</sup>, S. Negin Mortazavi<sup>2</sup>, Fatemeh Hassanipour<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of Texas at Dallas, Richardson, TX, United States*, <sup>2</sup>*Department of Integrative Biology, University of California, Berkeley, CA, United States*

## Education Posters

**Industrial Design for a Master of Engineering Project Course in Medical Device Development** SB<sup>3</sup>C2017-P76  
 Shea Tillman<sup>1</sup>, Alan Eberhardt<sup>2</sup>, <sup>1</sup>*Auburn University, Auburn, AL, United States*, <sup>2</sup>*UAB, Birmingham, AL, United States*

**'Exploring "ME"chanics: The Multiscale Mechanics of Me!' Summary of Outreach Lessons Learned** SB<sup>3</sup>C2017-P77  
**Stephany Santos**<sup>1</sup>, Hannah Kackley<sup>1</sup>, David M. Pierce<sup>2</sup>, <sup>1</sup>*Department of Biomedical Engineering, University of Connecticut, Storrs, CT, United States*, <sup>2</sup>*Departments of Mechanical Engineering/Biomedical Engineering, University of Connecticut, Storrs, CT, United States*

**Creating Virtual Laboratories In Biomechanics** SB<sup>3</sup>C2017-P78  
**Sara E. Wilson**, *Mechanical Engineering, University of Kansas, Lawrence, KS, United States*

**Inroducing Rehabilitative Design to Mechanical Engineering Students Using a Problem-Based Learning Approach** SB<sup>3</sup>C2017-P79  
**Joshua Gargac**, *Engineering, University of Mount Union, Alliance, OH, United States*

**The Use Of Journals Can Expose Student Learning Methods In Capstone Design** SB<sup>3</sup>C2017-P80  
**Ferris M. Pfeiffer**, Suzanne Burgoyne, Rachel E. Bauer, Jennie P. Pardoe, *University of Missouri, Columbia, MO, United States*

**Use of an Educational Tool Kit to Teach Mechanics of Materials** SB<sup>3</sup>C2017-P81

**Rita P. Patterson**<sup>1</sup>, Robin Bartoletti<sup>2</sup>, Dennis P. Chou<sup>3</sup>, John Dignam<sup>3</sup>, Vijay Vaidyanathan<sup>4</sup>, <sup>1</sup>*Osteopathic Manipulative Medicine, University of North Texas Health Science Center, Fort Worth, TX, United States*, <sup>2</sup>*Center for Innovative Learning, University of North Texas Health Science Center, Fort Worth, TX, United States*, <sup>3</sup>*Mentis Sciences, Inc., Manchester, NH, United States*, <sup>4</sup>*Biomedical Engineering, University of North Texas, Denton, TX, United States*

**Design, Dynamics, and Rehabilitation Posters****Biomechanical Changes Precede Radiographic Evidence of Nontraumatic Vertebral Fracture Under Cyclic Loading: An Ex-Vivo Study** SB<sup>3</sup>C2017-P82

Nicole C. Corbiere-Gale<sup>1</sup>, Stacey L. Zeigler<sup>2</sup>, Christopher Towler<sup>2</sup>, Kathleen A. Issen<sup>1</sup>, Arthur J. Michalek<sup>1</sup>, **Laurel Kuxhaus**<sup>1</sup>, <sup>1</sup>*Mechanical and Aeronautical Engineering Department, Clarkson University, Potsdam, NY, United States*, <sup>2</sup>*Physical Therapy Department, Clarkson University, Potsdam, NY, United States*

**This Hand is My Hand, This Hand is Your Hand** SB<sup>3</sup>C2017-P83

**Joshua P. Drost**, Tamara Reid Bush, *Mechanical Engineering, Michigan State University, East Lansing, MI, United States*

**Does Pathological Human Tendon Adapt To Load And Is This Related To Clinical Outcome? A Systematic Review** SB<sup>3</sup>C2017-P84

**K. Färnqvist**<sup>1</sup>, P. Malliaras<sup>2</sup>, S. Pearson<sup>3</sup>, <sup>1</sup>*Haninge Rehab, Handens Vårdcentral, Stockholm, Sweden*, <sup>2</sup>*Department of Physiotherapy, Monash University, Melbourne, Frankston, Australia*, <sup>3</sup>*Centre for Sport, Health and Rehabilitation, Salford University, Manchester, United Kingdom*

**Design and Testing of a 3D Printed Lower Limb Prosthesis** SB<sup>3</sup>C2017-P85

**McKenzie C. Evans**, Cooper H. Welch, Hunter T. Dender, Nathaniel A. Godwin, Connor L. Martin, Elizabeth M. Scheig, S. Nima Mahmoodi, Beth A. Todd, *Mechanical Engineering, University of Alabama, Tuscaloosa, AL, United States*

**Development of a Head Support Device for People With Hypermobility-Type Ehler-Danlos Syndrome** SB<sup>3</sup>C2017-P86

**Robert S. Pierce**<sup>1</sup>, Candace Ireton<sup>2</sup>, Martin L. Tanaka<sup>1</sup>, David Hudson<sup>3</sup>, <sup>1</sup>*Engineering and Technology, Western Carolina University, Cullowhee, NC, United States*, <sup>2</sup>*Asheville, NC*, <sup>3</sup>*Health and Human Sciences, Western Carolina University, Cullowhee, NC, United States*

**Design of a Novel Multidirectional Fluid Shear Stress Bioreactor for Aortic Tissue** SB<sup>3</sup>C2017-P87

**Janet Liu**, Philippe Sucusky, *Wright State University, Dayton, OH, United States*

**Hip Cup Hiccups: Validating A Computational Model For Hip Cup Stability** SB<sup>3</sup>C2017-P88

Mohsen Renani<sup>1</sup>, Philippe Favre<sup>2</sup>, **Jeff Bischoff**<sup>3</sup>, <sup>1</sup>*University of Missouri - Kansas City, Kansas City, MO, United States*, <sup>2</sup>*Zimmer Biomet GmbH, Winterthur, Switzerland*, <sup>3</sup>*Zimmer Biomet, Inc., Warsaw, IN, United States*

**The Effect of Floor Stiffness on Standing Posture And Sway** SB<sup>3</sup>C2017-P89

Daiane Aizen Grill, **Sara E. Wilson**, *Mechanical Engineering, University of Kansas, Lawrence, KS, United States*

**Time Domain Analysis of Local Dynamic Stability May Be Useful in Predicting a Critical Event Before it Occurs** SB<sup>3</sup>C2017-P90

**Martin L. Tanaka**, Chaoke Dong, *Engineering and Technology, Western Carolina University, Cullowhee, NC, United States*

**Quantifying Locomotion Stability by Measuring the Deviation of the Extrapolated Center of Mass From the Centroid of Base of Support** SB<sup>3</sup>C2017-P91

**M. Alamoudi**, F. Travascio, S. Asfour, *Department of Industrial Engineering, University of Miami, Miami, FL, United States*

**Elbow And Shoulder Joint Torques Are Correlated With Body Mass Index But Not Game Pitch Count In Youth Baseball Pitchers** SB<sup>3</sup>C2017-P92

**Jim D. Darke**<sup>1</sup>, Eshan M. Dandekar<sup>2</sup>, Arnel Aguinaldo<sup>3</sup>, Scott Hazelwood<sup>1</sup>, Stephen M. Klisch<sup>4</sup>, <sup>1</sup>*Biomedical Engineering, California Polytechnic State University, San Luis Obispo, CA, United States*, <sup>2</sup>*Kinesiology, California Polytechnic State University, San Luis Obispo, CA, United States*, <sup>3</sup>*Kinesiology, Point Loma Nazarene University, San Diego, CA, United States*, <sup>4</sup>*Mechanical Engineering, California Polytechnic State University, San Luis Obispo, CA, United States*

**The Effect of Different Carrying Methods on Spatio-Temporal Gait Parameters** SB<sup>3</sup>C2017-P93

**Mohammed Alamoudi**, Francesco Travascio, Shihab Asfour, *Industrial Engineering, University of Miami, Coral Gables, FL, United States*

**Simulating Ingress for Cab Design** SB<sup>3</sup>C2017-P94

Hyun-Jung Kwon<sup>1</sup>, **Yujiang Xiang**<sup>2</sup>, <sup>1</sup>*Transportation Research Center Inc., East Liberty, OH, United States*, <sup>2</sup>*Mechanical Engineering, University of Alaska Fairbanks, Fairbanks, AK, United States*

**Validation of a Patellofemoral Joint Model Driven by Knee Joint Kinematics** SB<sup>3</sup>C2017-P95

**Jonathan A. Gustafson**<sup>1</sup>, Kyle A. Berkow<sup>1</sup>, John J. Elias<sup>2</sup>, Richard E. Debski<sup>1</sup>, Shawn Farrokhi<sup>3</sup>, <sup>1</sup>*Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>2</sup>*Akron General Medical Center, Akron, OH, United States*, <sup>3</sup>*Naval Medical Center San Diego, San Diego, CA, United States*

**Characterizing Brain Injury Criteria for Concussion through Reconstructions of Collegiate Football Head Impacts** SB<sup>3</sup>C2017-P96

**Bethany Rowson**, Steven Rowson, Stefan M. Duma, *Virginia Tech, Blacksburg, VA, United States*

**Cell and Tissue Engineering Posters --  
Mechanobiology and the Microenvironment**

**A Method for Examining the Role of Mechanics in Apoptosis** SB<sup>3</sup>C2017-P97

**Zachary Goldblatt**, Heather Cirka, Kristen Billiar, *Worcester Polytechnic Institute, Worcester, MA, United States*

**Myosin Mediates Anisotropic Mechanosensing** SB<sup>3</sup>C2017-P98

**Shin Min Wen**, Pen-Hsiu Grace Chao, *Institute of Biomedical Engineering, National Taiwan University, TAIPEI, Taiwan*

**Substrate Displacements Induce Directed Keratinocyte Migration** SB<sup>3</sup>C2017-P99

Hoda Zarkoob<sup>1</sup>, Sathivel Chinnathambi<sup>1</sup>, John Selby<sup>2</sup>, **Ed Sander**<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, University of Iowa, Iowa City, IA, United States*, <sup>2</sup>*Dermatology, University of Iowa, Iowa City, IA, United States*

**Estrogen Deficiency Changes Mechanobiological Responses Of Osteoblasts To Fluid Flow Effecting Osteoblast Induced Osteoclast Differentiation** SB<sup>3</sup>C2017-P100

**Hollie Allison**, Vishwa Deepak, Laoise M. McNamara, *Biomedical Engineering, National University Of Ireland, Galway, Galway, Ireland*

**Abstract Withdrawn** SB<sup>3</sup>C2017-P101

**Predicting Cellular (Re)Orientation in Cyclically Stretched Collagen Gels due to Mechanical and Topographical Cues** SB<sup>3</sup>C2017-P102

**Tommaso Ristori**<sup>1,2</sup>, Thomas M. W. Notermans<sup>1</sup>, Frank P. T. Baaijens<sup>1,2</sup>, Sandra Loerakker<sup>1,2</sup>, <sup>1</sup>*Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*, <sup>2</sup>*Institute for Complex Molecular Systems, Eindhoven University of Technology, Eindhoven, Netherlands*

**Dose-Dependent Effects of Beta-Aminopropionitrile on Osteoblast Gene Expression and Collagen Production** SB<sup>3</sup>C2017-P103

**Silvia P. Canelon**<sup>1</sup>, Joseph M. Wallace<sup>2,3</sup>, <sup>1</sup>*Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN, United States*, <sup>2</sup>*Biomedical Engineering, Indiana University-Purdue University at Indianapolis, Indianapolis, IN, United States*, <sup>3</sup>*Department of Orthopaedic Surgery, Indiana University School of Medicine, Indianapolis, IN, United States*

**Effects of Low-intensity Ultrasound with Nanoparticle Concentration on Stem Cell Osteogenesis and Chondrogenesis** SB<sup>3</sup>C2017-P104

**Alexander Qin**, Minyi Hu, Yi-Xian Qin, *Biomedical Engineering, Stony Brook University, Stony Brook, NY, United States*

**Effect of Extracellular Matrix on Smooth Muscle Cell Migration Behaviour** SB<sup>3</sup>C2017-P105

**Toshiro Ohashi**<sup>1</sup>, Yasufumi Hagiwara<sup>2</sup>, <sup>1</sup>*Faculty of Engineering, Hokkaido University, Sapporo, Japan*, <sup>2</sup>*Graduate School of Engineering, Hokkaido University, Sapporo, Japan*

**Predicting Individual Cardiomyocyte Fiber Organization in Spatially Constrained Cells** SB<sup>3</sup>C2017-P106

**William Sherman**, Anna Grosberg, *University of California, Irvine, Irvine, CA, United States*

**Cells Align Along Topographical Cues as a Result of Free Energy Minimization and Homeostasis** SB<sup>3</sup>C2017-P107

**Tommaso Ristori**<sup>1,2</sup>, Siamak S. Shishvan<sup>3</sup>, Gitta A. B. C. Buskermolen<sup>1</sup>, Frank P. T. Baaijens<sup>1,2</sup>, Sandra Loerakker<sup>1,2</sup>, Vikram S. Deshpande<sup>3</sup>, <sup>1</sup>*Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*, <sup>2</sup>*Institute for Complex Molecular Systems, Eindhoven University of Technology, Eindhoven, Netherlands*, <sup>3</sup>*Department of Engineering, University of Cambridge, Cambridge, United Kingdom*

**Dormancy-capable Cancer Cell Isolation via Physical Proliferation Inhibition SB<sup>3</sup>C2017-P108**

**Julian A. Preciado**<sup>1</sup>, Samira Azarin<sup>2</sup>, Emil Lou<sup>3</sup>, Alptekin Aksan<sup>1</sup>, <sup>1</sup>*Department of Mechanical Engineering, <sup>2</sup>Department of Chemical Engineering and Material Science, <sup>3</sup>Department of Hematology, Oncology and Transplant, Department of Medicine, University of Minnesota, Twin Cities, Minneapolis, MN, United States*

**Actomyosin Contractility Regulates Nucleus Pulposus Cell Biophysical and Biomechanical Properties**SB<sup>3</sup>C2017-P109

**Timothy Jacobsen**, Paula Hernandez, Nadeen Chahine, *The Feinstein Institute for Medical Research, Manhasset, NY, United States*

## **Cell and Tissue Engineering Posters -- Tissue Engineering and Disease Models**

**Engineering Tendon Through a Multiscale Approach and Conditioning in a Bioreactor SB<sup>3</sup>C2017-P110**

**Brittany L. Banik**, Justin L. Brown, *The Pennsylvania State University, University Park, PA, United States*

**An In-Vitro Platform to Investigate Vascular Access Grafts for In-Situ Tissue Engineering under Hemodynamic Loading SB<sup>3</sup>C2017-P111**

**Eline E. van Haften**, Marcel C. M. Rutten, Jurgen A. Bultink, Nicholas A. Kurniawan, Carlijn V. C. Bouten, *Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*

**Design Features To Enable Physiological-Relevance In Flow For Optimizing Engineered Valve Tissues**SB<sup>3</sup>C2017-P112

**Manuel Perez-Nevarez**, Omkar Mankame, Elnaz Pour Issa, Alex Williams, Alejandro Piñero, Sharan Ramaswamy, *Biomedical Engineering, Florida International University, Miami, FL, United States*

**Mechanical Analysis of Pulmonary Hypertension via Adjoint Based Data Assimilation of a Finite Element Model**SB<sup>3</sup>C2017-P113

Henrik Finsberg<sup>1</sup>, Ce Xi<sup>2</sup>, J.L. Tan<sup>3</sup>, L. Zhong<sup>3</sup>, Lik Chuan Lee<sup>2</sup>, **Samuel Wall**<sup>1</sup>, <sup>1</sup>*Simula Research Laboratory, Lysaker, Norway, <sup>2</sup>Michigan State University, East Lansing, MI, United States, <sup>3</sup>National Heart Center, Singapore, Singapore*

**Determination of Osteogenic Markers Using RNA Sequencing in Human Adipose Tissue Derived Adult Stem Cells**SB<sup>3</sup>C2017-P114

**S. Shaik**<sup>1</sup>, E. Martin<sup>2</sup>, D. Hayes<sup>3</sup>, R. Devireddy<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, Louisiana State University, Baton Rouge, LA, United States, <sup>2</sup>Biological & Agricultural Engineering, Louisiana State University, Baton Rouge, LA, United States, <sup>3</sup>Biomedical Engineering, Pennsylvania State University, University Park, PA, United States*

**Junction Protein and Transport Characterization of Reconstructed Endothelium in a Microfluidic Cell Array with Mimicked Tumor Microenvironment SB<sup>3</sup>C2017-P115**

**Chun-Wei Chi**, Chenghai Li, A.H. R. Ahmed, Elizabeth Benoy, Zeynep Dereli-Korkut, Sihong Wang, *Department of Biomedical Engineering, CUNY- City College of New York, New York, NY, United States*

**Using Multicellular Building Blocks to Advance Bioprinting of 3D Tissues SB<sup>3</sup>C2017-P116**

Swathi Swaminathan, Mi Thant Mon Soe, Qudus Hamid, Wei Sun, **Alisa Morss Clyne**, *Drexel University, Philadelphia, PA, United States*

**Characterization of 3D Bioprinted Tissue Functionality SB<sup>3</sup>C2017-P117**

**Likitha Somasekhar**<sup>1</sup>, Cameron Hume<sup>2</sup>, Carlos Martino<sup>1</sup>, Kenia Nunes Bruhn<sup>3</sup>, Kunal Mitra<sup>1</sup>, <sup>1</sup>*Department of Biomedical Engineering, Florida Institute of Technology, Melbourne, FL, United States, <sup>2</sup>Department of Mechanical Aerospace Engineering, Florida Institute of Technology, Melbourne, FL, United States, <sup>3</sup>Department of Biological Sciences, Florida Institute of Technology, Melbourne, FL, United States*

**Engineering Extracellular Matrix Biofibers by Hollow Fiber Cell Culture SB<sup>3</sup>C2017-P118**

**Kevin Roberts**<sup>1</sup>, Jacob Schluns<sup>2</sup>, Jake Jones<sup>2</sup>, Kyle Quinn<sup>2</sup>, Jamie Hestekin<sup>3</sup>, Jeffrey Wolchok<sup>2</sup>, <sup>1</sup>*Cell & Molecular Biology Program, University of Arkansas, Fayetteville, AR, United States, <sup>2</sup>Department of Biomedical Engineering, University of Arkansas, Fayetteville, AR, United States, <sup>3</sup>Department of Chemical Engineering, University of Arkansas, Fayetteville, AR, United States*

**Improved Characterization of Spatially-Graded Mechanical Properties of Nanofibrous Scaffolds Via Inverse Problem Techniques SB<sup>3</sup>C2017-P119**

**Nicholas R. Hugenberg**<sup>1</sup>, David T. Corr<sup>2</sup>, Assad A. Oberai<sup>1</sup>, <sup>1</sup>*Rensselaer Polytechnic Institute, Malta, NY, United States, <sup>2</sup>Biomedical Engineering, Rensselaer Polytechnic Institute, Malta, NY, United States*

**Human Adipose Derived Stem Cells Cultured on Porous Poly L-Lactic Acid Scaffolds Prepared by Thermally Induced Phase Separation Method** SB<sup>3</sup>C2017-P120

**Harish Chinnasami**, Ram Devireddy, *Mechanical Engineering Department, Louisiana State University, Baton Rouge, LA, United States*

**Impact Of Cellular Cholesterol On Monocyte Chemotaxis** SB<sup>3</sup>C2017-P121

**Amit K. Saha**<sup>1,2</sup>, Shatha F. Dallo<sup>1</sup>, Anand K. Ramasubramanian<sup>1,2</sup>, <sup>1</sup>*Biomedical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*, <sup>2</sup>*Biomedical, Chemical & Materials Engineering, San Jose State University, San Jose, CA, United States*

**Numerical Investigation of the Role Of Intercellular Forces On Collective Cell Migratory Behaviors** SB<sup>3</sup>C2017-P122

**Liqiang Lin**, Xiaowei Zeng, *Department of Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*

**Collagenase Exposure Alters Neuronal Activity & Biochemical Regulators with Implications for Degenerative Pain** SB<sup>3</sup>C2017-P123

**Meagan Ita**, Modupe Adegoke, Beth Winkelstein, *University of Pennsylvania, Philadelphia, PA, United States*

**Inductive Electric Fields Hinder EGF Gradient Promoted Breast Cancer Cell Motility** SB<sup>3</sup>C2017-P124

**Ayush A. Garg**<sup>1</sup>, Travis Jones<sup>1</sup>, Sarah M. Bushman<sup>2</sup>, Jessica Shuman<sup>1</sup>, Jacob Enders<sup>2</sup>, Vish Subramaniam<sup>1</sup>, Jonathan W. Song<sup>1,3</sup>, <sup>1</sup>*Department of Mechanical and Aerospace Engineering, The Ohio State University, Columbus, OH, United States*, <sup>2</sup>*Department of Biomedical Engineering, The Ohio State University, Columbus, OH, United States*, <sup>3</sup>*The Comprehensive Cancer Center, The Ohio State University, Columbus, OH, United States*

**Cell and Tissue Engineering Posters --  
Measurements and Modeling in Cell and Tissue Engineering**

**A Thermodynamically-Motivated Model for Stress Fibre Reorganization** SB<sup>3</sup>C2017-P125

**William Ronan**<sup>1</sup>, Andrea Vigliotti<sup>2</sup>, Vikram S. Deshpande<sup>3</sup>, <sup>1</sup>*Biomedical Engineering, National University of Ireland Galway, Galway, Ireland*, <sup>2</sup>*Innovative Materials Laboratory, Italian Aerospace Research Centre, Capua, Italy*, <sup>3</sup>*Department of Engineering, University of Cambridge, Cambridge, United Kingdom*

**Implementation of a Rigorous Linear Viscoelastic Model for Measuring Cell Mechanical Properties Using a Microfluidic Extensional Flow Device** SB<sup>3</sup>C2017-P126

**Joanna D. Dahl**, *Engineering, University of Massachusetts Boston, Boston, MA, United States*

**Investigation of Fiber Architecture Effects on Axonal Deformation During Transverse and Axial Loading via a Coupled Network-Axon Model** SB<sup>3</sup>C2017-P127

**Vahhab Zarei**<sup>1</sup>, Sijia Zhang<sup>2</sup>, Beth A. Winkelstein<sup>2</sup>, Victor H. Barocas<sup>3</sup>, <sup>1</sup>*Mechanical Engineering, University of Minnesota, Minneapolis, MN, United States*, <sup>2</sup>*Bioengineering, University of Pennsylvania, Philadelphia, PA, United States*, <sup>3</sup>*Biomedical Engineering, University of Minnesota, Minneapolis, MN, United States*

**Detecting Environmental PH Using Mechanical Properties Of Microorganism** SB<sup>3</sup>C2017-P128

Wenjun Zheng<sup>1</sup>, Hua Yang<sup>2</sup>, Guanghui Xuan<sup>1</sup>, Letian Dai<sup>3</sup>, Yunxiao Hu<sup>3</sup>, Shuijin Hu<sup>4</sup>, Shengkui Zhong<sup>5</sup>, Zhen Li<sup>3</sup>, Mingyuan Gao<sup>1</sup>, Shimei Wang<sup>3</sup>, **Yuan Feng**<sup>1</sup>, <sup>1</sup>*School of Radiological and Interdisciplinary Sciences (RAD-X), Soochow University, Suzhou, China*, <sup>2</sup>*College of Resources and Environmental Sciences, Nanjing Agricultural University, Nanjing, China*, <sup>3</sup>*Nanjing Agricultural University, Nanjing, China*, <sup>4</sup>*North Carolina State University, Raleigh, NC, United States*, <sup>5</sup>*Soochow University, Suzhou, China*

**Bioinspired Polymer Infiltrated Hydroxyapatite Nanocomposite Hybrids** SB<sup>3</sup>C2017-P129

**Rohit Khanna**, Xiaodu Wang, *Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*

**Myocyte-collagen Interaction In The Heart: An Experimentally-guided Modeling Study** SB<sup>3</sup>C2017-P130

**Sheikh Mohammad Shavik**, Marissa Grobbel, Lik Chuan Lee, Sara Roccabianca, *Mechanical Engineering, Michigan State University, East Lansing, MI, United States*

**Influence of the Divalent Cation Crosslinker and Its Concentration on the Elastic Modulus and Permeability of Alginate Hydrogels** SB<sup>3</sup>C2017-P131

**David M. Kingsley**, David T. Corr, *Biomedical Engineering, Rensselaer Polytechnic Institute, Troy, NY, United States*

## Solids Posters -- Bone and Cartilage

### Measurement of Thermal Conductivity of Cortical Bone SB<sup>3</sup>C2017-P132

Seon Jeong Huh<sup>1</sup>, Hee Joon Lee<sup>1</sup>, **JuEun Lee**<sup>2</sup>, <sup>1</sup>*Mechanical Engineering, Kookmin University, Seoul, Korea, Republic of*, <sup>2</sup>*Mechanical Engineering, University of the Pacific, Stockton, CA, United States*

### Determining the Optimal Screw Configuration for Tibia Plate Fixation of Compound Fractures: A Finite Element Study SB<sup>3</sup>C2017-P133

Andrew L. Sori, Shihab Asfour, **Francesco Travascio**, *Industrial Engineering, University of Miami, Coral Gables, FL, United States*

### Alterations in Equine Tibial Contact Pressure and Bone Stress Due to Femoral Cysts are Independent of Kinematic Constraints SB<sup>3</sup>C2017-P134

**Lance L. Frazer**<sup>1</sup>, Elizabeth M. Santschi<sup>2</sup>, Kenneth J. Fischer<sup>3</sup>, <sup>1</sup>*Bioengineering Graduate Program, University of Kansas, Lawrence, KS, United States*, <sup>2</sup>*College of Veterinary Medicine, Department of Clinical Sciences, Kansas State University, Manhattan, KS, United States*, <sup>3</sup>*Mechanical Engineering, University of Kansas, Lawrence, KS, United States*

### A New Reaction-Diffusion-Strain Model for Predicting the Process of Skull Growth and Defect Formation SB<sup>3</sup>C2017-P135

**Chanyoung Lee**, Reuben H. Kraft, *Department of Mechanical and Nuclear Engineering, Pennsylvania State University, University Park, PA, United States*

### A Novel Method for Imaging Whole Bone 3D Fracture During Mechanical Testing SB<sup>3</sup>C2017-P136

**Kyle A. Bodnyk**, Michael J. Heyden, Richard T. Hart, *Department of Biomedical Engineering, The Ohio State University, Columbus, OH, United States*

### Analysis of Mineral Distribution in the Trabecular Bone of Normal and Estrogen Deficient Rat Ulnae and Radii Using Micro CT and Nanoindentation SB<sup>3</sup>C2017-P137

**Laura M. O'Sullivan**, Eoin P. Parle, Laoise M. McNamara, *National University of Ireland, Galway, Galway, Ireland*

### Ultrastructural Origin of Brittleness of Bone Using a Finite Element Approach SB<sup>3</sup>C2017-P138

**Abu Saleh Ahsan**, Mohammad Maghsoudi-Ganjeh, Xiaowei Zeng, Xiaodu Wang, *Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*

### Development of Stochastic Structural Finite Element Model for Trabecular Bone SB<sup>3</sup>C2017-P139

**Saif Alrafeek**, Peter Gustafson, James Jastifer, *Western Michigan University, Kalamazoo, MI, United States*

### Post -Yield Anisotropic Hardening Behavior of Trabecular Bone SB<sup>3</sup>C2017-P140

David Nolan, **Patrick McGarry**, *National University of Ireland Galway, Galway, Ireland*

### Effects of Combinational Treatment Strategies on Bones of Contused Animals SB<sup>3</sup>C2017-P141

Brittany King<sup>1</sup>, Sarah Townsend<sup>2</sup>, Katherine Glunt<sup>2</sup>, Jennifer Kadowec<sup>1</sup>, Andrea J. Vernengo<sup>3</sup>, **Anita Singh**<sup>1,2</sup>, <sup>1</sup>*Mechanical Engineering, Rowan University, Glassboro, NJ, United States*, <sup>2</sup>*Biomedical Engineering, Widener University, Chester, PA, United States*, <sup>3</sup>*Chemical Engineering, Rowan University, Glassboro, NJ, United States*

### Probabilistic Commonality Of Trabecular Bone Structures: Is It a Result of Nature's Design? SB<sup>3</sup>C2017-P142

**Matthew L. Kirby**<sup>1</sup>, Anuradha Roy<sup>2</sup>, Feng Zhao<sup>3</sup>, Xiaodu Wang<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*, <sup>2</sup>*Management Science and Statistics, University of Texas at San Antonio, San Antonio, TX, United States*, <sup>3</sup>*Biological and Medical Engineering, Beihang University, Beijing, China*

### Material Sensitivity Analysis Of Elbow Joint Cartilage Parameters In A Finite Element Model SB<sup>3</sup>C2017-P143

**Mohsen Sharifi Renani**<sup>1</sup>, Munsur Rahman<sup>1</sup>, Akin Cil<sup>1,2,3</sup>, Antonis Stylianou<sup>1</sup>, <sup>1</sup>*Department of Mechanical Engineering, University of Missouri-kansas City, kansas City, MO, United States*, <sup>2</sup>*Department of Orthopaedics Surgery, University of Missouri-Kansas City, Kansas City, MO, United States*, <sup>3</sup>*Department of Orthopaedics, Truman Medical Centers, Kansas City, MO, United States*

### Sustaining Low Friction by Load Sharing Mechanism in Hydrogels for Cartilage Implants SB<sup>3</sup>C2017-P144

**Elze M. Porte**, Philippa M. Cann, Marc A. Masen, *Mechanical Engineering, Imperial College London, London, United Kingdom*

### Evaluation Of The "Membrane" Effect Of The Lamina Splendens Of Articular Cartilage: Implications For OA SB<sup>3</sup>C2017-P145

**Ferris Pfeiffer**, Joe Rexwinkle, Andrew Polk, Aaron Stoker, Nikki Werner, Sydney Timmerman, *University of Missouri, Columbia, MO, United States*

**Effects of Freezing on Mechanical Properties of Bovine, Ovine, and Porcine Articular Cartilage** SB<sup>3</sup>C2017-P146  
**Kelly J. Vazquez**, Corinne R. Henak, *Mechanical Engineering, University of Wisconsin-Madison, Madison, WI, United States*

**Sensitivity of Cartilage Contact Mechanics Predictions to Subject Specific Loading Conditions** SB<sup>3</sup>C2017-P147  
**Penny R. Atkins**, Niccolo M. Fiorentino, Samuel A. Colby, Andrew E. Anderson, *University of Utah, Salt Lake City, UT, United States*

## Solids Posters -- Musculoskeletal

**Three Dimensional Measurement of Metatarsal Pronation In Patients With Hallux Valgus** SB<sup>3</sup>C2017-P148  
**Bradley C. Campbell**<sup>1</sup>, Stephen F. Conti<sup>2</sup>, Mark Carl Miller<sup>3</sup>, <sup>1</sup>*University of Pittsburgh, Pittsburgh, PA, United States*,  
<sup>2</sup>*Orthopaedic Practices, University of Pittsburgh Medical Center, Pittsburgh, PA, United States*, <sup>3</sup>*Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States*

**Post-Operative Effects of Altering Flexion and Extension Gaps During Total Knee Arthroplasty: A Finite Element Study** SB<sup>3</sup>C2017-P149  
Ruth A. Solomon, Andrew L. Sori, Shihab Asfour, **Francesco Travascio**, *Industrial Engineering, University of Miami, Coral Gables, FL, United States*

**Computational Analysis of the Changes in Intradiscal Pressure at Adjacent Segments After Posterior Fixation for Burst Fracture** SB<sup>3</sup>C2017-P150  
Shady Elmasry, Shihab Asfour, **Francesco Travascio**, *Industrial Engineering, University of Miami, Coral Gables, FL, United States*

**An Efficient Numerical Integration Method for Non-linear Viscoelastic Modeling** SB<sup>3</sup>C2017-P151  
**Nicole L. Ramo**<sup>1</sup>, Kevin L. Troyer<sup>2</sup>, Christian M. Puttlitz<sup>1,3</sup>, <sup>1</sup>*School of Biomedical Engineering, Colorado State University, Fort Collins, CO, United States*, <sup>2</sup>*Component Science and Mechanics, Sandia National Laboratories, Albuquerque, NM, United States*, <sup>3</sup>*Mechanical Engineering, Colorado State University, Fort Collins, CO, United States*

**Influence of the Disc Height and Annulus Fibrosus Area over the Range of Motion of the Human Spine, A Probabilistic Analysis** SB<sup>3</sup>C2017-P152  
**Hector E. Jaramillo**, *Energetica y Mecanica, Universidad Autonoma de Occidente, Cali, Colombia*

**Cervical Spine Finite Element Model with Anatomically Accurate Asymmetric Intervertebral Discs** SB<sup>3</sup>C2017-P153  
**Jobin Daniel John**<sup>1</sup>, Mike W. J. Arun<sup>2</sup>, Saravana Kumar Gurunathan<sup>1</sup>, Narayan Yoganandan<sup>2</sup>, <sup>1</sup>*Department of Engineering Design, Indian Institute of Technology Madras, Chennai, Tamil Nadu, India*, <sup>2</sup>*Department of Neurosurgery, Medical College of Wisconsin, Milwaukee, WI, United States*

**Biomechanical Differences Between Male And Female Sacroiliac Joints Implanted With Three Different Sacroiliac Implant Systems: Range Of Motion Study** SB<sup>3</sup>C2017-P154  
**Amin Joukar**, Anoli Shah, Ali Kiapour, Ardalan Seyed Vosoughi, Anand K. Agarwal, Hossein Elgafy, Nabil Ebraheim, Vijay K. Goel, *University of Toledo, Toledo, OH, United States*

**Characterization of the Average Lumbar Spine Intervertebral Disc Annulus Properties Based on Raw Data Sets** SB<sup>3</sup>C2017-P155  
**Jessica Coogan**<sup>1</sup>, Brian Stemper<sup>2</sup>, Daniel Nicoletta<sup>1</sup>, <sup>1</sup>*Southwest Research Institute, San Antonio, TX, United States*, <sup>2</sup>*Medical College of Wisconsin, Milwaukee, WI, United States*

**Finite Element Method for Predicting Failure Location of Annulus Fibrosus in Uniaxial Tension** SB<sup>3</sup>C2017-P156  
**Benjamin Werbner**, Minhao Zhou, Grace O'Connell, *Mechanical Engineering, University of California, Berkeley, Berkeley, CA, United States*

**A Semi-Automated Approach for Creating a Subject-Specific Finite Element Model of the Intervertebral Disc** SB<sup>3</sup>C2017-P157  
**Bo Yang**<sup>1</sup>, Yeabsra B. Habtegebriel<sup>1</sup>, Yu Ma<sup>2</sup>, Michael F. Wendland<sup>3</sup>, Grace D. O'Connell<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, University of California, Berkeley, Berkeley, CA, United States*, <sup>2</sup>*Mathematics, University of California, Berkeley, Berkeley, CA, United States*, <sup>3</sup>*IQBBB - QB3 Institute, University of California, Berkeley, Berkeley, CA, United States*

**Collagen Fiber Orientation of Tendon Bone Insertion Tissues** SB<sup>3</sup>C2017-P158  
Sandhya Chandrasekaran, Mark Pankow, Kara Peters, **Hsiao-Ying Shadow Huang**, *North Carolina State University, Raleigh, NC, United States*

**Age-Dependent Function of the Anterior Cruciate Ligament During Post-Natal Skeletal Growth in the Porcine Model**  
SB<sup>3</sup>C2017-P159

**Stephanie G. Cone**<sup>1</sup>, Emily P. Lambeth<sup>1</sup>, Paul B. Warren<sup>1</sup>, Stephanie D. Teeter<sup>1</sup>, Jorge A. Piedrahita<sup>2</sup>, Jeffrey T. Spang<sup>3</sup>, Matthew B. Fisher<sup>1,3</sup>, <sup>1</sup>*Biomedical Engineering, North Carolina State University and University of North Carolina, Raleigh, NC, United States*, <sup>2</sup>*Molecular Biomedical Sciences, North Carolina State University, Raleigh, NC, United States*, <sup>3</sup>*Orthopaedics, University of North Carolina - Chapel Hill, Chapel Hill, NC, United States*

**Three Dimensional Strain Analysis Of The Human Anterior Cruciate Ligament During Anterior Tibial Translation**  
SB<sup>3</sup>C2017-P160

**Satoshi Yamakawa**<sup>1</sup>, Richard E. Debski<sup>2</sup>, Hiromichi Fujie<sup>1</sup>, <sup>1</sup>*Tokyo Metropolitan University, Hino, Japan*, <sup>2</sup>*University of Pittsburgh, Pittsburgh, PA, United States*

**Evaluating the Appropriateness of Transversely Isotropic Constitutive Theories for Structural Ligaments**  
SB<sup>3</sup>C2017-P161

**Benjamin C. Marchi**, Callan M. Luetkemeyer, Ellen M. Arruda, *Mechanical Engineering, University of Michigan, Ann Arbor, MI, United States*

**Establishing the Proper Reference Configuration for Finite Element Models of the Supraspinatus Tendon**  
SB<sup>3</sup>C2017-P162

R. Matthew Miller<sup>1</sup>, James Thunes<sup>1</sup>, Volker Musahl<sup>2</sup>, Spandan Maiti<sup>1</sup>, **Richard E. Debski**<sup>1</sup>, <sup>1</sup>*Bioengineering, University of Pittsburgh, Pittsburgh, PA, United States*, <sup>2</sup>*Orthopaedic Surgery, University of Pittsburgh, Pittsburgh, PA, United States*

**A Cell-Based Cross-Correlation Imaging Analysis Method for Quantification of 3-D Tendon Strains** SB<sup>3</sup>C2017-P163

**Ashley K. Fung**<sup>1</sup>, J. J. Paredes<sup>2</sup>, Rebecca Bell<sup>1</sup>, Nelly Andarawis-Puri<sup>1,2,3</sup>, <sup>1</sup>*Sibley School of Mechanical and Aerospace Engineering, Cornell University, Ithaca, NY, United States*, <sup>2</sup>*Nancy E. and Peter C. Meinig School of Biomedical Engineering, Cornell University, Ithaca, NY, United States*, <sup>3</sup>*Hospital for Special Surgery, New York, NY, United States*

**A New Method to Determine Subject-specific Properties of Knee Ligaments Using Bayesian Calibration**  
SB<sup>3</sup>C2017-P164

Mohammad Kia<sup>1</sup>, Jonathan A. Race<sup>2</sup>, Po-Hsu Chen<sup>2</sup>, Andrew D. Pearle<sup>3</sup>, Thomas L. Wickiewicz<sup>3</sup>, Thomas L. Santner<sup>2</sup>, **Carl W. Imhauser**<sup>1</sup>, <sup>1</sup>*Biomechanics, Hospital for Special Surgery, New York, NY, United States*, <sup>2</sup>*Statistics, The Ohio State University, Columbus, OH, United States*, <sup>3</sup>*Orthopaedic Surgery, Hospital for Special Surgery, New York, NY, United States*

**Determining the Potential Role of Glycosaminoglycan Clusters in Tendon Mechanical Homeostasis** SB<sup>3</sup>C2017-P165

**Cody M. O'Cain**<sup>1</sup>, Wendell M. R. Heard<sup>2</sup>, Felix H. Savoie<sup>2</sup>, Sara Roccabianca<sup>3</sup>, Ronald C. Anderson<sup>1</sup>, Kristin S. Miller<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, Tulane University, New Orleans, LA, United States*, <sup>2</sup>*Orthopaedic Surgery, Tulane University, New Orleans, LA, United States*, <sup>3</sup>*Mechanical Engineering, Michigan State University, East Lansing, MI, United States*

**Multiaxial Mechanical Responses of Anterior Cruciate Ligament Bundles Reflect Differences in Microstructure**  
SB<sup>3</sup>C2017-P166

**Callan M. Luetkemeyer**, Benjamin C. Marchi, Ellen M. Arruda, *Mechanical Engineering, University of Michigan, Ann Arbor, MI, United States*

**Periodontitis's Affect on the Shear Mechanical Behavior of the Fibrous Periodontal Ligament. A Transversely Isotropic Hyperelastic Model.** SB<sup>3</sup>C2017-P167

**David S. NedreLOW**, Victor H. Barocas, *Biomedical Engineering, University of Minnesota, Minneapolis, MN, United States*

**Role of Vascular Recession on the Nutrition of the Human Meniscus: A Computational Analysis** SB<sup>3</sup>C2017-P168

**Francesco Travascio**<sup>1</sup>, Alicia Jackson<sup>2</sup>, Shihab Asfour<sup>1</sup>, <sup>1</sup>*Industrial Engineering, University of Miami, Coral Gables, FL, United States*, <sup>2</sup>*Biomedical Engineering, University of Miami, Coral Gables, FL, United States*

**Characterization of the In-Vivo Inflammatory Response to Polycarbonate-Urethane Wear Debris** SB<sup>3</sup>C2017-P169

Maoz Shemesh<sup>1</sup>, **Jonathan J. Elsner**<sup>2</sup>, Noa Cohen<sup>1</sup>, Lotem Mahluf<sup>1</sup>, Roni Noyvirt<sup>1</sup>, Shmuel Israeli<sup>3</sup>, Judit Krausz<sup>3</sup>, Natalia Edison<sup>3</sup>, Nimrod Rozen<sup>3</sup>, Eran Linder-Ganz<sup>1</sup>, <sup>1</sup>*Active Implants, Netanya, Israel*, <sup>2</sup>*Active Implants, Memphis, TN, United States*, <sup>3</sup>*Haemek Medical Center, Afula, Israel*

## Solids Posters -- Tissue Mechanics

### **Nanoindentation Based Approach for the Mechanical Characterization of Polymeric Microspheres for Drug Delivery** SB<sup>3</sup>C2017-P170

**Gianpaolo Serino**<sup>1</sup>, Valentina Crognale<sup>2</sup>, Costantino Del Gaudio<sup>2</sup>, Umberto Morbiducci<sup>1</sup>, Alberto Audenino<sup>1</sup>,  
<sup>1</sup>Mechanical and Aerospace Engineering, Politecnico di Torino, Torino, Italy, <sup>2</sup>Enterprise Engineering, University of Rome "Tor Vergata", Rome, Italy

### **Multi-Scale Mechanical Properties of Collagen Matrix** SB<sup>3</sup>C2017-P171

**Haiyue Li**<sup>1</sup>, Bin Xu<sup>1</sup>, Enhua Zhou<sup>2</sup>, Raimon Sunyer<sup>3,4</sup>, Yanhang Zhang<sup>1,5</sup>, <sup>1</sup>Mechanical Engineering, Boston University, Boston, MA, United States, <sup>2</sup>Ophthalmology, Novartis Institutes for BioMedical Research, Cambridge, MA, United States, <sup>3</sup>Institute of Bioengineering of Catalonia, Barcelona, Spain, <sup>4</sup>Centro de Investigación Biomédica en Red en Bioingeniería, Biomateriales y Nanomedicina, Madrid, Spain, <sup>5</sup>Biomedical Engineering, Boston University, Boston, MA, United States

### **Modeling Mechanical Property Changes of Collagen Fibrils Following Cyclic Loading** SB<sup>3</sup>C2017-P172

**Michelle L. Chen**<sup>1</sup>, Monica E. Susilo<sup>2</sup>, Jeffrey A. Ruberti<sup>2</sup>, Thao D. Nguyen<sup>1</sup>, <sup>1</sup>Mechanical Engineering, Johns Hopkins University, Baltimore, MD, United States, <sup>2</sup>Bioengineering, Northeastern University, Boston, MA, United States

### **Race Related Differences in Sclera Thickness Using Microcomputed Tomography** SB<sup>3</sup>C2017-P173

**Kenneth J. John Furdella**, Ehab A. Tamimi, Jonathan P. Vande Geest, *BioEngineering, University of Pittsburgh, Pittsburgh, PA, United States*

### **Determination Of Proper Storage Condition And Constitutive Model For Porcine Urinary Bladder Wall Mechanical Properties** SB<sup>3</sup>C2017-P174

Tyler Tuttle, Tamara Reid Bush, **Sara Roccabianca**, *Mechanical Engineering, Michigan State University, East Lansing, MI, United States*

### **Comparative Study of the Tensile Strength of Commonly Utilized Suture Materials** SB<sup>3</sup>C2017-P175

**Sourav S. Patnaik**<sup>1,2</sup>, James R. Butler<sup>3</sup>, Bryn Brazile<sup>2,4</sup>, Margot Damaser<sup>5</sup>, Jun Liao<sup>2,6</sup>, <sup>1</sup>Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, United States, <sup>2</sup>Agricultural and Biological Engineering, Mississippi State University, Mississippi State, MS, United States, <sup>3</sup>Department of Clinical Sciences, Mississippi State University, Mississippi State, MS, United States, <sup>4</sup>Eye and Ear Institute, University of Pittsburgh, Pittsburgh, PA, United States, <sup>5</sup>Biomedical Engineering, Cleveland Clinic Foundation, Cleveland, OH, United States, <sup>6</sup>Bioengineering, University of Texas at Arlington, Arlington, TX, United States

### **A Finite-Element Model of Pacinian Corpuscle Clustering in Human Skin** SB<sup>3</sup>C2017-P176

**Julia C. Quindlen**, Victor H. Barocas, *Biomedical Engineering, University of Minnesota, Minneapolis, MN, United States*

### **Modeling Creep Indentation of Brain Slices As A Fiber-Reinforced Biphase Material** SB<sup>3</sup>C2017-P177

**Ruizhi Wang**, Malisa Sarntinoranont, *Department of Mechanical and Aerospace Engineering, University of Florida, Gainesville, FL, United States*

### **Postural Influence on Thoracoabdominal Organs of 5<sup>th</sup>, 50<sup>th</sup>, and 95<sup>th</sup> Percentile Male Subjects** SB<sup>3</sup>C2017-P178

**James Gaewsky**<sup>1</sup>, Katelyn Greene<sup>2</sup>, Scott Gayzik<sup>1</sup>, Ashley Weaver<sup>1</sup>, <sup>1</sup>Center for Injury Biomechanics, Wake Forest University, Winston-Salem, NC, United States, <sup>2</sup>University of California, Berkeley, Berkeley, CA, United States

### **Determination of Proper Storage Condition and Constitutive Model For Rat Back Skin Mechanical Properties** SB<sup>3</sup>C2017-P179

**Sheng Chen**, Sara Roccabianca, *Mechanical Engineering, Michigan State University, East Lansing, MI, United States*

### **Characterization of Pediatric Brain Viscoelasticity Using Multi-Frequency Magnetic Resonance Elastography** SB<sup>3</sup>C2017-P180

**Mehmet Kurt**<sup>1</sup>, Fabiola Macruz<sup>2</sup>, Efe Ozkaya<sup>1</sup>, Kim B. Pauly<sup>2</sup>, Max Wintermark<sup>2</sup>, <sup>1</sup>Department of Mechanical Engineering, Stevens Institute of Technology, Hoboken, NJ, United States, <sup>2</sup>Department of Radiology, Stanford University, Stanford, CA, United States

### **Lung Micromechanics of Pulmonary Fibrosis: A Finite Element Analysis** SB<sup>3</sup>C2017-P181

**Bo Yang**<sup>1</sup>, Abdulrahman Jbaily<sup>1</sup>, Yintong Lu<sup>2</sup>, Andrew J. Szeri<sup>1</sup>, Grace D. O'Connell<sup>1</sup>, <sup>1</sup>Mechanical Engineering, University of California, Berkeley, Berkeley, CA, United States, <sup>2</sup>Mathematics, University of California, Berkeley, Berkeley, CA, United States

**Nonlinear Viscoelastic Responses of PLGA Fibers Under Physiologic Conditions** SB<sup>3</sup>C2017-P182

**Andrew B. Robbins**<sup>1</sup>, Hunter W. Storaci<sup>1</sup>, Michael R. Moreno<sup>2</sup>, Anastasia Muliana<sup>2</sup>, <sup>1</sup>*Biomedical Engineering, Texas A&M University, College Station, TX, United States*, <sup>2</sup>*Mechanical Engineering, Texas A&M University, College Station, TX, United States*

**Ex-Vivo Biomechanical Characterization of Arteriovenous Fistulas** SB<sup>3</sup>C2017-P183

Aman Mahipat<sup>1</sup>, Mirunalini Thirugnanasambandam<sup>1</sup>, **Sourav Patnaik**<sup>2</sup>, Roberto Vazquez<sup>3</sup>, Ender A. Finol<sup>2</sup>, <sup>1</sup>*Biomedical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*, <sup>2</sup>*Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*, <sup>3</sup>*Leonard M. Miller School of Medicine, University of Miami, Miami, FL, United States*

**Assessment of Material Properties of Thin Film Wound-Treatment Polymers** SB<sup>3</sup>C2017-P184

**Krysta-Lynn Amezcua**<sup>1</sup>, Sourav Patnaik<sup>2</sup>, Mirunalini Thirugnanasambandam<sup>1</sup>, Matthew Reilly<sup>3</sup>, Ender A. Finol<sup>2</sup>, <sup>1</sup>*Biomedical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*, <sup>2</sup>*Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*, <sup>3</sup>*Biomedical Engineering, The Ohio State University, Columbus, OH, United States*

**Pressure Induced Damage Of Pulmonary Artery** SB<sup>3</sup>C2017-P185

**Seungik Baek**<sup>1</sup>, Akshay Rao<sup>2</sup>, Yuheng Wang<sup>1</sup>, Laura Alison<sup>1</sup>, Sara Roccabianca<sup>1</sup>, <sup>1</sup>*Mechanical Engineering, Michigan State University, East Lansing, MI, United States*, <sup>2</sup>*Mechanical Engineering, National Institute of Technology Karnataka, Mangalore, India*

**Abstract Withdrawn** SB<sup>3</sup>C2017-P186**Transesophageal Echocardiography Enables Regional Quantification of Left Ventricular Strain in a Porcine Model of Myocardial Infarction** SB<sup>3</sup>C2017-P187

**William M. Torres**<sup>1</sup>, Alison T. Thames<sup>2</sup>, Tarek Shazly<sup>1</sup>, Francis G. Spinale<sup>2</sup>, <sup>1</sup>*University of South Carolina, Columbia, SC, United States*, <sup>2</sup>*University of South Carolina School of Medicine, Columbia, SC, United States*

**Early Remodeling of Pulmonary Autograft After Ross Procedure: Wall Stress Analysis** SB<sup>3</sup>C2017-P188

**Yue Xuan**<sup>1</sup>, Ismail El-Hamamsy<sup>2</sup>, Francois-Pierre Mongeon<sup>3</sup>, Richard Leask<sup>4</sup>, Alexander Emmott<sup>4</sup>, Aly Ghoneim<sup>5</sup>, Elaine Tseng<sup>1</sup>, Liang Ge<sup>1</sup>, <sup>1</sup>*Department of Surgery, University of California San Francisco Medical Center, San Francisco, CA, United States*, <sup>2</sup>*Division of Cardiac Surgery, Montreal Heart Institute, Montreal, QC, Canada*, <sup>3</sup>*Department of Medicine, Montreal Heart Institute, Montreal, QC, Canada*, <sup>4</sup>*Department of Chemical Engineering, McGill University, Montreal, QC, Canada*, <sup>5</sup>*Division of Cardiac Surgery, McGill University, Montreal, QC, Canada*

**Spatial Scaling in Multiscale Models: A Method for Coupling Agent-based and Finite-element Models of Tissue Remodeling** SB<sup>3</sup>C2017-P189

**Jia-Jye Lee**<sup>1</sup>, Lee Talman<sup>1</sup>, Shayn M. Peirce<sup>1,2</sup>, Jeffrey W. Holmes<sup>1,2,3</sup>, <sup>1</sup>*Biomedical Engineering, University of Virginia, Charlottesville, VA, United States*, <sup>2</sup>*Berne Cardiovascular Research Center, University of Virginia, Charlottesville, VA, United States*, <sup>3</sup>*Department of Medicine, University of Virginia, Charlottesville, VA, United States*

**Region-Specific Orthotropic Growth of the Pediatric Thoracic Spine Through Finite Element Methods** SB<sup>3</sup>C2017-P190

**John Dougherty**, James Peters, Sriram Balasubramanian, *Biomedical Engineering, Drexel University, Philadelphia, PA, United States*

**Biomechanics of Early Embryonic Brain Morphogenesis** SB<sup>3</sup>C2017-P191

Hannah Grover, Wei Zeng, Shicheng Huang, Lina Zhang, Yan Li, Nan Hu, **Zi Chen**, *Thayer School of Engineering, Dartmouth College, Hanover, NH, United States*

**Vascular Growth and Remodeling with Stochastic Optimal Stress-driven Fiber Deposition** SB<sup>3</sup>C2017-P192

**Jiacheng Wu**, Shawn C. Shadden, *Mechanical Engineering, University of California, Berkeley, Berkeley, CA, United States*

**The Effects of Alignment and Misalignment of Autografts in the Repair of Volumetric Muscle Loss Injuries** SB<sup>3</sup>C2017-P193

**John Kim**<sup>1</sup>, Benjamin Kasukonis<sup>1</sup>, Tyrone Washington<sup>2</sup>, Jeffrey Wolchok<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, University of Arkansas, Fayetteville, AR, United States*, <sup>2</sup>*Exercise Science, University of Arkansas, Fayetteville, AR, United States*

**A Biomechanical Comparison Of Two Methods Of Scapular Neck Fracture Fixation** SB<sup>3</sup>C2017-P194

**Hema Sulkar**, Robert Tashjian, Heath Henninger, *Orthopaedics, University of Utah, Salt Lake City, UT, United States*

**Development And Application Of A Six-year-old Child Pedestrian Finite Element Model** SB<sup>3</sup>C2017-P195

**Haiyan Li**<sup>1</sup>, Wenle Lv<sup>1</sup>, Shihai Cui<sup>1</sup>, Lijuan He<sup>1</sup>, Shijie Ruan<sup>1</sup>, Chunxiang Wang<sup>2</sup>, <sup>1</sup>Tianjin University of Science and Technology, No.1038 Dagou Nanlu, Hexi District, Tianjin, China, <sup>2</sup>Tianjin Children's Hospital, No. 225, Machang Road, Hexi District, Tianjin, China

**Measuring Oligodendrocyte Mechanics Following Simulated Traumatic Brain Injury** SB<sup>3</sup>C2017-P196

**Nicholas J. Braun**<sup>1</sup>, Zaw Win<sup>1</sup>, Dezhi Liao<sup>2</sup>, Patrick W. Alford<sup>1</sup>, <sup>1</sup>Biomedical Engineering, University of Minnesota - Twin Cities, Minneapolis, MN, United States, <sup>2</sup>Neuroscience, University of Minnesota - Twin Cities, Minneapolis, MN, United States

**Morphometric Analysis of Cerebellum in Type I Chiari Malformation** SB<sup>3</sup>C2017-P197

**Dipankar Biswas**<sup>1</sup>, Maggie S. Eppelheimer<sup>2</sup>, James R. Houston<sup>3</sup>, Audrey Braun<sup>1</sup>, Richard Labuda<sup>4</sup>, Francis Loth<sup>1</sup>, <sup>1</sup>Mechanical Engineering Department, The University of Akron, Akron, OH, United States, <sup>2</sup>Biomedical Engineering Department, The University of Akron, Akron, OH, United States, <sup>3</sup>Department of Psychology, The University of Akron, Akron, OH, United States, <sup>4</sup>Conquer Chiari, Wexford, PA, United States

**Composite Hydrogel: a New Tool for Reproducing the Mechanical Behaviour of Soft Human Tissues** SB<sup>3</sup>C2017-P198

**Zhengchu Tan**<sup>1</sup>, Antonio Forte<sup>1</sup>, Cristian Parisi<sup>2</sup>, Ferdinando Rodriguez y Baena<sup>3</sup>, Daniele Dini<sup>1</sup>, <sup>1</sup>Tribology group, Imperial College London, London, United Kingdom, <sup>2</sup>King's College London, London, United Kingdom, <sup>3</sup>Mechatronics in Medicine, Imperial College London, London, United Kingdom

**Strain Responses Of The Human Brain With Morphologically Age-Appropriate Head Models** SB<sup>3</sup>C2017-P199

**Bei Li**<sup>1,2</sup>, Wei Zhao<sup>2</sup>, Haiyan Li<sup>1</sup>, Songbai Ji<sup>2</sup>, Shijie Ruan<sup>1</sup>, <sup>1</sup>Center for Injury Biomechanics and Vehicle Safety Engineering, Tianjin University of Science and Technology, Tianjin, China, <sup>2</sup>Department of Biomedical Engineering, Worcester Polytechnic Institute, Worcester, MA, United States

**Interrupted High-Rate Compression of Porcine Brain Tissue Utilizing the Split-Hopkinson Pressure Bar Method** SB<sup>3</sup>C2017-P200

**Haden A. Johnson**<sup>1,2</sup>, Jonathon Miller<sup>2</sup>, Wilburn R. Whittington<sup>2</sup>, Alicia K. Olivier<sup>3</sup>, Michael D. Jones<sup>4</sup>, Rajkumar Prabhu<sup>1,2</sup>, Lakiesha N. Williams<sup>1,2</sup>, <sup>1</sup>Agricultural and Biological Engineering, Mississippi State University, Starkville, MS, United States, <sup>2</sup>Center for Advanced Vehicular Systems, Mississippi State University, Starkville, MS, United States, <sup>3</sup>Pathobiology and Population Medicine, Mississippi State University, Starkville, MS, United States, <sup>4</sup>School of Engineering, Cardiff University, Cardiff, United Kingdom

**A Method to Leverage Detailed and Simplified Occupants for Computational Efficiency in Pre-Crash Simulations** SB<sup>3</sup>C2017-P201

**Berkan Guleyupoglu**, Scott Gayzik, Biomedical Engineering, Wake Forest University School of Medicine, Winston Salem, NC, United States

## Solids Posters -- Cardiovascular

**Predicting Stent Graft Rotation in Patient Specific Abdominal Aortic Aneurysm Repair Using Finite Element Analysis** SB<sup>3</sup>C2017-P202

Ryan M. Sanford<sup>1</sup>, Sean A. Crawford<sup>2,3</sup>, **Matthew G. Doyle**<sup>1,3</sup>, Thomas L. Forbes<sup>3</sup>, Cristina H. Amon<sup>1,2</sup>, <sup>1</sup>Department of Mechanical and Industrial Engineering, University of Toronto, Toronto, ON, Canada, <sup>2</sup>Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, ON, Canada, <sup>3</sup>Division of Vascular Surgery, University of Toronto, Toronto, ON, Canada

**Mechanical Characterisation and Modelling of Thrombus Material** SB<sup>3</sup>C2017-P203

**Sarah Johnson**<sup>1</sup>, Sharon Duffy<sup>2,3</sup>, Michael Gilvarry<sup>3</sup>, Patrick McGarry<sup>1</sup>, Peter E. McHugh<sup>1</sup>, <sup>1</sup>Biomedical Engineering, National University of Ireland, Galway, Galway, Ireland, <sup>2</sup>GmedTech, Galway-Mayo Institute of Technology, Galway, Ireland, <sup>3</sup>Neuravi Ltd, Galway, Ireland

**Abstract Withdrawn** SB<sup>3</sup>C2017-P204

**Mouse Aortic Mechanics assessed from Finite Element Simulation using Ring Pull Test Properties** SB<sup>3</sup>C2017-P205

**Ryan R. Mahutga**<sup>1</sup>, Neeta Adhikari<sup>2</sup>, Jennifer L. Hall<sup>2</sup>, Victor H. Barocas<sup>1</sup>, <sup>1</sup>Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN, United States, <sup>2</sup>Department of Medicine, University of Minnesota, Minneapolis, MN, United States

**A Comparison of Morphological Parameters in Asian and Caucasian Abdominal Aortic Aneurysm Patients Using Biomechanical and Machine Learning Methods** SB<sup>3</sup>C2017-P206

**Tejas Canchi**<sup>1</sup>, Hong Nguyen<sup>2</sup>, Sourav Patnaik<sup>3</sup>, Eddie Ng<sup>1</sup>, Dinesh Srinivasan<sup>4</sup>, Sriram Narayanan<sup>5</sup>, Ender A. Finol<sup>3</sup>,  
<sup>1</sup>*School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore, Singapore,*  
<sup>2</sup>*Biomedical Engineering, University of Texas at San Antonio, San Antonio, TX, United States,* <sup>3</sup>*Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, United States,* <sup>4</sup>*Lee Kong Chian School of Medicine, Nanyang Technological University, Si, Singapore,* <sup>5</sup>*General Surgery, Tan Tock Seng Hospital, Singapore, Singapore*

**Multidimensional Aneurysm Growth: A Bioengineering Approach to Assess Thoracic Aortic Aneurysms** SB<sup>3</sup>C2017-P207

**Alina Ismaguilova**<sup>1</sup>, Giampaolo Martufi<sup>1</sup>, Jehangir Appoo<sup>2</sup>, Eric Herget<sup>3</sup>, Amy Bromley<sup>4</sup>, Lorraine Royall<sup>5</sup>, Naeem Merchant<sup>3</sup>, Elena Di Martino<sup>6</sup>, <sup>1</sup>*University of Calgary, Calgary, AB, Canada,* <sup>2</sup>*Cardiac Surgery, Libin Cardiovascular Institute of Alberta, Calgary, AB, Canada,* <sup>3</sup>*Interventional Radiology, Foothills Medical Centre, Calgary, AB, Canada,* <sup>4</sup>*Pathology and Laboratory Medicine, Foothills Medical Centre, Calgary, AB, Canada,* <sup>5</sup>*Pathology and Laboratory Medicine, Mount Royal University, Calgary, AB, Canada,* <sup>6</sup>*Civil Engineering, University of Calgary, Calgary, AB, Canada*

**Characterisation of Mechanical Properties of Vascular Tissue in a Quasi-2D Setting** SB<sup>3</sup>C2017-P208

**Stefan Sanders**, Frans van de Vosse, Marcel Rutten, *Eindhoven University of Technology, Eindhoven, Netherlands*

**Towards Accurate Atherosclerotic Plaque Failure Models: Investigating Matrix-Calcification Delamination** SB<sup>3</sup>C2017-P209

**Brian L. O'Reilly**, Peter E. McHugh, Patrick McGarry, *Biomedical Engineering, National University of Ireland, Galway, Ireland*

**Non-Contact Measurement of Carotid Artery Pulsewave Velocity: Neck Phantom and Preliminary In-vivo Results** SB<sup>3</sup>C2017-P210

**Stephen Greenwald**<sup>1</sup>, Jonathan Reeves<sup>1,2</sup>, Shyam Thacker<sup>1</sup>, Awais Yousof<sup>1</sup>, Malcolm Birch<sup>1,2</sup>, Viviana Mancini<sup>3</sup>, Daniela Thommasin<sup>3</sup>, Patrick Segers<sup>3</sup>, Louise Marais<sup>4</sup>, Pierre Boutouyrie<sup>4</sup>, <sup>1</sup>*Blizard Institute, Barts & The London School of Medicine & Dentistry, Queen Mary University of London, London, United Kingdom,* <sup>2</sup>*Clinical Physics, Barts Health Trust, London, United Kingdom,* <sup>3</sup>*Institute Biomedical Technology, Ghent University, Ghent, Belgium,* <sup>4</sup>*Département de pharmacologie - Toxicologie, INSERM, Paris, France*

**New Implantable Force Transducer For The Aortic Annulus** SB<sup>3</sup>C2017-P211

**Tommy Bechsgaard**<sup>1,2</sup>, Hans Nygaard<sup>1</sup>, Sten L. Nielsen<sup>1</sup>, Peter Johansen<sup>1,2</sup>, <sup>1</sup>*Cardiothoracic and Vascular Surgery, Aarhus University Hospital, Aarhus N, Denmark,* <sup>2</sup>*Engineering, Aarhus University, Aarhus N, Denmark*

**Characteristics Of Clots From Acute Ischemic Stroke And Laboratory Analogs** SB<sup>3</sup>C2017-P212

**Juyu Chueh**<sup>1</sup>, Joshua Litchman<sup>1</sup>, Rose Arslanian<sup>1</sup>, Sarena Carniato<sup>2</sup>, David Rex<sup>1</sup>, Ajit Puri<sup>1</sup>, Mary Howk<sup>1</sup>, Matthew Gounis<sup>1</sup>, <sup>1</sup>*Radiology, University of Massachusetts Medical School, Worcester, MA, United States,* <sup>2</sup>*Department of Preclinical Science, Stryker Neurovascular, Fremont, CA, United States*

**Three Part Hyperelastic Law for Anisotropic Aortic Tissue: Model Development and Experimental Validation** SB<sup>3</sup>C2017-P213

**Catherine A. O'Connor**<sup>1</sup>, David R. Nolan<sup>2</sup>, Eóin McEvoy<sup>1</sup>, Patrick McGarry<sup>1</sup>, <sup>1</sup>*Biomedical Engineering, National University of Ireland, Galway, Galway, Ireland,* <sup>2</sup>*Trinity Centre for Bioengineering, Trinity College, Dublin, Dublin, Ireland*

**A Semiautomatic Method for the Detection of Patient Specific Aortic Geometries and Mechanical Properties Using 4D Flow MRI** SB<sup>3</sup>C2017-P214

**Jamie Concannon**<sup>1,2</sup>, Niamh Hynes<sup>2</sup>, Sherif Sultan<sup>2</sup>, Patrick McGarry<sup>1</sup>, Peter E. McHugh<sup>1</sup>, <sup>1</sup>*National University of Ireland, Galway, Ireland,* <sup>2</sup>*Western Vascular Institute, Vascular and Endovascular Surgery, Galway University Hospitals, Galway, Ireland*

**Modeling of Myocardium Compressibility and its Impact in Computational Simulations of the Functioning Heart** SB<sup>3</sup>C2017-P215

**Joao S. Soares**<sup>1</sup>, David S. Li<sup>1</sup>, Eric Lai<sup>2</sup>, Joseph H. Gorman<sup>2</sup>, Robert C. Gorman<sup>2</sup>, Michael S. Sacks<sup>1</sup>, <sup>1</sup>*Institute for Computational Engineering and Sciences, University of Texas at Austin, Austin, TX, United States,* <sup>2</sup>*Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA, United States*

**Topological and Geometrical Analyses of 3D Epicardial Elastin Fiber Network** SB<sup>3</sup>C2017-P216

**Xiaodan Shi**<sup>1</sup>, **Song Zhang**<sup>2</sup>, **Katherine M. Copeland**<sup>1</sup>, **Yue Liu**<sup>3</sup>, **Huajian Gao**<sup>3</sup>, **Jun Liao**<sup>1</sup>, <sup>1</sup>*Department of Bioengineering, University of Texas at Arlington, Arlington, TX, United States,* <sup>2</sup>*Department of Computer Science and Engineering, Mississippi State University, Mississippi State, MS, United States,* <sup>3</sup>*School of Engineering, Brown University, Providence, RI, United States*

**Biaxial Mechanical Properties of Porcine Tricuspid Valve Leaflets** SB<sup>3</sup>C2017-P217  
**Keyvan Amini Khoiy**, Rouzbeh Amini, *The University of Akron, Akron, OH, United States*

**Effect Of Layer- And Organ-scale Prestrain On The Opening-Closing Behavior Of A Heart Valve** SB<sup>3</sup>C2017-P218  
 Rogelio Ortigosa, Antonio J. Gil, **Ankush Aggarwal**, *Zienkiewicz Centre for Computational Engineering, Swansea University, Swansea, United Kingdom*

**A Biologically Motivated Computational Model to Explain Anisotropic Prestretch in the Mitral Valve** SB<sup>3</sup>C2017-P219  
**Mathieu A. J. van Kelle**<sup>1,2</sup>, Manuel K. Rausch<sup>3</sup>, Carlijn V. C. Bouten<sup>1</sup>, Ellen Kuhl<sup>2</sup>, Sandra Loerakker<sup>1,2</sup>, *<sup>1</sup>Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands, <sup>2</sup>Mechanical Engineering, Stanford University, Stanford, CA, United States, <sup>3</sup>Department of Aerospace Engineering & Engineering Mechanics, University of Texas, Austin, TX, United States*

**Finite Element Modeling of Mitral Valve Patch Augmentation & Effects on Chordal Force Distribution**  
 SB<sup>3</sup>C2017-P220  
**Jonathan F. Wenk**<sup>1</sup>, Morten O. Jensen<sup>2</sup>, *<sup>1</sup>Mechanical Engineering, University of Kentucky, Lexington, KY, United States, <sup>2</sup>Biomedical Engineering, University of Arkansas, Fayetteville, AR, United States*

**A Parametric Study Of The Optimal Shape And Leaflet Properties In Bioprosthetic Heart Valves** SB<sup>3</sup>C2017-P221  
**Rana Zakerzadeh**<sup>1</sup>, Fei Xu<sup>2</sup>, Michael C.H. Wu<sup>2</sup>, Ming-Chen Hsu<sup>2</sup>, Michael S. Sacks<sup>1</sup>, *<sup>1</sup>Institute for Computational Engineering and Science (ICES), University of Texas at Austin, Austin, TX, United States, <sup>2</sup>Department of Mechanical Engineering, Iowa State University, Ames, IA, United States*

**In-Vivo Stress Estimation of The Functional Heart Valve and Its Implications For Annuloplasty Ring-Based Valve Surgical Repair** SB<sup>3</sup>C2017-P222  
**Chung-Hao Lee**<sup>1</sup>, Michael S. Sacks<sup>2</sup>, *<sup>1</sup>Aerospace and Mechanical Engineering, University of Oklahoma, Norman, OK, United States, <sup>2</sup>Biomedical Engineering, The University of Texas at Austin, Austin, TX, United States*

**Phenomenological based Constitutive Modeling of Jugular Venous Tissue** SB<sup>3</sup>C2017-P223  
**Nayyan Kaul**, Hsiao-Ying Shadow Huang, *MAE, North Carolina State University, Raleigh, NC, United States*

**Mechanical and Structural Characterization of Pulmonary Arteries in Two PAH Animal Models** SB<sup>3</sup>C2017-P224  
**Daniela Velez-Rendon**, Erica R. Pursell, Daniela Valdez-Jasso, *Bioengineering, University of Illinois at Chicago, Chicago, IL, United States*

**Statics and Dynamics of Aortic Segment with Residual Stresses** SB<sup>3</sup>C2017-P225  
**Ivan Breslavskyi**<sup>1</sup>, Marco Amabili<sup>2</sup>, *<sup>1</sup>McGill University, Montreal, QC, Canada, <sup>2</sup>Department of Mechanical Engineering, McGill University, Montreal, QC, Canada*

## Fluids Posters -- Cardiovascular Devices, Valves, and Flows

**Physiology-Modeling Coupled Experiment: A High Fidelity Hardware-In-The-Loop Hybrid Model for the Circulation**  
 SB<sup>3</sup>C2017-P226  
**Ethan Kung**, Masoud Farahmand, Akash Gupta, *Clemson University, Clemson, SC, United States*

**In-vitro Validation Of A Lumped-parameter Model For A Fontan Right-side Assist Device** SB<sup>3</sup>C2017-P227  
**Mitra Shabanisamghabady**<sup>1</sup>, Ehsan Mirzaei<sup>1</sup>, Minoo N. Kavarana<sup>2</sup>, Dimitrios Georgakopoulos<sup>3</sup>, Ethan O. Kung<sup>1</sup>, *<sup>1</sup>Mechanical Engineering, Clemson University, Central, SC, United States, <sup>2</sup>Medical University of South Carolina, Charleston, SC, United States, <sup>3</sup>Sunshine Heart Inc., Eden Prairie, MN, United States*

**Towards a Multifidelity Hemodynamic Model Pipeline for the Analysis of Cardiovascular Flow Under Uncertainty**  
 SB<sup>3</sup>C2017-P228  
**Casey M. Fleeter**<sup>1</sup>, Daniele E. Schiavazzi<sup>2</sup>, Alison L. Marsden<sup>3</sup>, *<sup>1</sup>Institute of Computational and Mathematical Engineering, Stanford University, Stanford, CA, United States, <sup>2</sup>Department of Applied and Computational Mathematics and Statistics, University of Notre Dame, Notre Dame, IN, United States, <sup>3</sup>Department of Pediatrics, Stanford University, Stanford, CA, United States*

**A CFD-based Genetic Algorithm Applied To the Design of Flow-diverting Stent for Identifying the Wire Configuration that Maximally Disrupts the Bundle of Aneurysm Inflow** SB<sup>3</sup>C2017-P229

**Mingzi Zhang**<sup>1,2</sup>, Hitomi Anzai<sup>3</sup>, Bastien Chopard<sup>4</sup>, Yi Qian<sup>2</sup>, Makoto Ohta<sup>5</sup>, <sup>1</sup>Graduate School of Engineering, Tohoku University, Sendai, Japan, <sup>2</sup>Faculty of Medicine and Health Sciences, Macquarie University, Sydney, Australia, <sup>3</sup>Frontier Research Institute for Interdisciplinary Sciences, Tohoku University, Sendai, Japan, <sup>4</sup>Department of Computer Science, University of Geneva, Geneva, Switzerland, <sup>5</sup>Institute of Fluid Science, Tohoku University, Sendai, Japan

**Optimization Of Systemic-to-Pulmonary Shunt Design in the Assisted Bi-directional Glenn** SB<sup>3</sup>C2017-P230

**Aekaansh Verma**<sup>1</sup>, Mahdi Esmaily-Moghadam<sup>1</sup>, Jessica K. Shang<sup>2</sup>, Richard Figliola<sup>3</sup>, Tain-Yen Hsia<sup>4</sup>, Alison L. Marsden<sup>5</sup>, <sup>1</sup>Mechanical Engineering, Stanford University, Stanford, CA, United States, <sup>2</sup>Mechanical Engineering, University of Rochester, Rochester, NY, United States, <sup>3</sup>Mechanical Engineering, Clemson University, Clemson, SC, United States, <sup>4</sup>Great Ormond Street Hospital for Children, London, United Kingdom, <sup>5</sup>Pediatrics, Stanford University, Stanford, CA, United States

**Hemodynamics Consequences of Different Designs of the MonaLSA Stent Graft** SB<sup>3</sup>C2017-P231

**Rosamaria Tricarico**<sup>1</sup>, Yong He<sup>2</sup>, Roger Tran-Son-Tay<sup>3</sup>, Salvatore T. Scali<sup>2</sup>, Teng-Chun Lee<sup>2</sup>, Scott A. Berceci<sup>2</sup>, <sup>1</sup>Biomedical Engineering, University of Florida, Gainesville, FL, United States, <sup>2</sup>Surgery, University of Florida, Gainesville, FL, United States, <sup>3</sup>Mechanical Engineering, University of Florida, Gainesville, FL, United States

**Nonlinear Dynamics of Dacron Aortic Prostheses Conveying Pulsatile Flow** SB<sup>3</sup>C2017-P232

**Eleonora Tubaldi**, Marco Amabili, Michael P. Paidoussis, McGill University, Montreal, QC, Canada

**A Novel Modeling Approach to Quantify Coronary Perfusion after Transcatheter Aortic Valve Replacement**

SB<sup>3</sup>C2017-P233

**Harkamaljot Kandail**<sup>1</sup>, Setu Trivedi<sup>2</sup>, John LaDisa<sup>1,3</sup>, <sup>1</sup>Biomedical Engineering, Marquette University, Milwaukee, WI, United States, <sup>2</sup>Aurora St. Luke's Medical Center, Milwaukee, WI, United States, <sup>3</sup>Medical College of Wisconsin, Milwaukee, WI, United States

**Predicting Calcific Aortic Valve Disease Progression and Its Effect on Transcatheter Aortic Valve Deployment in Bicuspid Valves** SB<sup>3</sup>C2017-P234

Gil Marom<sup>1</sup>, Karin Lavon<sup>2</sup>, Matteo Bianchi<sup>1</sup>, Rotem Halevi<sup>2</sup>, Ashraf Hamdan<sup>3</sup>, Ehud Raanani<sup>3</sup>, Rami Haj-Ali<sup>2</sup>, **Danny Bluestein**<sup>1</sup>, <sup>1</sup>Biomedical Engineering, Stony Brook University, Stony Brook, NY, United States, <sup>2</sup>School of Mechanical Engineering, Tel Aviv University, Tel Aviv, Israel, <sup>3</sup>Cardiothoracic Surgery, Chaim Sheba Medical Center, Tel Hashomer, Israel

**Implication Of Flow Dependence Of Valve Area On The Formulation Of A Severity Index For Calcific Aortic Valve Stenosis** SB<sup>3</sup>C2017-P235

**Megan Heitkemper**, Hoda Hatoum, Jennifer Dollery, Juan Crestenello, Lakshmi P. Dasi, The Ohio State University, Columbus, OH, United States

**Sub-Annular Deployment In Valve-in-Valve Is Most Optimal When Considering Both Pressure Gradients And Leaflet Thrombosis Risk** SB<sup>3</sup>C2017-P236

**Hoda Hatoum**<sup>1</sup>, Atieh Yousefi<sup>1</sup>, Jennifer Dollery<sup>2</sup>, Pablo Maureira<sup>3</sup>, Juan A. Crestanello<sup>2</sup>, Lakshmi P. Dasi<sup>1</sup>, <sup>1</sup>Department of Biomedical Engineering, The Ohio State University, Columbus, OH, United States, <sup>2</sup>Division of Cardiac Surgery, The Ohio State University, Columbus, OH, United States, <sup>3</sup>Department of Cardiovascular Surgery, Lorraine University Hospital of Nancy, Nancy, France

**In Vitro Assessment of Prosthetic Valve Fluid Mechanics in the Pediatric Pulmonary Outflow Tract** SB<sup>3</sup>C2017-P237

**Nicole K. Schiavone**<sup>1</sup>, Christopher J. Elkins<sup>1</sup>, Jeffrey Feinstein<sup>2</sup>, Doff McElhinney<sup>3</sup>, John K. Eaton<sup>1</sup>, Alison Marsden<sup>4</sup>, <sup>1</sup>Mechanical Engineering, Stanford University, Stanford, CA, United States, <sup>2</sup>Pediatric Cardiology, Stanford University, Stanford, CA, United States, <sup>3</sup>Cardiothoracic Surgery, Stanford University, Stanford, CA, United States, <sup>4</sup>Pediatrics and Bioengineering, Stanford University, Stanford, CA, United States

**Novel Technique for Optical Strain Measurements on the Mitral Valve Anterior Leaflet** SB<sup>3</sup>C2017-P238

Søren N. Skov<sup>1,2</sup>, Oliver Blome<sup>2</sup>, Mariam A. Noor<sup>2</sup>, **Peter Johansen**<sup>1,2</sup>, <sup>1</sup>Department of Cardiothoracic & Vascular Surgery, Aarhus University Hospital, Aarhus N, Denmark, <sup>2</sup>Department of Engineering, Aarhus University, Aarhus, Denmark

**Simulation of Blood as a Particulate Flow in The Hinge Gap Region of a Mechanical Heart Valve** SB<sup>3</sup>C2017-P239

**Fazlollah Mohaghegh**, HS Udaykumar, University of Iowa, Iowa City, IA, United States

**Effect of Left Versus Right Coronary Flow Waveforms on Aortic Sinus Hemodynamics** SB<sup>3</sup>C2017-P240

**Dorma C. Flemister**, Ryan W. Oba, Atieh Yousefi, Hoda Hatoum, Juan Crestanello, Lakshmi P. Dasi, The Ohio State University, Columbus, OH, United States

**Suppressing Unsteady Flow In Arterio-Venous Fistulae SB<sup>3</sup>C2017-P241**

**Lorenza Grechy<sup>1</sup>**, Francesco Iori<sup>1</sup>, Richard W. Corbett<sup>2</sup>, Wladyslaw M. W. Gedroyc<sup>3</sup>, Neill Duncan<sup>2</sup>, Colin G. Caro<sup>4</sup>, Peter E. Vincent<sup>1</sup>, <sup>1</sup>*Department of Aeronautics, Imperial College London, London, United Kingdom*, <sup>2</sup>*Imperial College Renal and Transplant Centre, Hammersmith Hospital, London, United Kingdom*, <sup>3</sup>*St. Marys Hospital, Praed Street, London, United Kingdom*, <sup>4</sup>*Department of Bioengineering, Imperial College London, London, United Kingdom*

**Fluids Posters --  
Cardiovascular Diagnostics and Flow and Aneurysms**

**Quantification of Changes in Blood Flow Dynamics in Left Ventricles of Porcine Hearts Before and After Myocardial Infarction SB<sup>3</sup>C2017-P242**

**Vivek Vasudevan<sup>1</sup>**, Adriel Low<sup>1</sup>, Sarayu Annamalai<sup>2</sup>, Smita Sampath<sup>2</sup>, Kian Poh<sup>3</sup>, Teresa Totman<sup>4</sup>, Muhammad Mazlan<sup>4</sup>, Mark Richards<sup>5</sup>, Dominique de Kleijn<sup>4</sup>, Chih-Liang Chin<sup>2</sup>, Choon-Hwai Yap<sup>1</sup>, <sup>1</sup>*National University of Singapore, Singapore, Singapore*, <sup>2</sup>*Translational Biomarkers, MSD, Singapore, Singapore*, <sup>3</sup>*Department of Cardiology, NUHS, Singapore, Singapore*, <sup>4</sup>*Department of Surgery, NUHS, Singapore, Singapore*, <sup>5</sup>*CVRI, NUHC, Singapore, Singapore*

**A Simulation Study of the Age-Related Changes in the Cardiovascular System SB<sup>3</sup>C2017-P243**

**Stamatia Zoi Pagoulatou**, Nikolaos Stergiopoulos, *Laboratory of Hemodynamics and Cardiovascular Mechanics, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland*

**CFD-Shape Optimization Coupling Explains Partial Restoration of Homeostatic WSS in Venous Neointimal Hyperplasia SB<sup>3</sup>C2017-P244**

**S. M. Javid Mahmoudzadeh Akherat<sup>1</sup>**, Kevin Cassel<sup>1</sup>, Marta Wlodarczyk<sup>1</sup>, Mary Hammes<sup>2</sup>, <sup>1</sup>*MMAE Department, Illinois Institute of Technology, Chicago, IL, United States*, <sup>2</sup>*Department of Medicine, University of Chicago, Chicago, IL, United States*

**Computational Access Flow Reduction Effect on Wall Shear Stress in Brachiocephalic Fistulae SB<sup>3</sup>C2017-P245**

**Marta Wlodarczyk<sup>1</sup>**, S. M. Javid Mahmoudzadeh Akherat<sup>1</sup>, Kevin Cassel<sup>1</sup>, Mary Hammes<sup>2</sup>, <sup>1</sup>*Illinois Institute of Technology, Chicago, IL, United States*, <sup>2</sup>*Department of Medicine University of Chicago, Chicago, IL, United States*

**Dynamic Mesh Computational Fluid Dynamics Of The Chick Embryonic Heart Based On 4D High-frequency Ultrasound Imaging SB<sup>3</sup>C2017-P246**

**Sheldon Ho**, Yue Yin Loh, Hadi Wiputra, Choon Hwai Yap, *NUS, Singapore, Singapore*

**A Fluid-Structure Interaction Model of a Cuffed Carotid Artery of an ApoE<sup>-/-</sup> Mouse SB<sup>3</sup>C2017-P247**

**Ryan M. Pedrigi<sup>1</sup>**, Miten B. Patel<sup>2</sup>, Vikram V. Mehta<sup>2</sup>, Fotios Savvopoulos<sup>2</sup>, Avinash Kondiboyina<sup>2</sup>, Lucas H. Timmins<sup>3</sup>, Rob Krams<sup>2</sup>, <sup>1</sup>*Mechanical and Materials Engineering, University of Nebraska-Lincoln, Lincoln, NE, United States*, <sup>2</sup>*Bioengineering, Imperial College London, London, United Kingdom*, <sup>3</sup>*Bioengineering, University of Utah, Salt Lake City, UT, United States*

**A Multiscale Model of the Endothelial Glycocalyx as Mechanosensor of Hemodynamic Shear Forces SB<sup>3</sup>C2017-P248**

**Diego Gallo<sup>1</sup>**, Pablo Saez<sup>2</sup>, Morbiducci Umberto<sup>1</sup>, <sup>1</sup>*Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Turin, Italy*, <sup>2</sup>*Laboratori de Calcul Numeric (LaCaN), Universitat Politecnica de Catalunya, Barcelona, Spain*

**Abstract Withdrawn SB<sup>3</sup>C2017-P249**

**Quantification of Ventricular Hemodynamic and Wall Shear Stress Abnormalities in Discrete Subaortic Stenosis SB<sup>3</sup>C2017-P250**

**Jason Shar**, Philippe Sucusky, *Wright State University, Fairborn, OH, United States*

**Inconsistent Application of the Scalar Stress Concept in the Power-law Hemolysis Model SB<sup>3</sup>C2017-P251**

**Mohammad M. Faghih**, M. Keith Sharp, *Mechanical Engineering, University of Louisville, Louisville, KY, United States*

**Fictitious Domain Particle-based Modeling for Thrombosis SB<sup>3</sup>C2017-P252**

**Debanjan Mukherjee**, Shawn C. Shadden, *U.C. Berkeley, Berkeley, CA, United States*

**Impact Of CFD Flow Solver Choice On Predicted Intracranial Aneurysm (ICA) Flow Field And Hemodynamics: Assessing Flow Solvers Unseen In ICA Literature SB<sup>3</sup>C2017-P253**

**Justin D. Hodges<sup>1</sup>**, Kristian Debus<sup>2</sup>, <sup>1</sup>*University of Central Florida, Orlando, FL, United States*, <sup>2</sup>*Siemens Product Lifecycle Management Software Inc., Santa Rosa, CA, United States*

**Abstract Withdrawn** SB<sup>3</sup>C2017-P254

**A Virtual Inter-Laboratory Comparison of Predicted Hemodynamic Indices in Intracranial Aneurysms: Consistent or Not?** SB<sup>3</sup>C2017-P255

**Aslak W. Bergersen**, Kristian Valen-Sendstad, *Scientific Computing, Simula Research Laboratory, Lysaker, Norway*

**Intracranial Vascular Disease Evaluation With Combined Vessel Wall Imaging And Patient Specific Hemodynamics** SB<sup>3</sup>C2017-P256

**Kurt Russell Sansom**<sup>1</sup>, Mahmud Mossa-Basha<sup>2</sup>, Chun Yuan<sup>2,3,4</sup>, Alberto Aliseda<sup>1</sup>, Gador Canton<sup>1,5</sup>, <sup>1</sup>*Mechanical Engineering, University of Washington, Seattle, WA, United States*, <sup>2</sup>*Radiology, University of Washington, Seattle, WA, United States*, <sup>3</sup>*Bioengineering, University of Washington, Seattle, WA, United States*, <sup>4</sup>*Vascular Imaging Laboratory, University of Washington, Seattle, WA, United States*, <sup>5</sup>*Vascular Imaging Laboratory, University of Washington, Seattle, WA, United States*

**Ontology for Cerebral Aneurysm Morphometrics** SB<sup>3</sup>C2017-P257

**Benjamin Berkowitz**, Elizabeth Niedert, Suresh M. L. Raghavan, *Biomedical Engineering, University of Iowa, Iowa City, IA, United States*

## Fluids Posters -- Biological Flows

**Fluid Mechanics and Evolution of Cooperation** SB<sup>3</sup>C2017-P258

**Dervis C. Vural**, Gurdip Uppal, *University of Notre Dame, Notre Dame, IN, United States*

**Fluid-Structure Interaction Of The Non-contact Tonometry Test** SB<sup>3</sup>C2017-P259

**Wei Wu**<sup>1</sup>, Miguel A. Ariza<sup>2</sup>, Mauro Malve<sup>3</sup>, Ender A. Finol<sup>1</sup>, Begoña Calvo<sup>2</sup>, Jose F. Rodriguez<sup>4</sup>, <sup>1</sup>*Department of Mechanical Engineering, University of Texas at San Antonio, San Antonio, TX, United States*, <sup>2</sup>*Department of Mechanical Engineering, University of Zaragoza, Zaragoza, Spain*, <sup>3</sup>*Department of Mechanical Engineering, Energetics and Materials, Public University of Navarra, Pamplona, Spain*, <sup>4</sup>*Department of Chemistry, Materials, and Chemical Engineering "Giulio Natta", Politecnico di Milano, Milan, Italy*

**The Effects Of Preconditioning On Uniaxial Tensile Tests Of Porcine Cornea** SB<sup>3</sup>C2017-P260

**Hamed Hatami-Marbini**, Sandeep Mysore, *Mechanical & Industrial Engineering, University of Illinois at Chicago, Chicago, IL, United States*

**Intraocular Pressure Measurement Through the Laser Induced Cavitation Bubbles Dynamics.** SB<sup>3</sup>C2017-P261

**Luis F. Devia-Cruz**<sup>1</sup>, Carlos A. Zuniga-Romero<sup>1</sup>, Guillermo Aguilar<sup>2</sup>, Santiago Camacho-López<sup>1</sup>, <sup>1</sup>*Departamento de Óptica, Centro de Investigación Científica y de Educación Superior de Ensenada, Ensenada, Mexico*, <sup>2</sup>*Department of Mechanical Engineering, University of California Riverside, Riverside, CA, United States*

**Infant Oral Cavity Pressure Data Processing** SB<sup>3</sup>C2017-P262

**Lin Jiang**, Fatemeh Hassanipour, *Mechanical Engineering, University of Texas at Dallas, Richardson, TX, United States*

**An In Vitro Model of Intrathecal Cerebrospinal Fluid Dynamics With Dorsal and Ventral Spinal Cord Nerve Rootlets** SB<sup>3</sup>C2017-P263

**Lucas R. Sass**<sup>1</sup>, Mohammadreza Khani<sup>1</sup>, Olivier Baledent<sup>2</sup>, Bryn A. Martin<sup>1</sup>, <sup>1</sup>*Biological Engineering, University of Idaho, Moscow, ID, United States*, <sup>2</sup>*BioFlow Image, University of Picardy Jules Verne, Amiens, France*

**Accelerating Cardiovascular Segmentation With Convolutional Neural Networks** SB<sup>3</sup>C2017-P264

**Gabriel D. Maher**<sup>1</sup>, Jameson M. Merkow<sup>2</sup>, Alison L. Marsden<sup>3</sup>, <sup>1</sup>*Institute for Computational and Mathematical Engineering, Stanford University, Stanford, CA, United States*, <sup>2</sup>*Electrical and Computer Engineering, University of California San Diego, San Diego, CA, United States*, <sup>3</sup>*Bioengineering, Pediatrics, Stanford University, Stanford, CA, United States*

**How Temperature Influences the Viscosity of Hornworm Hemolymph** SB<sup>3</sup>C2017-P265

**Melissa C. Kenny**<sup>1</sup>, Matthew N. Giarra<sup>2</sup>, John J. Socha<sup>1</sup>, <sup>1</sup>*Biomedical Engineering and Mechanics, Virginia Tech, Blacksburg, VA, United States*, <sup>2</sup>*Mechanical Engineering, Virginia Tech, Blacksburg, VA, United States*

**Computational Model of an Initial Lymphatic Network** SB<sup>3</sup>C2017-P266

**Bernard Ikhimwin**<sup>1</sup>, Samira Jamalian<sup>2</sup>, Charlie Macaskill<sup>1</sup>, Christopher Bertram<sup>1</sup>, <sup>1</sup>*University of Sydney, Sydney, Australia*, <sup>2</sup>*Imperial college, London, United Kingdom*

**Capturing the Oral Peripheral Pressure of Infants while Breastfeeding** SB<sup>3</sup>C2017-P267

**Diana L. Alatalo**, Fatemeh Hassanipour, *Mechanical Engineering, The University of Texas at Dallas, Richardson, TX, United States*

**Introduction of a Re-Engineered User Interface and Modular Architecture for the SimVascular Open Source Pipeline for Cardiovascular Modeling** SB<sup>3</sup>C2017-P268

**Hongzhi Lan**<sup>1</sup>, Adam Updegrove<sup>2</sup>, Nathan M. Wilson<sup>3</sup>, Shawn C. Shadden<sup>2</sup>, Alison L. Marsden<sup>1</sup>, <sup>1</sup>*Stanford University, Stanford, CA, United States*, <sup>2</sup>*University of California - Berkeley, Berkeley, CA, United States*, <sup>3</sup>*Open Source Medical Software Corporation, Santa Monica, CA, United States*

**Hemodynamic Effects of Stenosis in the Inferior Vena Cava Conduit and Left Pulmonary Artery of the Fontan Circulation** SB<sup>3</sup>C2017-P269

**Masoud Farahmand**<sup>1</sup>, Ethan O. Kung<sup>1,2</sup>, <sup>1</sup>*Dept. of Mechanical Engineering, Clemson University, Clemson, SC, United States*, <sup>2</sup>*Dept. of Bioengineering, Clemson University, Clemson, SC, United States*

**Abstract Withdrawn** SB<sup>3</sup>C2017-P270

**Sickle Red Blood Cell Adhesion to Heme Activated Endothelial Cells in Microscale Flow** SB<sup>3</sup>C2017-P271

**Erdem Kucukal**<sup>1</sup>, Anton Ilich<sup>2</sup>, Jane A. Little<sup>1</sup>, Nigel S. Key<sup>2</sup>, Umut A. Gurkan<sup>1</sup>, <sup>1</sup>*Case Western Reserve University, Cleveland, OH, United States*, <sup>2</sup>*University of North Carolina, Chapel Hill, NC, United States*

**Parametric Analysis Of New Coronary Artery Bypass Configurations** SB<sup>3</sup>C2017-P272

**Gokce Nur Oguz**<sup>1</sup>, Senol Piskin<sup>1</sup>, Tijen Alkan Bozkaya<sup>2</sup>, Mehmet Sanser Ates<sup>2</sup>, Haldun Karagoz<sup>3</sup>, Kerem Pekkan<sup>1</sup>, <sup>1</sup>*Department of Mechanical Engineering, Koc University, Istanbul, Turkey*, <sup>2</sup>*Department of Cardiovascular Surgery, Koc University Hospital, Istanbul, Turkey*, <sup>3</sup>*Department of Cardiovascular Surgery, American Hospital, Istanbul, Turkey*

## Undergraduate Design Competition Posters

**DART Brace: Daily Advanced Range of Motion Therapy for Maximizing Function** SB<sup>3</sup>C2017-P273

Anthony D. Anderson, Bridgette Bousquet, Megan M. Curry, **Brian G. Davis**, Catherine R. Pelton, Christopher Robinson, Laurel Kuxhaus, Margret Shea, Victoria Priganc, *Clarkson University, Potsdam, NY, United States*

**Wearable Rehabilitation: A Customizable Continuous Passive Motion Device for Early Phalangeal Mobilization** SB<sup>3</sup>C2017-P274

Sydney D. Crady, Kiersten E. Drapeau, Thomas C. Piersall, Elizabeth A. Cassady, Alyson A. Weisner, **Deja A. Robinson**, Laurel Kuxhaus, Kevin B. Fite, Victoria Priganc, John LaRue, Molly Kelso, *Clarkson University, Potsdam, NY, United States*

**Design and Fabrication of a Small In Vivo Biomechanical Testing Device: The Portable In Vivo Tissue Tester (PIVTT)** SB<sup>3</sup>C2017-P275

**Thomas Zamorski**, Bridgette M. Saverine, Tobi Odesanya, Veronica E. Schimpf, Michael Tarquini, Anita Singh, *Department of Biomedical Engineering, Widener University, Chester, PA, United States*

## Author Index

- Abdulhai, Sophia ..... 299  
 Abel, Richard L. .... 48  
 Ables, Elizabeth T. .... 281  
 Abou-Arraj, Ramzi ..... P36  
 Abramowitch, Steven D. .... 254, 295  
 Acun, Aylin ..... 159  
 Acuna, Andrea ..... 288  
 Adams, Bruce D. .... 324  
 Adegoke, Modupe ..... P123  
 Adeyinka, Oluwaseun R. .... 194  
 Adhikari, Neeta ..... P205  
 Agarwal, Anand K. .... 7, P154  
 Agarwal, Pradyumn ..... 232  
 Aggarwal, Ankush ..... P218  
 Aguilar, Guillermo ..... 117, P261  
 Aguinaldo, Arnel ..... P92  
 Ahmadzadeh, Hossein ..... 287  
 Ahmed, A.H. R. .... P115  
 Ahsan, Abu Saleh ..... P138  
 Aizen Grill, Daiane ..... P89  
 Akbarimoosavi, Mahdi ..... 117  
     WITHDRAWN  
 Akhter, Forhad ..... 324  
 Akintunde, Akinjide R. .... 95  
 Akkus, Ozan ..... 195  
 Aksan, Alptekin ..... P62, P74, P108, 118  
 Alamer, Moath ..... 278  
 Alamoudi, Mohammed ..... P91, P93  
 Alaraj, Ali ..... P249, P270  
 Alatalo, Diana L. .... P267  
 Albon, Julie ..... 48  
 Alexanderian, Alen ..... P59  
 Alexeev, Alexander ..... 32  
 Alford, Patrick ..... 181  
 Alford, Patrick W. .... 49, P196, 197  
 Aliakbari Miyamahaleh,  
     Mohammad ..... P75  
 Alisafaei, Farid ..... 81  
 Aliseda, Alberto ..... P256, 269  
 Alison, Laura ..... P185  
 Allen, Philip ..... 292  
 Allison, Hollie ..... P100  
 Alrafeek, Saif ..... P139  
 Amabili, Marco ..... P225, P232  
 Amen, Kamilah Y. .... 49  
 Amezcua, Krysta H. .... 194  
 Amezcua, Krysta-Lynn ..... P184  
 Amini, Rouzbeh ..... 97, 110, 136, 173,  
     P217, 299  
 Amini Khoiy, Keyvan ..... P217, 299  
 Amon, Cristina H. .... P202  
 Anayiotos, Andreas S. .... 149  
 Andarawis-Puri, Nelly ..... P163, 309  
 Andersen, Thomas L. .... 22  
 Anderson, Andrew E. .... P147, 153  
 Anderson, Deirdre E. .... 147  
 Anderson, Ronald C. .... P165  
 Andreasen, Christina ..... 22  
 Andrist, Joseph A. .... 251  
 Annamalai, Sarayu ..... P242  
 Anseth, Kristi ..... 74  
 Anzai, Hitomi ..... P229  
 Aomura, Shigeru ..... P38, 220  
 Appoo, Jehangir ..... P207  
 Aprile, Paola ..... 38  
 Aranyosi, AJ ..... 152  
 Arcot, Kashyap ..... 165  
 Arif, Imran ..... P46  
 Ariza, Miguel A. .... P259  
 Armiger, Robert ..... 290  
 Armiger, Robert S. .... 251  
 Arruda, Ellen M. .... P161, P166  
 Arslanian, Rose ..... P212  
 Arun, Mike W. J. .... P153  
 Arvaneh, Tia ..... P51  
 Arvayo, Alberto L. .... 43  
 Arzani, Amirhossein ..... 6  
 Asfour, Shihab ..... P91, P93, P133, P149,  
     P150, P168, 323  
 Ashinsky, Beth G. .... 123  
 Ates, Mehmet Sanser ..... P272  
 Ateshian, Gerard ..... 283  
 Ateshian, Gerard A. .... 179  
 Athanasiou, Thanos ..... 103  
 Atkins, Penny R. .... P147  
 Audenino, Alberto ..... P170  
 Augustin, Christoph M. .... 143  
 Avazmohammadi, Reza ..... 141  
 Avendano, Alex ..... 33  
 Ayoub, Salma ..... 1, 328  
 Ayyaswamy, P. S. .... 237  
 Azarin, Samira ..... P108  
 Baaijens, Frank P. T. .... P102, P107  
 Babaliaros, Vasilis ..... 148  
 Badachhape, Andrew A. .... 249  
 Baek, Seungjik ..... P185, 267  
 Baeumler, Kathrin ..... 265  
 Baez, Ivan ..... 315  
 Bagchi, Amit ..... 248  
 Bailey, Travis S. .... 127  
 Baillargeon, Brian P. .... 144  
 Bakalova, Lydia ..... 22  
 Baker, Aaron ..... 330  
 Baker, Anthony J. .... 192  
 Baker, Brendon M. .... 83, 284  
 Balasubramanian, Sriram ..... P190  
 Baledent, Olivier ..... P263  
 Ban, Ehsan ..... 284, 326  
 Banerjee, Rupak K. .... P46, 172  
 Banik, Brittany L. .... P110  
 Banks, Darren ..... 117  
 Bankwala, Danesh ..... 325  
 Bansal, Sonia ..... 164  
 Barbour, Michael C. .... 269  
 Barg, Alexej ..... 153  
 Barila, Guillermo ..... 256  
 Barker, Alex J. .... 101  
 Bar-Kochba, Eyal ..... 251  
 Barnum, Carrie E. .... 256  
 Barocas, Victor H. .... 44, 80, P127, P176,  
     197, 198, P167, P205, 306, 325  
 Barreda, Adriana ..... 167  
 Barthold, Jeanne E. .... 124  
 Bartoletti, Robin ..... P81  
 Bauer, Rachel E. .... P80  
 Bayly, Philip V. .... 54, 217, 249  
 Beard, Daniel A. .... 192  
 Beasley, Michaela ..... 252  
 Beavers, Daniel P. .... 24  
 Beavers, Kristen M. .... 24  
 Bechsgaard, Tommy ..... P211  
 Beebe, David ..... P60  
 Behera, Reeti ..... 287  
 Behkam, Reza ..... 47, 135  
 Bell, Rebecca ..... P163, 309  
 Benito, Yolanda ..... 233  
 Benko, Nikolaus A. .... 250  
 Benoy, Elizabeth ..... P115  
 Benson, Adam ..... 45  
 Benson, Joey ..... P62  
 Berceli, Scott A. .... P231  
 Bergersen, Aslak ..... 55  
 Bergersen, Aslak W. .... P255  
 Berkow, Kyle A. .... P95  
 Berkowitz, B ..... 227  
 Berkowitz, Benjamin ..... P257  
 Bermejo, Javier ..... 233  
 Bermel, Emily A. .... 198  
 Berry, Joel ..... 114  
 Bersi, Matthew R. .... 16, 39  
 Bersie, Lauren M. .... 80  
 Bertram, Christopher ..... P266  
 Bertram, Christopher D. .... 65  
 Bhal, Vinay ..... 4  
 Bhattacharya, Shamik ..... 3  
 Bianchi, Matteo ..... 104, P234  
 Bibevski, Steven ..... 315  
 Biglino, Giovanni ..... 313  
 Bignardi, Cristina ..... 230  
 Billiar, Kristen ..... P97, 113  
 Birch, Helen L. .... 308  
 Birch, Malcolm ..... P210  
 Birk, David E. .... 125, 128, 200, 204  
 Birman, Victor ..... 201  
 Bischof, John ..... 171, 239

AUTHOR INDEX BY PRESENTATION NUMBER

Bischoff, Jeff .....	P88, 272	Bulka, Ben .....	187	Chang, Chia-Wen .....	78
Biswas, Arijit .....	253	Bulsink, Jurgen A. ....	P111, 160	Chang, Jonathan .....	33
Biswas, Dipankar .....	P197, 292	Burdick, Jason A. ....	37, 141, 284	Chao, Pen-Hsiu Grace .....	41, P98
Black, Anthony .....	97	Burgoyne, Claude F. ....	177, 297	Charbel, Fady .....	P270
Blanche, Syndey .....	32	Burgoyne, Suzanne .....	P80	Chauhan, Sathyajeeth .....	303
Bland, Megan L. ....	154	Burris, David L. ....	89, 186	Che, Zifan .....	236
Blome, Oliver .....	P238	Bush, Tamara Reid .....	P174	Chen, Christopher S. ....	284
Bloodworth, Charles H. ....	4, 98	Bushman, Sarah .....	36	Chen, Michelle L. ....	P172
Bloodworth, Nathaniel .....	P70	Bushman, Sarah M. ....	P124	Chen, Po-Hsu .....	P164
Bluestein, Danny .....	28, 104, P234	Buskermolen, Gitta A. B. C. ....	P107	Chen, Sheng .....	P179
Boccardo, Stefano .....	262	Butcher, Jonathan .....	317	Chen, Zhuo .....	P68
Bodnyk, Kyle A. ....	P136	Butler, James R. ....	P175	Chen, Zi .....	P191
Boerckel, Joel D. ....	157, 184	Butman, John A. ....	217	Cheng, Zhiliang .....	163
Bohnstedt, Bradley .....	322	Byrne, Matt .....	P52	Chery, Daphney R. ....	200
Bokka, Kishore .....	84	Caenen, Annette .....	175	Chesler, Naomi C. ....	60, 142, 192
Boncell, Katie .....	127	Cai, Luyao .....	85	Chi, Chun-Wei .....	P115
Bongiorno, Tom .....	32	Cai, Yunliang .....	247, 289	Chiastra, Claudio .....	57, 106
Bonner, Tara .....	216	Cai, Zhonghou .....	311	Chien, Chun .....	263
Bonnevie, Edward D. ....	92	Calve, Sarah .....	288	Chin, Chih-Liang .....	P242
Boorman-Padgett, James F. ....	215	Calvo, Begonia .....	P259	Chinnasami, Harish .....	P120
Borghini, Alessandro .....	271	Camacho-López, Santiago .....	117, P261	Chinnathambi, Sathivel .....	P99
Bouhira, Nesrine .....	P64	Camarillo, David B. ....	155, 222	Chintalapani, Gouthami .....	268
WITHDRAWN					
Boulware, David .....	239	Cameron, Andrew R. ....	199	Chopard, Bastien .....	P229
Bouten, Carlijn V. C. ....	15, 160, P111, P219	Campas, Otger .....	243	Chou, Dennis P. ....	P81
Boutouyrie, Pierre .....	P210	Campbell, Bradley C. ....	P148	Chowdhury, Shoieb .....	322
Bowler, Meghan .....	39	Campbell, Ian C. ....	137	Christofidou-Solomidou, Melpo .....	238
Bozkaya, Tijen Alkan .....	P272	Campolettano, Eamon .....	P49	Chu, Chia-Ye .....	70
Bozzi, Silvia .....	230	Campolettano, Eamon T. ....	P50	Chua, Kong Chun .....	314
Bradfield, Connor .....	290	Canchi, Tejas .....	P206	Chueh, Juyu .....	P212
Bradfield, Connor A. ....	251	Canelon, Silvia P. ....	P103	Cil, Akin .....	P143, 211
Bradney, Michael .....	P61	Canino, J. Miles .....	72	Cirka, Heather .....	P97
Braun, Audrey .....	P197, 292	WITHDRAWN			
Braun, Nicholas J. ....	P196	Cann, Philippa M. ....	P144	Claeson, Amy A. ....	90, 198
Brazile, Bryn .....	133, P175	Canton, Gador .....	P256	Claessens, Tom .....	100
Brenneman, Jack .....	309	Cao, Xuan .....	284	Claiborne, Thomas E. ....	276
Breslavskiy, Ivan .....	P225	Capin, Jacob J. ....	213	Clark, Cyndi .....	2
Brink, Hannah .....	32	Carare, Roxana O. ....	P66	Clarke, Geoffrey D. ....	194
Brisson, Becky K. ....	327	Carniato, Sarena .....	P212	Clarke, Samantha A. ....	139
Brockmeyer, Douglas L. ....	8	Caro, Colin G. ....	P241	Clegg, Peter D. ....	308
Bromley, Amy .....	P207	Carter, Lauren .....	313	Clifford, Christopher .....	102
Brown, Amy G. ....	256	Cassel, Kevin .....	P244, P245	Coats, Brittany .....	P52, 250, 282
Brown, Justin L. ....	P110	Castile, Ryan .....	161, 188	Coccolone, Austin .....	277
Brüel, Annemarie .....	22	Caulk, Alexander W. ....	16	Cohen, Noa .....	P169
Bruse, Jan .....	271	Centola, Matteo .....	262	Colbrunn, Robb .....	216
Buchak, Jacqueline .....	167	Ceruolo, Melissa .....	152	Colby, Samuel A. ....	P147
Buchanan, Thomas S. ....	213	Cha, Thomas D. ....	12	Colter, Jourdan .....	282
Buchholz, Kyle S. ....	53	Chahine, Nadeen .....	P109, 166	Colvin, Daniel C. ....	150
Buck, Amanda K. W. ....	150	Chahine, Nadeen O. ....	285	Concannon, Jamie .....	P214
Buckley, Mark R. ....	126	Chamberlain, Aaron .....	161, 188	Cone, Stephanie G. ....	P159
Buehler, Markus J. ....	165	Chamberlain, Connie S. ....	261	Connizzo, Brianne K. ....	307
Buganza Tepole, Adrian .....	94	Chan, Calvin A. ....	212	Conoan, Nicholas .....	242
Buksa, Justin .....	181	Chan, Deva C. ....	217	Constantinides, Georgios .....	149
Bulinski, J. Chloe .....	42	Chan, Warren .....	239	Constantinou, Marios .....	149
		Chandrasekaran, Prashant .....	128	Conti, Stephen F. ....	P148
		Chandrasekaran, Sandhya .....	P158	Converse, Matthew I. ....	190
				Conway, Cassandra K. ....	255

Coogan, Jessica .....	P155	DeLorenzo, Robert A. ....	324	Duma, Stefan M. ....	P96
Cook, James L. ....	96	Demtropolis, Constantine K. ....	251	Dumoulin, Charles .....	172
Copeland, Katherine M. ....	P216	Dender, Hunter T. ....	P85	Dunaway, David .....	271
Corbett, Richard W. ....	P241	Deng, Gang .....	235	Duncan, Neill .....	P241
Corbiere-Gale, Nicole C. ....	67, P82	Deng, Yuefan .....	28	Dunham, Chelsey .....	161, 188
Cornelison, Robert C. ....	121	De Nisco, Giuseppe .....	230	Duraiswamy, Nandini .....	276
Corr, David T. ....	P119, P131, 261	De Oliveira, Victor .....	P44, 303	Durney, Krista M. ....	179
Cortes, Daniel H. ....	10	Depalle, Baptiste .....	165	Dyment, Nathaniel .....	259
Cosgrove, Brian D. ....	37	Dereli-Korkut, Zeynep .....	P115	Dyrna, Felix .....	259
Cotsarelis, George .....	73	Deshpande, Vikram .....	286	Earnest, Brittany .....	29
Coudrillier, Baptiste .....	48	Deshpande, Vikram S. ....	40, P107, P125, 203	Easley, Thomas F. ....	4
Crane, Emily .....	290	Desrosiers, Laurephile .....	255	Eaton, John K. ....	P237
Crawford, Sean A. ....	P202	Devarakonda, Surendra B. ....	172	Eberhardt, Alan .....	P36, P48, P76, 114
Crestanello, Juan .....	99, P240	Devesa-Cordero, Carolina .....	233	Ebraheim, Nabil .....	7, P154
Crestanello, Juan A. ....	P236	Devia-Cruz, Luis F. ....	117, P261	Eckmann, D M. ....	237
Crestenello, Juan .....	P235	Devireddy, Ram .....	P114, P120	Edgar, Lowell T. ....	64
Crognale, Valentina .....	P170	De Vita, Raffaella .....	254, 295	Edison, Natalia .....	P169
Crompton, Phil .....	108	Deymier, Alix C. ....	165, 311	Effat, Mohamed A. ....	P46
Cui, Shihai .....	P195	Dhume, Rohit .....	306	Effiong, Linda A. ....	20
Cumsky, Jameson L. ....	195	Dhume, Rohit Y. ....	44, 80, 197	Ehret, Alexander E. ....	257
Cunnane, Eoghan M. ....	258	Diamond, Scott .....	279	Einav, Shmuel .....	107
Cuomo, Federica .....	232	Diaz-Portela, Paola .....	3	Elgafy, Hossein .....	7, P154
	WITHDRAWN	DiCristofaro, Steve .....	152	El-Hamamsy, Ismail .....	P188
Dabagh, Mahsa .....	P254	Diffot, Nanette .....	P186	Elias, John J. ....	P95
Dahl, Joanna D. ....	P126	Dignam, John .....	P81	Eliason, Travis .....	151
Dai, Eric N. ....	37	Di Martino, Elena .....	P207	Elkins, Christopher J. ....	P237
Dai, Letian .....	P128	Ding, Yonghui .....	77	Elliott, Dawn .....	92
Dailey, Andrew T. ....	8	Dini, Daniele .....	P198	Elliott, Dawn M. ....	11, P39, 90, 123, 189, 310
Dallo, Shatha F. ....	P121	DiPrete, Caleb .....	32		
Dallon, John .....	P101		WITHDRAWN	Ellis, Benjamin J. ....	8
Damaser, Margot .....	P175	Dollery, Jennifer .....	99, P235, P236	Elmasry, Shady .....	P150
Dames, Chris .....	171	Donatelli, Gregory M. ....	120	Elovitz, Michal A. ....	256
D'Amore, Antonio .....	122	Dong, Chaoke .....	P90	Elsaid, Nahla .....	131
Dandekar, Eshan M. ....	P92	Dorairaj, Syril K. ....	136	Elsner, Jonathan J. ....	P169
Daniel John, Jobin .....	P153	Doud, Ryan .....	P36	Emmott, Alexander .....	P188
D'Arcy, Sheena .....	P68	Dougherty, John .....	P190	Emonet, Thierry .....	244
Darke, Jim D. ....	P92	Doughterty, Ronald L. ....	321	Enders, Jacob .....	P124
Das, Dipjyoti .....	244	Doyle, Matthew G. ....	P202	Ennis, Christina .....	33
Dasi, Lakshmi P. ....	99, P235, P236, P240	Doyran, Basak .....	125	Enomoto-Iwamoto, Motomi .....	200, 327
Davidson, Lance .....	50, 246	Drach, Andrew .....	1, 105	Eppelheimer, Maggie .....	292
Davis, Michael J. ....	65	Drach, Borys .....	330	Eppelheimer, Maggie S. ....	P197
Davis, Niall F. ....	258	Drakopoulos, Michael A. ....	288	Erickson, Alek .....	242
Dawahare, James H. ....	184	Drapaca, Corina S. ....	10	Eshtehardi, Parham .....	169
Deaton, Nancy J. ....	98	Dray, Nicolas .....	244	Eskandari, Mark .....	303
de Bakker, Chantal M. J. ....	19, 180	Driscoll, Tristan P. ....	37	Eskandari, Mona .....	43
De Beule, Matthieu .....	300	Drost, Joshua P. ....	P83	Esmaily-Moghadam, Mahdi .....	P230
Debski, Richard E. ...	P95, P160, P162, 212	Drost, Michael .....	71	Estell, Eben G. ....	42
Debus, Kristian .....	P253	Drouet, Christophe .....	165	Estrada, Ana C. ....	139
Debusschere, Nic .....	300	Du, Yu .....	75	Ethier, Ross .....	48, 137, 177, 297
Decker, William .....	291	Dubini, Gabriele .....	106	Evans, Avery J. ....	29
Deepak, Vishwa .....	P100	Dudley, Andrew .....	242	Evans, Emily .....	P101
de Kleijn, Dominique .....	P242		WITHDRAWN	Evans, McKenzie C. ....	P85
del Alamo, Juan Carlos .....	233	Duffy, Michael P. ....	183	Everingham, John B. ....	P47
Delgado-Montero, Antonia .....	233	Duffy, Sharon .....	P203	Faghih, Mohammad M. ....	25, P251
Del Gaudio, Costantino .....	P170			Fan, Li .....	125

AUTHOR INDEX BY PRESENTATION NUMBER

Fan, Shongshan .....	191	Gao, Huajian .....	P216	Gogte, Priyanka .....	136
Fanton, Michael G. ....	155	Gao, Madeleine A. ....	202	Goins, Beth .....	194
Farahmand, Masoud .....	P226, P269	Gao, Mingyuan .....	P128	Goldblatt, Zachary .....	P97
Färnqvist, Kenneth .....	P84	Gao, Yuan .....	293	Golman, Mikhail .....	201
Farrell, Megan J. ....	73	Garbe, James C. ....	79	Gomez, Arnold D. ....	131, 132
Farrokhi, Shawn .....	P95	Garcia, Kara E. ....	91	Gomezrueda, Rebecca .....	69
Fatemifar, Fatemeh .....	140	García-Rodríguez, Sylvana .....	229	Gong, Yan .....	239
Favre, Philippe .....	P88	Gardner, Thomas .....	20	Gonzales, David A. ....	167
Feinstein, Jeffrey .....	P237	Gardner, Thomas R. ....	201	Gonzalez, Alexandro .....	P37
Feldman, Marc D. ....	140	Garg, Ayush A. ....	P124	Gonzalez, L. Fernando .....	P254
Feng, Aaron .....	330	Gargac, Joshua .....	P79	Gonzalez-Mansilla, Ana .....	233
Feng, Yuan .....	P128, 293	Gartner, Zev J. ....	79	Good, Bryan .....	108
Feng, Yusheng .....	324	Gaskill, Christa .....	P70	Goodwin, Katharine .....	245
Feola, Andrew .....	48, 297	Gassensmith, Jeremiah J. ....	P68	Gorman, Joseph H. ....	1, 141, P215
Fernandez-Avilés, Francisco .....	233	Gaul, Robert .....	17	Gorman, Robert C. ....	1, 141, P215
Ferruzzi, Jacopo .....	93, 232	Gayzik, F. Scott .....	218, 291	Gounis, Matthew .....	P212
Ferry, Dawn .....	112	Gayzik, Scott .....	P178, P201	Graham, Brian T. ....	89, 186
Figliola, Richard .....	P230, 313	Ge, Liang .....	P188	Graves, Jordan .....	330
Figuroa, C. Alberto .....	232	Gedroyc, Wladyslaw M. W. ....	P241	Grechy, Lorenza .....	P241
Fijal, Paul .....	9	Gee, James C. ....	90	Greene, Katelyn .....	P178
Finol, Ender A. ....	P44, 106, P183, P184, 194, P206, P259, 303	Geindreau, Christian .....	269	Greenwald, Stephen .....	P210
Finsberg, Henrik .....	P113	Gellner, Ryan .....	P49	Greenwald, Steve E. ....	264
Fiorentino, Niccolo M. ....	P147	Gellner, Ryan A. ....	P50	Grier, William K. ....	260
Fischenich, Kristine M. ....	127	Gendron, Remi .....	309	Griffin, Michael T. ....	280
Fischer, Kenneth .....	P134	Genin, Guy M. ....	165, 201, 311	Grobbe, Marissa .....	P130
Fisher, Matthew B. ....	P159	Georgakopoulos, Dimitrios .....	P57, P227	Grodzinsky, Alan .....	329
Fissell, William H. ....	150	George, Stephanie M. ....	281	Grodzinsky, Alan J. ....	307
Fite, Kevin B. ....	72	George, Uduak .....	84	Grosberg, Anna .....	P106
Fitzgerald, Sarah .....	133	Geraldes, Diogo M. ....	48	Groszek, Joseph J. ....	150
FitzGibbon, Brian .....	18	Ghaffari, Mahsa .....	P249, P270	Grover, Hannah .....	P191
Flatow, Evan L. ....	309	Ghaffari, Roozbeh .....	152	Grundeken, Maik J. ....	106
Fleeter, Casey M. ....	P228	Ghoneim, Aly .....	P188	Grutzendler, Jaime .....	235
Fleischer, Candace .....	56	Ghosh, Ram P. ....	104	Gu, Qimei .....	P72
Fleischmann, Dominik .....	265	Giarra, Matthew N. ....	P265	Guccione, Julius .....	144
Flemister, Dorma C. ....	P240	Gibbs, Christina .....	174	Guertler, Charlotte A. ....	249
Floren, Michael .....	77	Gibely, George J. ....	276	Guisbert, Eric .....	119
Foo, Choon Chiang .....	319	Giddens, Don .....	56	Guleyupoglu, Berkan .....	P201
Forbes, Rachel .....	150	Gienger, Edwin B. ....	251	Gullbrand, Sarah E. ....	123
Forbes, Thomas L. ....	P202	Gijsen, Frank .....	59	Gunning, Paul S. ....	176
Foreman, K. Bo .....	153	Gil, Antonio J. ....	P218	Gupta, Akash .....	P45, P226
Forte, Antonio .....	P198	Gillespie, Callan M. ....	216	Gupta, Prachi .....	28
Frakes, David .....	P254	Gillespie, Robert J. ....	195		WITHDRAWN
Francois, Christopher J. ....	318	Gilmanov, Anvar .....	101	Gurkan, Umut A. ....	P271
François, Christopher J. ....	229	Gilvarry, Michael .....	P203	Gurunathan, Saravana Kumar .....	P153
Franklin, Matthew .....	326	Gladson, Santhi .....	P70	Gustafson, Jonathan A. ....	P95
Frazer, Lance F. ....	P134	Gleason, Thomas G. ....	302	Gustafson, Peter .....	P139
Fujie, Hiromichi .....	P41, P160, 214	Gleghorn, Jason P. ....	82	Gustafson, Peter A. ....	273
Fung, Ashley K. ....	P163	Glenn, Ian C. ....	299	Gutierrez, Carlos .....	303
Furdella, Kenneth J. John. ....	P173	Glunt, Katherine .....	P141	Gutierrez-Franco, Juan D. ....	P53
Gadde, Manasa .....	34	Godakhindi, Varsha S. ....	P65	Haas, Nicholas J. ....	216
Gaewsky, James .....	P178, 218	Godinho, Marta S. ....	264	Habtegebriel, Yeabsra B. ....	P157
Galatz, Leesa .....	161	Godwin, Nathaniel A. ....	P85	Hacker, Tim A. ....	60
Gallo, Diego .....	57, 230, P248, 270	Goel, Vijay K. ....	7, P154	Hacker, Timothy A. ....	142
Gallos, George .....	257	Goergen, Craig .....	234	Hagen, Matthew W. ....	147
		Goergen, Craig J. ....	255, 288	Hagiwara, Yasufumi .....	P105

- Hair, Jackson B. .... 231  
Haj-Ali, Rami ..... P234  
Halevi, Rotem ..... P234  
Hall, Jennifer L. .... P205  
Hall, Matthew ..... 81  
Ham, Trevor R. .... 110  
Hamdan, Ashraf ..... P234  
Hamid, Qudus ..... P116  
Hammel, Chris ..... 330  
Hammes, Mary ..... P244, P245  
Han, Biao ..... 200, 204  
Han, Bumsoo ..... 35, P61  
Han, Hai-Chao ..... 140, 194  
Han, Liang ..... 235  
Han, Lin ..... 125, 128, 129, 200, 204, 327  
Hang, Tianqi ..... 313  
Hannon, Bailey G. .... 137  
Hansen, Kirk B. .... 30  
Hariharan, Prasanna ..... 276  
Harley, Brendan A. C. .... 260  
Harrigan, Timothy P. .... 251, 290  
Harrison, David G. .... 16  
Hart, David A. .... 312  
Hart, Richard T. .... P136  
Hasan, D ..... 227  
Haskett, Darren G. .... 122  
Hassanipour, Fatemeh ... P75, P262, P267  
Hatami-Marbini, Hamed ..... P260  
Hatoum, Hoda ..... 99, P235, P236, P240  
Haugh, Ellen M. .... 22  
Haut, Roger C. .... 221  
Haut Donahue, Tammy ..... 130, 178  
Haut Donahue, Tammy L. .... 127  
Hawes, Jie ..... 225  
Hayes, Daniel ..... P114  
Hazelwood, Scott ..... P53, P92  
He, Kunhou ..... 271  
He, Lijuan ..... P195  
Heard, Wendell M. R. .... P165  
Hebbar, Ullhas U. .... P46  
Heeder, Paul D. .... 221  
Heidari Pahlavian, Soroush ..... 173, 292  
Heitkemper, Megan ..... P235  
Helmke, Brian P. .... 29  
Henak, Corinne R. .... P146  
Henninger, Heath ..... P194  
Heo, Su-Jin ..... 37, P39  
Herchenhan, Andreas ..... 262  
Herget, Eric ..... P207  
Herman, Alex ..... 69  
Herman, Alexander ..... 276  
Hernandez, Paula ..... P109  
Hernandez, Rafael ..... 323  
Herron, Michael R. .... 8  
Hestekin, Jamie ..... P118  
Hester, Robert L. .... 133  
Heyden, Michael J. .... P136  
Higginson, Jill ..... 68  
Hinds, Monica ..... 147  
Hirayama, Kodai ..... P55  
Ho, Sheldon ..... P246  
Hoard, Lindsay ..... 71  
Hockenbery, Zachary M. .... 243  
Hodges, Justin D. .... P253  
Hodges, Wyatt ..... 171  
Hoffman Ruddy, Bari ..... 62  
Holley, Scott ..... 244  
Holmes, Jeffrey W. .... 13, 139, P189  
Holt, Andrew W. .... 281  
Hood, R. Lyle ..... 324  
Horner, Marc ..... 104  
Horton, Bethany J. .... 121  
Horvat, Nino ..... P204  
Hou, Chieh(Jay) ..... 283  
House, Michael ..... 257  
Houston, James ..... 292  
Houston, James R. .... P197  
Howard, William E. .... 281  
Howell, Kristen ..... 263  
Howerton, Stephen J. .... 298  
Howk, Mary ..... P212  
Hoxha, Kevt'her ..... 327  
Hoyle, John M. .... P48  
Hoyt, Kenneth ..... P68  
Hsia, Tain-Yen ..... P230, 313  
Hsiai, Tzung ..... 316  
Hsu, Chih-Yang ..... P249  
Hsu, Ming-Chen ..... P221  
Hu, Minyi ..... P104  
Hu, Nan ..... P191  
Hu, Shuijin ..... P128  
Hu, Xiaoping ..... 56  
Hu, Yunxiao ..... P128  
Hua, Yi ..... 134  
Huang, Alice H. .... 263  
Huang, Hsiao-Ying Shadow ..... 45, P158, P223  
Huang, Qinghai ..... 268  
Huang, Shicheng ..... P191  
Hubel, Allison ..... P63  
Hudson, David ..... P86  
Hugenberg, Nicholas R. .... P119  
Huh, Dongeun (Dan) ..... 73  
Huh, Seon Jeong ..... P132  
Humayun, Mark S. .... 63  
Hume, Cameron ..... P117  
Humphrey, Jay D. .... 16, 228, 232  
Hung, Clark T. .... 42  
Hussein, Amira I. .... 23  
Hynes, Niamh ..... 18, P214  
Hyypio, Jeffrey D. .... 325  
Iannaccone, Francesco ..... 57, 300  
Ii, Satoshi ..... P43, 266  
Ikhimwin, Bernard ..... P266  
Ilegbusi, Olusegun J. .... 62  
Ilich, Anton ..... P271  
Imhauser, Carl W. .... P164, 215  
Ingram, Patrick ..... P60  
Iori, Francesco ..... P241  
Iozzo, Renato ..... 200  
Iozzo, Renato V. .... 125, 204  
Ireton, Candace ..... P86  
Islam, Muhymin ..... 32  
Ismaguilova, Alina ..... P207  
Israeli, Shmuel ..... P169  
Issen, Kathleen A. .... 67, P82  
Ita, Meagan ..... P123  
Iwaskiw, Alexander S. .... 251  
Jackson, Alicia ..... P168  
Jacobs, Christopher R. .... 182, 183  
Jacobsen, Timothy ..... P109, 166  
WITHDRAWN  
Jamalian, Samira ..... P266  
Jan, Ning-Jiun ..... 134  
Janssen-van den Broek,  
Marloes W. J. T. .... 160  
Jaramillo, Hector E. .... P152  
Jarral, Omar A. .... 103  
Jastifer, James ..... P139  
Jbaily, Abdulrahman ..... P181  
Jeelani, Owase ..... 271  
Jena, Sampreeti ..... P74  
Jenis, Louis G. .... 12  
Jensen, Morten O. .... 5, P220  
Jerrell, Rachel J. .... 39  
Ji, Songbai ..... 222, 247, 289  
Jiang, Jingfeng ..... 268  
Jiang, Lin ..... P262  
Jimenez, Juan M. .... 66  
Jog, Amod ..... 132  
Johansen, Peter ..... P211, P238  
Johnson, Camille ..... 102  
Johnson, Camryn ..... 58  
Johnson, Curtis L. .... 249  
Johnson, Elaine C. .... 177  
Johnson, Haden A. .... P200  
Johnson, Luke ..... 269  
Johnson, Sarah ..... P203  
Jones, Derek ..... 218  
Jones, Jake ..... P118  
Jones, Michael ..... 252  
Jones, Michael D. .... P200  
Jones, Travis ..... P124  
Jortberg, Elise ..... 152  
Joukar, Amin ..... 7, P154

AUTHOR INDEX BY PRESENTATION NUMBER

Jülich, Dörthe .....	244	Knoepp, Leise .....	255	Lee, Hee-Kyoung .....	282
Kackley, Hannah .....	P77	Knutsen, Andrew K. ....	217	Lee, Jia-Jye .....	P189
Kadowec, Jennifer .....	P141	Ko, Yi-An .....	169	Lee, JuEun .....	P132
Kahn, Andrew M. ....	170, 233	Kok, Annette M. ....	169	Lee, Juhyun .....	316
Kahn, Jeffrey .....	P65	Kokai, Lauren E. ....	122	Lee, Lik Chuan .....	P113, P130, 267
Kahn, Mark L. ....	66	Kollech, Hirut G. ....	47	Lee, Teng-Chun .....	P231
Kakuta, Akira .....	P38	Kondiboyina, Avinash .....	P247	Lee, William E. ....	P51
Kaldowec, Jennifer .....	69	Kong, Fanwei .....	297	Lee, Wonsae .....	19
Kandail, Harkamaljot .....	P233	Konieczny, Stephen .....	P61	Lemmex, Devin B. ....	312
Kang, James D. ....	12	Korenczuk, Christopher .....	306	Lemons, Jack .....	P36
Kang, Peiyuan .....	P65, P68	Koshiyama, Kenichiro .....	P43	Lenchik, Leon .....	24
Kapnisis, Konstantinos .....	149	Kotelsky, Alexander .....	126	Leo, Hwa Liang .....	314
Karagoz, Haldun .....	P272	Koya, Bharath .....	291	Leong, Kam W. ....	202
Karp, Seth .....	150	Kraft, Reuben H. ....	P135	Leupin, Olivier .....	262
Karšaj, Igor .....	P204	Krams, Rob .....	P247	Levenston, Marc E. ....	43
Kartha, Sonia .....	163, 187	Krausz, Judit .....	P169	Levine, William N. ....	201
Kasukonis, Benjamin .....	P193	Krawiec, Jeffery T. ....	122	Levitt, Michael R. ....	269
Kaufman, Kenton .....	178	Ku, David N. ....	280	Li, Bei .....	P199
Kaul, Nayyan .....	P223	Kucukal, Erdem .....	P271	Li, Chen .....	232
Kavarana, Minoo .....	P57	Kuhl, Ellen .....	15, 43, P219	Li, Chenghai .....	P115
Kavarana, Minoo N. ....	P227	Kumar, Gautam .....	148	Li, David S. ....	141, P215
Keah, Niobra M. ....	164	Kumar, Pawan .....	78	Li, Guoan .....	12
Kealhofer, David A. ....	243	Kung, Ethan .....	P45, P57, P226	Li, Haiyan .....	P195, P199
Keely, Patricia .....	P60	Kung, Ethan O. ....	P227, P269	Li, Haiyue .....	93, P171
Keller, Sara B. ....	150	Kuo, C.-C Jay .....	316	Li, Jeffrey .....	P67
Kelly, Daniel J. ....	38, 157, 199	Kuo, Calvin .....	155, 222	Li, Mingqiang .....	202
Kenny, Melissa C. ....	P265	Kurniawan, Nicholas A. ....	P111	Li, Ning .....	75
Kensinger, Clark D. ....	150	Kurt, Mehmet .....	46, P180	Li, Qing .....	125, 128, 129, 204, 327
Kent, Robert N. ....	215	Kuruppullage, Don Nadun S. ....	62	Li, Xiuying .....	236
Kersh, Mariana E. ....	22	Kuxhaus, Laurel .....	67, P82, 109	Li, Yan .....	P191
Key, Nigel S. ....	P271	Kwon, Hyun-Jung .....	P94	Li, Yihan .....	19, 180
Khalighi, Amir H. ....	1, 105, 328	Kyrkou, Maria .....	149	Li, Zhe .....	319
Khan, Kamran Z. ....	12	LaBarge, Mark A. ....	79	Li, Zhen .....	P128
Khandha, Ashutosh .....	213	Labuda, Richard .....	P197, 292	Li, Zhigang .....	247, 289
Khang, Alex C. ....	74	LaDisa, John .....	P233	Liachenko, Serguei .....	5
Khani, Mohammadreza .....	174, P263	Lai, Eric .....	P215	Liao, Dezhi .....	P196
Khanna, Rohit .....	P129	Lai, Victor K. ....	80, 325	Liao, Jun .....	133, P175, P216, 252
Khoobyar, Anahid .....	63	Lake, Spencer .....	161, 188	Lin, Albert .....	212
Khoshgoftar, Mehdi .....	86	Lal, Hind .....	14	Lin, Liqiang .....	P122
Khosravi, Ramak .....	16	Lally, Caitriona .....	17	Lin, Yuan .....	284
Kia, Mohammad .....	P164	Lam, Wilbur .....	32	Linder-Ganz, Eran .....	P169
Kiapour, Ali .....	7, P154	Lambeth, Emily P. ....	P159	Linderman, Stephen W. ....	201
Kill, Birgitte .....	22	Lan, Hongzhi .....	P268		WITHDRAWN
Kim, Dong Hwa .....	123	Lanier, Matthew .....	172	Lindsey, Stephanie .....	317
Kim, John .....	P193	Lao, Yeh-Hsing .....	202	Linninger, Andreas .....	P249, P270
Kim, Jungsil .....	304	Lasch, Michael .....	324	Linton, MacRae F. ....	58
Kim, Louis J. ....	269	Lavon, Karin .....	P234	Liphardt, Jan T. ....	326
king, Brittany .....	P141	Lawton, Andrew .....	244	Litchman, Joshua .....	P212
Kingsley, David M. ....	P131	Leahy, Thomas .....	330	Little, Jane A. ....	P271
Kirby, Matthew L. ....	P142	Learn, Greg D. ....	195	Liu, Anna .....	32
Kizilski, Shannen B. ....	197	Leask, Richard .....	P188	Liu, Eric .....	324
Klisch, Stephen M. ....	P53, P92	Lee, Andrea H. ....	310	Liu, Janet .....	P87
Knapik, Derrick M. ....	195	Lee, Chanyoung .....	P135	Liu, Jie .....	9
Knarr, Brian .....	68	Lee, Chung-Hao .....	P222, 322	Liu, X. Sherry .....	19, 125, 180
Knight, Martin M. ....	185	Lee, Hee Joon .....	P132	Liu, Yaling .....	31

- Liu, Yang ..... 19  
Liu, Yingtao ..... 322  
Liu, Yue ..... P216  
Lo, Ian K. Y. .... 312  
Loaiza, Johnfredy ..... 23  
Lockwood, Howard ..... 297  
Loerakker, Sandra ....15, P102, P107, 160,  
P219  
Loh, Yue Yin ..... P246  
Long, Mian ..... 75  
Lopata, Richard G. P. .... 160, 305  
Loth, Dorothy ..... 292  
Loth, Francis ..... 173, P197, 292  
Lou, Emil ..... P108  
Low, Adriel ..... P242  
Lu, Jiaqi ..... 45  
Lu, Miao ..... P59  
Lu, X. Lucas ..... 191  
Lu, Xin L. .... 129  
Lu, Yintong ..... P181  
Lu, Yuan-Chiao ..... 217  
Lubkin, Sharon ..... 84  
Lucio, Adam A. .... 243  
Luetkemeyer, Callan M. ....P161, P166  
Lugo-Cintrón, Karina M. ....P60  
Lujan, Trevor J. ....P47  
Luongo, Mary E. .... 251  
Lv, Mengxi ..... 191  
Lv, Wenle ..... P195  
Ma, Ronghui ..... P59, P67, P72, 116  
Ma, Yu ..... P157  
Ma, Yuntao ..... P69  
Maak, Travis G. .... 87  
Macaskill, Charlie ..... 65, P266  
Macruz, Fabiola ..... P180  
Maghsoudi-Ganjeh, Mohammad ..... P138  
Mahadevan, L ..... 51, 241  
Mahadevan, Nikhil ..... 152  
Mahendroo, Mala ..... 296  
Maher, Gabriel D. .... P264  
Maher, Suzanne A. .... 86  
Mahipat, Aman ..... P183  
Mahluf, Lotem ..... P169  
Mahmoodi, S. N. .... P85  
Mahmoudzadeh Akherat, S. M.  
Javid .....P244, P245  
Mahutga, Ryan R. .... P205  
Main, Russell ..... 21  
Main, Russell P. .... 124  
Maisonnette, Mariana R. .... 5  
Maiti, Spandan ..... P162, 254, 295, 302  
Majka, Susan ..... P70  
Mahotra, Neil R. .... 90  
Malliaras, P ..... P84  
Malve, Mauro ..... P259  
Manal, Kurt ..... 213  
Mancini, Viviana ..... 55, P210  
Mankame, Omkar ..... P40, P112  
Mankame, Omkar V. .... 315  
Mann, Brenda ..... 282  
Manning, Keefe B. .... 27, 108  
Marais, Louise ..... P210  
Marchi, Benjamin C. ....P161, P166  
Margolis, David S. .... 167  
Marino, Michele ..... 190  
Marom, Gil ..... 104, P234  
Marra, Kacey G. .... 122  
Marsden, Alison L. .... 170, P228, P230,  
P237, P264, 265, P268, 316  
Martin, Bryn ..... P66  
Martin, Bryn A. .... 174, P263  
Martin, Connor L. .... P85  
Martin, Diego R. .... 145  
Martin, Elizabeth ..... P114  
Martin, John T. .... 123  
Martin, Peter T. .... P47  
Martinez-Legazpi, Pablo ..... 233  
Martino, Carlos ..... P117  
Martin-Peña, Alfonso ..... 42  
Martufi, Giampaolo ..... P207  
Masen, Marc A. .... P144  
Mason, Devon E. .... 184  
Mass, Steve ..... 283  
Masters, Kristyn S. .... 6  
Matsagkas, Miltiadis ..... 270  
Mattar, Nurfarah Zaini ..... 253  
Mattucci, Stephen ..... 9  
Mauck, Robert L. .... 37, P39, 92, 123, 164  
Maureira, Pablo ..... 99, P236  
Mazhar, Khadijah ..... 236  
Mazlan, Muhammad ..... P242  
Mazza, Edoardo ..... 257  
Mazzocca, Augustus ..... 259  
McCarthy, Mary Beth ..... 259  
McClellan, Phillip E. .... 195  
McCulloch, Andrew D. .... 13, 53  
McDermott, Anna M. .... 157  
McDonough, Ryan C. .... 76  
McElhinney, Doff ..... P237  
McEvoy, Eoin ..... 203  
McEvoy, Eoin ..... 286  
McEvoy, Eóin ..... P213  
McGarry, Patrick ..... 18, P140, P203, 203,  
P209, P213, P214, 286  
McGee, Orla M. .... 176  
McGinnis, Kevin ..... 213  
McGinnis, Ryan S. .... 152  
McGrane, Bryan ..... 152  
McGuire, Jeffrey ..... 295  
McHugh, Peter ..... 18  
McHugh, Peter E. .... P203, P209, P214  
McIntyre, Oliver ..... 162  
McLean, Nathan ..... 267  
McNally, Craig ..... 154  
McNamara, Laoise M. ....P100, P137, 176  
Meadows, Kyle D. .... 11  
Mecham, Robert ..... 304  
Mecham, Robert P. .... 225  
Meckes, Daniel P. .... 120  
Medero, Rafael ..... P56, 229  
Mehta, Vikram V. .... P247  
Merchant, Naeem ..... P207  
Merkle, Andrew ..... 290  
Merkle, Andrew C. .... 251  
Merkow, Jameson M. .... P264  
Merrill, Thomas L. .... P64, 120  
Merryman, W. David ..... 2, 14, 39, 58, P70  
Merryweather, Andrew S. .... 156  
Mertens, Luc ..... 175  
Meyers, Brett A. .... 234  
Michalek, Arthur J. .... 67, P82  
Michna, Rhys ..... 34  
Midgett, Dan ..... 138  
Midha, Prem ..... 102, 148  
Migliavacca, Francesco ..... 57, 106  
Miller, Jonathon ..... P200  
Miller, Kristin S. .... 95, P165, 255  
Miller, Mark Carl ..... P148  
Miller, R. M. .... P162  
Mirramezani, Mehran ..... 26  
Mirzaei, Ehsan ..... P57, P227  
Mitchell, Jennifer E. .... 120  
Mitra, Kunal ..... P117, 119  
Moalli, Pamela A. .... 254  
Moerman, Astrid ..... 59  
Mofrad, Mohammad R. K. .... 6  
Mohaghegh, Fazlolah ..... P239  
Molony, David ..... 56  
Molony, David S. .... 169  
Mongeon, Francois-Pierre ..... P188  
Mongera, Alessandro ..... 243  
Monson, Kenneth L. .... 190  
Moon, Hye-ran ..... 35  
Moon, Nicolas ..... 20  
Moore, Axel C. .... 89, 186  
Moore, Emily R. .... 182  
Moore, James E. .... 64  
Morbiducci, Umberto ...57, P170, 230, 270  
Moreno, Michael R. .... P182  
Morgan, Elise F. .... 23  
Morgan, Joshua T. .... 82  
Morley, Cameron ..... 77  
Morris, Christopher J. .... 64  
Morrison, John C. .... 177  
Morss Clyne, Alisa ..... 111, P116

AUTHOR INDEX BY PRESENTATION NUMBER

Mortazavi, S. Negin .....	P75	Nolan, David .....	P140	Parle, Eoin P. ....	P137
Mortensen, Jonathan D. ....	156	Nolan, David R. ....	P213	Passoni, Giuseppe .....	230
Morton, Ryan P. ....	269	Noles, Kristen .....	114	Pasteris, Jill D. ....	165
Moshkforoush, Arash .....	P40	Noor, Mariam A. ....	P238	Patel, Dharmesh .....	308
Mossa-Basha, Mahmud .....	P256	Notermans, Thomas M. W. ....	P102	Patel, Miten B. ....	P247
Mubyana, Kuwabo .....	261	Novak, Tyler .....	124	Patel, Shyamal .....	152
Mueller, Becky C. ....	154	Noyvirt, Roni .....	P169	Pathak-Ray, Vanita .....	136
Mueser, Ashlyn .....	27	Nunes, Kenia .....	119	Patnaik, Sourav .....	P183, P184, P206
Mugler, Andrew J. ....	35	Nunes Bruhn, Kenia .....	P117	Patnaik, Sourav S. ....	P175
Mukherjee, Debanjan .....	P252	Nygaard, Hans .....	P211	Patterson, Kelly .....	71
Muli, Dominic .....	162	O'Hern, Corey .....	244	Patterson, Rita M. ....	70
Muliana, Anastasia .....	P182	O'Regan, Declan P. ....	103	Patterson, Rita P. ....	P81
Muluk, Satish .....	P44, 303	Oakes, Jessica M. ....	61	Pauly, Hannah .....	130
Mulvihill, John .....	48	Oba, Ryan W. ....	P240	Pauly, Kim B. ....	P180
Munden, Paul M. ....	321	Oberai, Assad A. ....	P119	Pauzenberger, Leo .....	259
Munson, Jennifer M. ....	121	O'Brien, Fergal J. ....	199, 258	Pazos, Marta .....	177
Munuhe, Timothy .....	P67, P72, 116	O'Cain, Cody M. ....	P165	Pearle, Andrew D. ....	P164, 215
Murali, Karthik .....	63	O'Connell, Grace .....	P42, P156	Pearson, S .....	P84
Murikinati, Sasidhar .....	235	O'Connell, Grace D. ....	P157, P181, 196	Pedersen, Claus B. W. ....	85
Murphy, Brian .....	152	O'Connor, Catherine A. ....	P213	Pedrigi, Ryan M. ....	P247
	WITHDRAWN	Odegard, Gregory .....	178	Peelukhana, Srikara V. ....	P46
Musahl, Volker .....	P162, 212	Oftadeh, Ramin .....	204, 329	Peirce, Shayn M. ....	P189
Myers, Kristin .....	257, 296	Oguz, Gokce Nur .....	P272	Peirlinck, Mathias .....	300
Myers, Matthew R. ....	172	Ohashi, Toshiro .....	P105	Pekkan, Kerem .....	P272
Mysore, Sandeep .....	P260	Ohta, Makoto .....	P229	Peloquin, John M. ....	11, P39
Nair, Arun .....	165	Okada, Yohei .....	214	Penkova, Anita N. ....	63
Nair, Priya .....	P254	Okafor, Ikay .....	148	Perez, Manuel .....	P40
Nakadate, Hiromichi .....	P38, 220	Okafor, Ikechukwu .....	102	Perez del Villar, Candelas .....	233
Nakagawa, Daichi .....	227	Okamoto, Ruth J. ....	249	Perez-Nevarez, Manuel .....	P112
Nakamura, Shinichi .....	220	Oliveira, Amanda .....	119	Pernot, Mathieu .....	175
Narayanan, Sriram .....	P206	Olivier, Alicia K. ....	P200	Pescador, Ricardo .....	324
Natesan, Harishankar .....	171	Omens, Jeffrey H. ....	13, 53	Peters, James .....	P190
Nedrelow, David S. ....	P167, 325	Onar-Thomas, Arzu .....	323	Peters, Kara .....	P158
Nelson , Celeste M. ....	245	Ono, Yohei .....	312	Pettersen, Niels J. ....	305
Nerurkar, Nandan L. ....	51, 241	Oomen, Pim J. A. ....	15, 160	Pewowaruk, Ryan J. ....	192
Neu, Corey P. ....	85, 124	O'Reilly, Brian L. ....	P209	Pfeiffer, Ferris .....	P145
Neuberger, Thomas U. ....	10	Ortigosa, Rogelio .....	P218	Pfeiffer, Ferris M. ....	P80, 96
Newby, N. ....	218	Oshima, Marie .....	P54, P55	Pham, Dzung L. ....	217
Ng, Eddie .....	P206	Oshinski, John .....	56, 173, 174, 223, 231	Philip, Anisha .....	32
Nguyen, Hong .....	P206	Ostrowski, Michael C. ....	33	Philippi, Julie A. ....	302
Nguyen, Quynhhoa T. ....	285	O'Sullivan, Laura M. ....	P137	Phuntsok, Rinchen .....	8
Nguyen, Thao .....	138	Ouyang, Liu .....	125, 129	Piedrahita, Jorge A. ....	P159
Nguyen, Thao D. ....	P172	Oxland, Thomas .....	9	Piepmeier, Joseph .....	235
Nhan-Chang, Chia-Ling .....	257	Ozkaya, Efe .....	46, P180	Pierce, David M. ....	P77, 88
Nia, Hadi T. ....	204	Pagoulatou, Stamatia Z. ....	P243	Pierce, Eric L. ....	98
Nicholls, Art .....	151	Païdoussis, Michael P. ....	P232	Pierce, Robert S. ....	P86
Nicolella, Daniel .....	151, P155	Pankow, Mark .....	P158	Pindado, Jesus .....	152
Niedert, Elizabeth .....	P257	Pant, Anup D. ....	97, 136	Piñero, Alejandro .....	P112
Nielsen, Sten L. ....	P211	Parchami, Neda .....	119	Pirola, Selene .....	103
Nielsen, Steven O. ....	P68	Pardoe, Jennie P. ....	P80	Piskin, Senol .....	P272
Niki, Kiyomi .....	P55	Paredes, J. J. ....	P163	Pitarresi, Jason R. ....	33
Nikolaou, Petros .....	149	Parekh, Aron .....	39	Plank, Gernot .....	143
Nikou, Amir .....	13	Parikh, Shalin .....	P44	Poh, Kian .....	P242
Nishimoto, Keisuke .....	P43	Parisi, Cristian .....	P198	Polk, Andrew .....	P145
Nizami, Saquib A. ....	20	Park, Jaekeun .....	56	Ponsky, Todd A. ....	299

Ponzini, Raffaele .....	230	Rausch, Manuel K. ....	P219, 228	Rozan, Samuel .....	200
Porte, Elze M. ....	P144	Ray, Nicole .....	68	Rozen, Nimrod .....	P169
Potter, Samuel .....	330	Read, A. T. ....	137	RUAN, SHIJIE .....	P195, P199
Pour Issa, Elnaz .....	P112	Reategui, Eduardo .....	P108	Ruberti, Jeffrey A. ....	P172
Prabhakar, Saurabh .....	104	Reeves, Jonathan .....	P210	Rubin, J P. ....	122
Prabhu, Raj .....	133, 252	Rego, Bruno V. ....	1	Ruppel, Edward F. ....	126
Prabhu, Rajkumar .....	P200	Reid Bush, Tamara .....	71, P83	Rutkowski, David R. ....	318
Preciado, Julian A. ....	P108	Reilly, Matthew .....	P184	Rutten, Marcel .....	P208
Price, Christopher .....	76, 89, 186	Reiter, Alex .....	161	Rutten, Marcel C. M. ....	160
Price, Theodore .....	236	Rejeski, W. Jack .....	24	Rutten, Marcel C. M. ....	P111
Price, Veronica A. ....	276	Renani, Mohsen .....	P88, 272	Ryan, Alan J. ....	258
Prince, Jerry L. ....	131, 132	Revuru, Naga Arvind .....	P65	Rylander, Marissa N. ....	34
Pujari, Akshay .....	66	Rex, David .....	P212	Saaid, Hicham .....	100
Puri, Ajit .....	P212	Rexwinkle, Joe .....	P145	Sack, Kevin L. ....	144
Pursell, Erica R. ....	P224, 226	Rey, Julian .....	P58	Sacks, Michael S. ....	1, 98, 105, 141, 168, P215, P221, P222, 328, 330
Putnam, Jacob .....	218	Reynaud, Juan .....	297	Sacks, Michael S. ....	74
Puttlitz, Christian M. ....	P151, 294	Reynolds, Noel .....	286	Sadhal, Satwindar S. ....	63
Pyles, Connor .....	290	Rezvan, Amir .....	56	Saez, Pablo .....	P248
Pyles, Connor O. ....	251	Richards, Mark .....	P242	Safa, Babak N. ....	189
Pyne, Jeffery D. ....	298	Ridwan, Yanto .....	59	Saffarzadeh, Mona .....	218
Qian, Yi .....	P229	Rigos, Jacob .....	166	Safonov, Alexander .....	198
Qin, Alexander .....	P104	Riley, Graham P. ....	308	Saha, Amit K. ....	P121
Qin, Ling .....	125, 200, 204	Ristori, Tommaso .....	P102, P107	Sailer, Anna M. ....	265
Qin, Yi-Xian .....	P104	Rizzo, Giovanna .....	230	Sako, Edward Y. ....	3
Qin, Zhao .....	165	Roach, Koren E. ....	153	Saleh, Kamiel A. ....	122
Qin, Zhenpeng .....	P65, P68, 236	Robbins, Andrew B. ....	P182	Salinas, Manuel .....	P40
Qiu, Suhao .....	293	Roberts, Kevin .....	P118	Salloum, Maher .....	P59
Quigley, Harry .....	138	Robles, Vicente .....	117	Samady, Habib .....	56, 169
Quindlen, Julia C. ....	P176	Roccabianca, Sara .....	P130, P165, P174, P179, P185	Sampath, Smita .....	P242
Quinn, Kyle .....	P118	Rodriguez Vila, Borja .....	88	Samuels, Brian .....	48
Qureshi, Hamna J. ....	255	Rodriguez, Andrea G. ....	74	Sander, Ed .....	P99
Qwam Alden, Arz Y. ....	273	Rodriguez, Jose F. ....	P259	Sanders, Roy .....	P51
Raanani, Ehud .....	P234	Rodriguez Florez, Naiara .....	271	Sanders, Stefan .....	P208
Rabidou, Jake .....	281	Rodriguez y Baena, Ferdinando .....	P198	Sanford, Ryan M. ....	P202
Rabin, Yoed .....	P73	Rogers, John .....	171	Sansom, Kurt R. ....	P256
Race, Jonathan A. ....	P164	Roldán-Alzate, Alejandro .....	P56, 229, 318	Santare, Michael H. ....	189
Rachev, Alexander .....	301	Rolland du Roscoat, Sabine .....	269	Santner, Thomas L. ....	P164
Radhakrishnan, R .....	237	Rollick, Natalie C. ....	312	Santos, Stephany .....	P77
Raghav, Vrishank .....	102, 148	Roman, Alondra .....	P186	Santschi, Elizabeth .....	P134
Raghavan, M .....	227	Romereim, Sarah .....	242	Sarntinoranont, Malisa .....	P37, P58, P177
Raghavan, Suresh M. L. ....	P257	Ronan, William .....	P125	Sass, Lucas R. ....	P263
Rahman, Munsur .....	P143, 211	Roner, Michael .....	P65	Sather, Benjamin J. ....	288
Rais-Rohani, Sammira .....	133	Rossini, Lorenzo .....	233	Sathy, Binulal N. ....	38
Raj, Milan .....	152	Rothenberger, Sean M. ....	10	Saucerman, Jeffrey J. ....	53
Raju, Nivetha .....	314	Rotman, Oren M. ....	104, 107	Savoie, Felix H. ....	P165
Ramachandra, Abhay B. ....	170	Routzong, Megan R. ....	254	Savvopoulos, Fotios .....	P247
Ramasubramanian, Anand K. ....	P121	Rowe, David .....	259	Saw, Shier Nee .....	253
Ramaswamy, Sharan .....	P40, P112, 315	Rowghanian, Payam .....	243	Scali, Salvatore T. ....	P231
Ramo, Nicole L. ....	P151, 294	Rowson, Bethany .....	P96	Scalo, Carlo .....	234
Ramos, SIndia .....	P186	Rowson, Daniel T. ....	185	Scheig, Elizabeth M. ....	P85
Randles, Amanda .....	P254	Rowson, Steven .....	P49, P50, P96, 154	Schiavazzi, Daniele E. ....	170, P228
Randrianalisoa, Jaona .....	P65	Roy, Anuradha .....	P142	Schiavone, Nicole K. ....	P237
Rao, Akshay .....	P185	Roy, Shuvo .....	150	Schievano, Silvia .....	271
Raptis, Anastasios .....	270	Royall, Lorraine .....	P207	Schluns, Jacob .....	P118
Rattanakijsumton, Komsan .....	63				

AUTHOR INDEX BY PRESENTATION NUMBER

Schmidig, Gregg .....	275	Shoga, Janty .....	76	Steucke, Kerianne E. ....	49
Schmidt, John L. ....	249	Showalter, Brent L. ....	90		WITHDRAWN
Schmuck, Eric G. ....	142	Shuman, Jessica .....	P124	Stewart, Gregory .....	174
Schoell, Samantha L. ....	24	Siedlecki, Chris A. ....	27	Stewart, Wade G. ....	82
Scholl, Frank .....	315	Siersema, Peter .....	300	Stiansen, Nicholas .....	187
Schreier, David A. ....	60, 142	Sigal, Ian A. ....	134	Stitzel, Joel D. ....	24, 218
Schroeder, Megan .....	74	Silva, Ikaro .....	152	Stoker, Aaron .....	96, P145
Schumacher, A .....	227	Simionescu, Dan T. ....	194	Stolarski, Henryk .....	101
Schwaner, Stephen A. ....	177, 297	Simon, Peter .....	P51	Stone, Maureen L. ....	131, 132
Schwartz, Andrea G. ....	311	Singh, Anita .....	69, 112, P141	Stone, Nicholas .....	32
Schwendinger-Schreck, Jamie .....	244	Singh, Sagar .....	219	Storaci, Hunter W. ....	P182
Scott, Justin .....	71	Sinno, Talid .....	279	Stott, Shannon L. ....	240
Screen, Hazel R. C. ....	185, 264, 308	Skaro, Jordan M. ....	P53	Stratton, Amanda .....	33
Seelbinder, Benjamin .....	124	Skinner, Matthew J. ....	120	Strother, Charles .....	268
Segers, Patrick ....	55, 100, 175, P210, 300	Skov, Søren N. ....	P238	Stylianou, Antonis .....	P143, 211
Seiber, Breanna N. ....	164	Slepian, Marvin J. ....	28, 104	Subramaniam, Vish .....	P124
Seker, Drew .....	290	Smith, Chad .....	313	Sucosky, Philippe .....	P87, P250
Selby, John .....	P99	Smith, Harvey E. ....	123	Sugawara, Motoaki .....	P55
Sen-Gupta, Ellora .....	152	Smith, Jordan L. ....	167	Sulchek, Todd .....	32
Serino, Gianpaolo .....	P170	Smith, Kenneth L. ....	8	Sulkar, Hema .....	P194
Serre, Maud .....	P65	Smith, Lachlan J. ....	123	Sultan, Sherif .....	18, P214
Serruys, Patrick W. ....	106	Smith, Lucas .....	326	Summers, Richard L. ....	133
Servidio, Damon .....	275	Smith, Olivia .....	191	Sun, Mei .....	128, 204
Serwane, Friedhelm .....	243	Snider, J. Caleb .....	14	Sun, Wei .....	P116, 176
Seta, Francesca .....	193	Snyder-Mackler, Lynn .....	213	Sundaram, Paul .....	P186
Seyed Vosoughi, Ardalan .....	7, P154	Soares, Joao S. ....	168, P215	Sunderland, Kevin .....	268
Seykora, Thomas F. ....	73	Soares, João S. ....	141	Sun Han Chang, Raul A. ....	260
Sganga, Jake A. ....	155	Socha, John J. ....	P265	Sunyer, Raimon .....	P171
Shabanisamghabady, Mitra .....	P227	Soe, Mi Thant Mon .....	P116	Suresh, Hamsini .....	40
Shadden, Shawn .....	P71	Solanki, Prem K. ....	P73	Suryanarayanan, Raj .....	P74
Shadden, Shawn C. ....	26, 30, 143, P192, P252, P268	Solivio, Morwena J. ....	118	Susilo, Monica E. ....	P172
Shah, Anoli .....	7, P154	Solomon, Ruth A. ....	P149	Swaminathan, Swathi .....	P116
Shaik, Mulla Shahensha .....	P114	Somasekhar, Likitha .....	P117	Sweet, Daniel T. ....	66
Shang, Jessica K. ....	P230	Somers, Jeffrey .....	218	Swei, Anisa .....	240
Shar, Jason .....	P250	Song, Jonathan W. ....	33, 78, P124	Swillens, Abigail .....	175
Sharifi Renani, Mohsen .....	P143, 211	Sori, Andrew L. ....	P133, P149	Szczesny, Spencer E. ....	P39
Sharp, M. Keith .....	25, P66, P251	Soslowsky, Louis J. ....	128, 256	Szeri, Andrew J. ....	P181
Shavik, Sheikh Mohammad .....	P130	Sotiropoulos, Fotis .....	101	Szivek, John A. ....	167
Shay, Sheila .....	P70	Soto, Mario J. ....	P186	Taber, Larry A. ....	91
Shazly, Tarek .....	P187, 301	Soung, Do Y. ....	20, 20	Tabima, Diana .....	60
Shcherbakova, Darya .....	175	Spang, Jeffrey T. ....	P159	Tabima, Diana M. ....	192
Shedd, Daniel F. ....	250	Spasic, Milos .....	183	Tabin, Cliff .....	51, 241
Shemesh, Maoz .....	P169	Spiesz, Ewa M. ....	308	Takagi, Tetsuya .....	214
Shemirani, Atena I. ....	93	Spinale, Francis G. ....	P187	Takenaga, Tetsuya .....	212
Shenoy, Vivek .....	81, 287	Sprague, Eugene .....	194	Talman, Lee .....	P189
Shenoy, Vivek B. ....	284, 326	Spurlin, James W. ....	245	Tamimi, Ehab A. ....	P173, 298
Sheriff, Jawaad .....	28	Sridharan, Rukmani .....	199	Tan, Andrea R. ....	42
Sherman, William .....	P106	Srinivasan, Dinesh .....	P206	Tan, J.L .....	P113
Sheth, Nirav .....	152	Srivastava, Vasudha .....	79	Tan, Jifu .....	279
Shetye, Snehal S. ....	256	Staiculescu, Marius .....	304	Tan, Philip M. ....	53
Shi, Wentao .....	31	Stalker, Timothy J. ....	26	Tan, Wei .....	77
Shi, Xiaodan .....	P216	Stannard, James P. ....	96	Tan, X. Gary .....	248
Shirasaki, Shota .....	P38	Stemper, Brian .....	P155	Tan, Zhengchu .....	P198
Shishvan, Siamak S. ....	40, P107, 203	Stephens, Sam E. ....	5	Tanabe, Reo .....	P41
		Stergiopoulos, Nikolaos .....	P243	Tanaka, Martin L. ....	P86

- Tanaka, Martin L. .... P90  
Tangen, Kevin ..... P270  
Tao, Luyang ..... 293  
Tashjian, Robert ..... P194  
Tasso, Paola ..... 57, 270  
Taylor, W. Robert ..... 223  
Teasley, Aura ..... P44  
Teeter, Stephanie D. .... P159  
Teo, Tabitha H. T. .... 321  
Teramoto, Atsushi ..... 214  
Tessier, Shannon N. .... 240  
Tetzlaff, Wolfram ..... 9  
Tewari, Shivendra G. .... 192  
Thabit, Abdullah ..... 175  
Thacker, Shyam ..... P210  
Thakore, Mayur ..... 275  
Thames, Alison T. .... P187  
Thein, Ran ..... 215  
Thirugnanasambandam, Mirunalini .... P44,  
P183, P184, 194, 303  
Thomas, Ashley ..... 3  
Thomas, Vineet S. .... 97  
Thommasin, Daniela ..... P210  
Thomopoulos, Stavros ..... 165, 201, 311  
Thompson, Christopher C. .... 120  
Thomsen, Jesper ..... 22  
Thornton, Gail M. .... 312  
Thorpe, Chavaunne T. .... 264, 308  
Thunes, James ..... P162  
Thunes, James R. .... 302  
Thurrow, Brian ..... 102  
Tian, Limei ..... 171  
Tillman, Shea ..... P76  
Timmerman, Sydney ..... P145  
Timmins, Lucas H. .... 169, 231, P247  
Todd, Beth A. .... P85  
Todd, Jocelyn ..... 87  
Tomaiuolo, Maurizio ..... 26  
Tomko, Lucas ..... P60  
Toner, Mehmet ..... 240  
Tong, Wei ..... 125  
Torres, William M. .... P187  
Torzilli, Peter A. .... 86  
Totman, Teresa ..... P242  
Towler, Christopher ..... 67, P82  
Townsend, Sarah ..... P141  
Tran, Justin S. .... 170  
Tranquillo, Robert T. .... 80  
Tran-Son-Tay, Roger ..... P231  
Travascio, Francesco ..... P91, P93, P133,  
P149, P150, P168, 323  
Tricarico, Rosamaria ..... P231  
Trivedi, Setu ..... P233  
Troche, Harrison ..... 187  
Troy, Karen L. .... 109  
Troyer, Kevin L. .... P151, 294  
Tsai, Karen C. .... 328  
Tseng, Elaine ..... P188  
Tseng, Wei-Ju ..... 19, 125, 180  
Tsinman, Tonia ..... P39  
Tsoukias, Nikalaos ..... P40  
Tsourkas, Andrew ..... 163  
Tubaldi, Eleonora ..... P232  
Tulis, David A. .... 281  
Turcotte, Raphael ..... 193  
Tuttle, Tyler ..... P174  
Udaykumar, HS ..... P239  
Umberto, Morbiducci ..... P248  
Updegrave, Adam ..... P268  
Updegrave, Adam R. .... P71  
Uppal, Gurdip ..... P258  
Urbizu, Aintzane ..... 292  
  
WITHDRAWN  
Vaidyanathan, Vijay ..... P81  
Valdes-Cruz, Lilliam ..... 315  
Valdez-Jasso, Daniela ..... P224, 226  
Valen-Sendstad, Kristian ..... 55, P255  
Vande Geest, Jonathan P. .... 47, 135, 162,  
P173, 298  
van der Heiden, Kim ..... 59  
van de Vosse, Frans ..... P208  
van de Vosse, Frans N. .... 305  
van Disseldorp, Emiel M. J. .... 305  
van Haaften, Eline E. .... P111  
van Kelle, Mathieu A. J. .... 160, P219  
van Sambeek, Marc R. H. M. .... 305  
Varenes, Julien ..... 35  
Varner, Victor D. .... 52  
Vasudevan, Vivek ..... P242  
Vazquez, Kelly J. .... P146  
Vazquez, Roberto ..... P183  
Vedula, Vijay ..... 265, 316  
Velez-Rendon, Daniela ..... P224, 226  
Venkat, Keshav ..... 269  
Verba, Taylor ..... 97  
Verdonck, Pascal ..... 100  
Verheghe, Benedict ..... 300  
Verma, Aekaansh ..... P230  
Vernengo, Jennifer ..... 69, P141  
Verner, Kari ..... 21  
Vigliotti, Andrea ..... P125  
Vignon-Clementel, Irene ..... 317  
Vincent, Peter E. .... P241  
Vink, Joy ..... 257  
Virag, Lana ..... P204  
Vlachos, Pavlos ..... 234  
Vo, Nghia T. .... 48  
Volk, Susan W. .... 73, 327  
Voorhees, Andrew P. .... 134  
Vorp, David A. .... 122, 258, 302  
Voytik-Harbin, Sherry L. .... 184  
Vresilovic, Edward J. .... 11, 90  
Vural, Dervis ..... 159  
Vural, Dervis C. .... P258  
Wackett, Lawrence ..... P62  
Wada, Shigeo ..... P43, 266  
Wagenseil, Jessica ..... 277, 304  
Wagenseil, Jessica E. .... 225  
Wagner, William R. .... 122  
Wall, Samuel ..... P113  
Wallace, Joseph M. .... P103  
Waller, Edmund K. .... 32  
Walsh, Michael T. .... 258  
Wang, Chao ..... 129, 327  
Wang, Chunxiang ..... P195  
Wang, Gonghao ..... 32  
Wang, Guanying ..... 192  
Wang, Hailong ..... 326  
Wang, Jingyu ..... 322  
Wang, Ruizhi ..... P177  
Wang, Shimei ..... P128  
Wang, Shunqiang ..... 31  
Wang, Sihong ..... P115  
Wang, Tao ..... 293  
Wang, Wen-Tung ..... 217  
Wang, William Y. .... 83  
Wang, Xiaodu ..... P129, P138, P142  
Wang, Y ..... 237  
Wang, Yingxi ..... 319  
Wang, Yuheng ..... P185  
Wang, Yunjie ..... 224  
Wang, Zhijie ..... 142  
Wapner, Ronald J. .... 257  
Warburton, David ..... 84  
Warren, Paul B. .... P159  
Washington, Tyrone ..... P193  
Watanabe, Yoshiyuki ..... 266  
Weaver, Ashley ..... P178, 218  
Weaver, Ashley A. .... 24  
Webster, Marie ..... 287  
Weeraratna, Ashani ..... 287  
Wei, Feng ..... 221  
Weinbaum, Justin S. .... 122  
Weiss, Dar ..... 107  
Weiss, Jeffrey A. .... 87, 283  
Weiss, Stephanie N. .... 256  
Weiss, William J. .... 27  
Weisshaar, Christine ..... 158, 163, 238  
Welch, Cooper H. .... P85  
Wells, Jessica ..... 218  
Wells, Rebecca G. .... 326  
Wen, Shin Min ..... P98  
Wen, Wen-Cih ..... 41  
Wendland, Michael F. .... P157  
Weng, Lindong ..... 240

AUTHOR INDEX BY PRESENTATION NUMBER

Wenk, Jonathan F. ....	5, P220	Xu, Fei .....	P221	Zhan, Li .....	239
Wentzel, Jolanda J. ....	57, 169	Xu, Feng .....	239	Zhang, Aili .....	P69, 115
Werbner, Benjamin .....	P42, P156	Xu, Gang .....	54	Zhang, Jiangyue .....	290
Werner, Nikki .....	P145	Xu, Hao .....	316	Zhang, Kangwei .....	115
West, James D. ....	P70	Xu, Lisa .....	P69, 115	Zhang, Lina .....	P191
Westervelt, Andrea R. ....	257	Xu, Xiao Y. ....	103, 278	Zhang, Mingzi .....	P229
Wheatley, Benjamin .....	178	Xuan, Guanghui .....	P128	Zhang, Peng .....	28
White, Courtney .....	252	Xuan, Yue .....	P188	Zhang, Qinkun .....	14
Whittington, Wilburn R. ....	P200	Yamakawa, Satoshi .....	P160, 214	Zhang, Sijia .....	P127, 158, 219
Wickiewicz, Thomas L. ....	P164, 215	Yamashita, Toshihiko .....	214	Zhang, Song .....	P216
Wieben, Oliver .....	318	Yanagisawa, Hiromi .....	304	Zhang, Will .....	168
Wilkins, Keith T. ....	120	Yang, Bo .....	P157, P181, 196	Zhang, Yanhang .....	93, P171, 193, 224
Williams, Alex .....	P112	Yang, Haisheng .....	21	Zhao, Ansha .....	77
Williams, Alexander T. ....	P40	Yang, Hao .....	75	Zhao, Feng .....	P142
	WITHDRAWN	Yang, Hongli .....	177, 297	Zhao, Hongbo .....	19, 180
Williams, Lakiesha .....	133, 252	Yang, Hua .....	P128	Zhao, Shiqing .....	P69
Williams, Lakiesha N. ....	P200	Yang, Sarah H. ....	217	Zhao, Wei .....	P199, 222, 247, 289
Williams, Phillip .....	150	Yang, Yi .....	P61	Zhao, Xiaodan .....	267
Wilson, John S. ....	223	Yang, Yuchen .....	182	Zhao, Xuefeng .....	293
Wilson, Nathan M. ....	P71, P268	Yap, Choon Hwai .....	P246, 253, 314, 319	Zheng, Wenjun .....	P128
Wilson, Sara E. ....	P78, P89, 321	Yap, Choon-Hwai .....	P242	Zhong, L. ....	P113
Win, Zaw .....	181, P196	Yarimitsu, Seido .....	P41	Zhong, Liang .....	267
Wingo, Nancy .....	114	Yoder, Claude H. ....	165	Zhong, Shengkui .....	P128
Winkelstein, Beth ....	P123, P127, 158, 163, 187, 219, 238	Yoder, Mervin C. ....	184	Zhong, Xiaodong .....	173, 223
Winter, Robbert J. de. ....	106	Yoganandan, Narayan .....	P153	Zhou, Enhua .....	P171
Wintermark, Max .....	46, P180	Yoganathan, Ajit .....	102	Zhou, Jiangbing .....	235
Wiputra, Hadi .....	P246, 314	Yoganathan, Ajit P. ....	4, 98, 148	Zhou, Lei .....	56
Wirostko, Barbara .....	282	Yong, He .....	P231	Zhou, Minhao .....	P42, P156
Witzenburg, Colleen .....	306	Yoon, Donghwan .....	201	Zhou, Yilu .....	191
Witzenburg, Colleen M. ....	13	Yoshida, Kyoko .....	13, 296	Zhu, Jian .....	319
Wlodarczyk, Marta .....	P244, P245	Yoshida, Masahito .....	212	Zhu, Liang .....	P59, P67, P72, 116
Wojtanowski, Andrew M. ....	167	Yotti, Raquel .....	233	Zhu, Ya Xing .....	182
Wolchok, Jeffrey .....	P118, P193	Yousaf, Awais .....	P210	Zhuo, Jiachen .....	131
Wong, Andrew .....	166	Yousefi, Atieh .....	P236, P240	Zimmerman, Brandon K. ....	179
Wong, Edna .....	290	Yu, Guanglin .....	P63	Zorlutuna, Pinar .....	159
Wood, Kirkham B. ....	12	Yu, Meilin .....	P59	Zou, Huashan .....	87
Woodard, Tim .....	330	Yu, Xunjie .....	193, 224	Zou, JinCheng .....	P69, 115
Worke, Logan J. ....	124	Yuan, Chun .....	P256	Zuby, David S. ....	154
Wright, Alexander C. ....	90	Yuan, Jessica X. ....	121	Zuniga-Romero, Carlos A. ....	P261
Wright, John .....	152	Yuhn, Changyoung .....	P54		
Wu, Jiacheng .....	P192	Zakerzadeh, Rana .....	P221		
Wu, Lyndia C. ....	222	Zakko, Phillip .....	259		
Wu, Michael C. ....	P221	Zaman, Muhammad H. ....	93		
Wu, Mingming .....	81	Zambrano, Byron A. ....	267		
Wu, Wei .....	106, P259	Zarei, Vahhab .....	P127		
Wujciak, Anna .....	16	Zaretsky, Uri .....	107		
Wykryzkowska, Joanna J. ....	106	Zarins, Christopher K. ....	146		
Xenos, Michalis .....	270	Zarkoob, Hoda .....	P99		
Xi, Ce .....	P113	Zaw, Myo M. ....	P72		
Xiang, Yujiang .....	P94	Zaw, Myo Min .....	P67, 116		
Xing, Ruoyu .....	59	Zeigler, Stacey L. ....	67, P82		
Xing, Tao .....	174	Zeller, Jillynne .....	174		
Xinjian, Du .....	P270	Zeng, Wei .....	P191		
Xu, Bin .....	P171	Zeng, Xiaowei .....	P122, P138		
		Zgonis, Miltiadis H. ....	164		

Abdulhai, Sophia .....	58	Andreasen, Christina M. ....	27	Barbour, Michael C. ....	55
Abel, Richard L. ....	30	Andrist, Joseph A. ....	52	Barg, Alexej .....	41
Ables, Elizabeth T. ....	56	Annamalai, Sarayu .....	82	Barila, Guillermo .....	53
Abou-Arraj, Ramzi .....	65	Anseth, Kristi .....	33	Barker, Alex J. ....	35
Abramowitch, Steven D. ....	53, 58	Anzai, Hitomi .....	81	Bar-Kochba, Eyal .....	52
Acun, Aylin .....	42	Aomura, Shigeru .....	49, 65	Barnum, Carrie E. ....	53
Acuna, Andrea .....	57	Appoo, Jehangir .....	79	Barocas, Victor H. ....	29, 33, 46, 59, 61, 64, 72, 75, 76, 78
Adams, Bruce D. ....	61	Aprile, Paola .....	29	Barreda, Adriana .....	42
Adegoke, Modupe .....	72	Aranyosi, AJ .....	41	Barthold, Jeanne E. ....	38
Adeyinka, Oluwaseun R. ....	46	Arcot, Kashyap .....	42	Bartoletti, Robin .....	69
Adhikari, Neeta .....	78	Arif, Imran .....	66	Bauer, Rachel E. ....	68
Agarwal, Anand K. ....	25, 74	Ariza, Miguel A. ....	83	Bayly, Philip V. ....	30, 49, 52, 63
Agarwal, Pradyumn .....	50	Armiger, Robert .....	57	Beard, Daniel A. ....	45
Aggarwal, Ankush .....	80	Armiger, Robert S. ....	52	Beasley, Michaela .....	52
Aguilar, Guillermo .....	37, 83	Arruda, Ellen M. ....	75	Beavers, Daniel P. ....	27
Aguinaldo, Arnel .....	69	Arslanian, Rose .....	79	Beavers, Kristen M. ....	27
Ahmadzadeh, Hossein .....	57	Arun, Mike W. J. ....	74	Bechsgaard, Tommy .....	79
Ahmed, A.H. R. ....	71	Arvaneh, Tia .....	66	Beebe, David .....	67
Ahsan, Abu Saleh .....	73	Arvayo, Alberto L. ....	29	Behera, Reeti .....	57
Aizen Grill, Daiane .....	62, 69	Arzani, Amirhossein .....	25	Behkam, Reza .....	30, 39
Akbarimoosavi, Mahdi .....	37	Asfour, Shihab .....	61, 69, 73, 74, 75	Bell, Rebecca .....	59, 75
WITHDRAWN					
Akhter, Forhad .....	61	Ashinsky, Beth G. ....	38	Benito, Yolanda .....	50
Akintunde, Akinjide R. ....	35	Ates, Mehmet Sanser .....	84	Benko, Nikolaus A. ....	52
Akkus, Ozan .....	46	Ateshian, Gerard .....	56	Benoy, Elizabeth .....	71
Aksan, Alptekin .....	37, 67, 68, 71	Ateshian, Gerard A. ....	44	Benson, Adam .....	29
Alamer, Moath .....	56	Athanasidou, Thanos .....	36	Benson, Joey J. ....	67
Alamoudi, Mohammed .....	69	Atkins, Penny R. ....	74	Berceli, Scott A. ....	81
Alatalo, Diana L. ....	84	Audenino, Alberto .....	76	Bergersen, Aslak .....	31
Albon, Julie .....	30	Augustin, Christoph M. ....	40	Bergersen, Aslak W. ....	83
Alexanderian, Alen .....	67	Avazmohammadi, Reza .....	40	Berkow, Kyle A. ....	70
Alexeev, Alexander .....	28	Avendano, Alex .....	28	Berkowitz, B. ....	50
Alford, Patrick .....	44	Ayoub, Salma .....	25, 62	Berkowitz, Benjamin .....	83
Alford, Patrick W. ....	30, 46, 78	Ayyaswamy, P. S. ....	51	Bermejo, Javier .....	50
Aliakbari Miyamahaleh, Mohammad ....	68	Azarin, Samira .....	71	Bermel, Emily A. ....	46
Alisafaei, Farid .....	33	Baaijens, Frank P. T. ....	70	Berry, Joel .....	37
Aliseda, Alberto .....	55, 83	Babalarios, Vasilis .....	40	Bersi, Matthew R. ....	26, 29
Alison, Laura .....	77	Badachhape, Andrew A. ....	52, 63	Bersie, Lauren M. ....	33
Allen, Philip .....	57	Baek, Seungjik .....	54, 77	Bertram, Christopher .....	83
Allison, Hollie .....	70	Baeumler, Kathrin .....	54	Bertram, Christopher D. ....	32
Alrafeek, Saif .....	73	Baez, Ivan .....	60	Bhal, Vinay .....	25
Amabili, Marco .....	80, 81	Bagchi, Amit .....	52	Bhattacharya, Shamik .....	25
Amen, Kamilah Y. ....	30	Bailey, Travis S. ....	38	Bianchi, Matteo .....	36, 81
Amezcuca, Krysta H. ....	46	Baillargeon, Brian P. ....	40	Bibevski, Steven .....	60
Amezcuca, Krysta-Lynn .....	77	Bakalova, Lydia P. ....	27	Biglino, Giovanni .....	60
Amini, Rouzbeh .....	35, 36, 39, 43, 58, 63, 64, 80	Baker, Aaron .....	62	Bignardi, Cristina .....	50
Amini Khoiy, Keyvan .....	58, 80	Baker, Anthony J. ....	45	Billiar, Kristen .....	37, 70
Amon, Cristina H. ....	78	Baker, Brendon M. ....	33, 57	Birch, Helen L. ....	59
Anayiotos, Andreas S. ....	40	Balasubramanian, Sriram .....	77	Birch, Malcolm .....	79
Andarawis-Puri, Nelly .....	59, 75	Baledent, Olivier .....	63, 83	Birk, David E. ....	38, 47
Andersen, Thomas Levin .....	27	Ban, Ehsan .....	57, 61	Birman, Victor .....	47
Anderson, Andrew E. ....	41, 74	Banerjee, Rupak K. ....	66	Bischof, John .....	43, 51, 63
Anderson, Deirdre E. ....	40	Banik, Brittany L. ....	71	Bischoff, Jeff .....	55, 69
Anderson, Ronald C. ....	75	Banks, Darren .....	37	Biswas, Arijit .....	53
		Bankwala, Danesh .....	61	Biswas, Dipankar .....	57, 78
		Bansal, Sonia .....	42		

AUTHOR INDEX BY PAGE NUMBER

Black, Anthony.....	35, 64	Burgoyne, Suzanne.....	68	Che, Zifan.....	51
Blanche, Syndey.....	28	Burris, David L.....	34, 45	Chen, Christopher S.....	57
Bland, Megan L.....	41	Bush, Tamara Reid.....	32, 69, 76	Chen, Michelle L.....	76
Blome, Oliver.....	81	Bushman, Sarah.....	28	Chen, Po-Hsu.....	75
Bloodworth, Charles H.....	25, 35	Bushman, Sarah M.....	72	Chen, Sheng.....	76
Bloodworth, Nathaniel C.....	68	Buskermolen, Gitta A. B. C.....	70	Chen, Zhuo.....	68
Bluestein, Danny.....	28, 36, 81	Butcher, Jonathan.....	60	Chen, Zi.....	77
Boccardo, Stefano.....	54	Butler, James R.....	76	Cheng, Zhiliang.....	42
Bodnyk, Kyle A.....	73	Butman, John A.....	49	Chery, Daphney R.....	47
Boerckel, Joel D.....	41, 45	Byrne, Matt.....	66	Chesler, Naomi C.....	31, 40, 45
Bohnstedt, Bradley.....	61	Caenen, Annette.....	44	Chi, Chun-Wei.....	71
Bokka, Kishore.....	33	Cai, Luyao.....	34	Chiastra, Claudio.....	31, 36
Boncell, Katie.....	38	Cai, Yunliang.....	52, 57	Chien, Chun.....	54
Bongiorno, Tom.....	28	Cai, Zhonghou.....	60	Chin, Chih-Liang.....	82
Bonner, Tara.....	48	Calve, Sarah.....	57	Chinnasami, Harish.....	72
Bonnevie, Edward D.....	34	Calvo, Begonia.....	83	Chinnathambi, Sathivel.....	70
Boorman-Padgett, James F.....	48	Camacho-López, Santiago.....	37, 83	Chintalapani, Gouthami.....	55
Borgi, Alessandro.....	55	Camarillo, David B.....	41, 49	Chopard, Bastien.....	81
Bouhria, Nesrine.....	64, 67	Cameron, Andrew R.....	46	Chou, Dennis P.....	69
WITHDRAWN				Chowdhury, Shoieb.....	61
Boulware, David.....	51, 63	Campas, Otger.....	52	Christofidou-Solomidou, Melpo.....	51
Bouten, Carlijn V. C.....	26, 42, 71, 80	Campbell, Bradley C.....	74	Chu, Chia-Ye.....	32
Boutouyrie, Pierre.....	79	Campbell, Ian C.....	39	Chua, Kong Chun.....	60
Bowler, Meghan A.....	29	Campolettano, Eamon.....	66	Chueh, Juyu.....	79
Bozkaya, Tijen Alkan.....	84	Campolettano, Eamon T.....	66	Cil, Akin.....	48, 73
Bozzi, Silvia.....	50	Canchi, Tejas.....	79	Cirka, Heather.....	70
Bradfield, Connor.....	57	Canelon, Silvia P.....	70	Claeson, Amy A.....	34, 46, 64
Bradfield, Connor A.....	52	Canino, J. Miles.....	32	Claessens, Tom.....	35
Bradney, Michael.....	67	WITHDRAWN			
Braun, Audrey.....	57, 78	Cann, Philippa M.....	73	Claiborne, Thomas E.....	56
Braun, Nicholas J.....	78	Canton, Gador.....	83	Clark, Cyndi.....	25
Brazile, Bryn.....	39, 76	Cao, Xuan.....	57	Clarke, Geoffrey D.....	46
Brenneman, Jack.....	59	Capin, Jacob J.....	48	Clarke, Samantha A.....	39
Breslavskiy, Ivan.....	80	Carare, Roxana O.....	67	Clegg, Peter D.....	59
Brink, Hannah.....	28	Carniato, Sarena.....	79	Clifford, Christopher.....	35
Brisson, Becky K.....	61	Caro, Colin G.....	82	Coats, Brittany.....	52, 56, 62, 66
Brockmeyer, Douglas L.....	25	Carter, Lauren.....	60	Coccolone, Austin.....	56
Bromley, Amy.....	79	Cassel, Kevin.....	82	Cohen, Noa.....	75
Brown, Amy G.....	53	Castile, Ryan.....	42, 45	Colbrunn, Robb.....	48
Brown, Justin L.....	71	Caulk, Alexander W.....	26	Colby, Samuel A.....	74
Brüel, Annemarie.....	27	Centola, Matteo.....	54	Colter, Jourdan.....	56
Bruse, Jan.....	55	Ceruolo, Melissa.....	41	Colvin, Daniel C.....	41
Buchak, Jacqueline.....	42	Cha, Thomas D.....	26	Concannon, Jamie.....	79
Buchanan, Thomas S.....	48	Chahine, Nadeen.....	42, 71	Cone, Stephanie G.....	75
Buchholz, Kyle S.....	30	Chahine, Nadeen O.....	57	Connizzo, Brianne K.....	59
Buck, Amanda K. W.....	41	Chamberlain, Aaron.....	42, 45	Conoan, Nicholas.....	51
Buckley, Mark R.....	38, 64	Chamberlain, Connie S.....	54	Constantinides, Georgios.....	40
Buehler, Markus J.....	42	Chan, Calvin A.....	48	Constantinou, Marios.....	40
Buganza Tepole, Adrian.....	35	Chan, Deva C.....	49	Conti, Stephen F.....	74
Buksa, Justin.....	44	Chan, Warren.....	51	Converse, Matthew I.....	45
Bulinski, J. Chloe.....	29	Chandrasekaran, Prashant.....	38	Conway, Cassandra K.....	53
Bulka, Ben.....	45	Chandrasekaran, Sandhya.....	74	Coogan, Jessica.....	74
Bulsink, Jurgen A.....	42, 71	Chang, Chia-Wen.....	33	Cook, James L.....	35
Burdick, Jason A.....	29, 40, 57	Chang, Jonathan.....	28	Copeland, Katherine M.....	79
Burgoyne, Claude F.....	44, 58	Chao, Pen-Hsiu Grace.....	29, 70	Corbett, Richard W.....	82
		Chauhan, SathyaJeeth.....	59	Corbiere-Gale, Nicole C.....	32, 69

Cornelison, Robert C. ....	37	Depalle, Baptiste .....	42	Dyment, Nathaniel .....	54	
Corr, David T. ....	54, 71, 72	Dereli-Korkut, Zeynep.....	71	Dyrna, Felix .....	54	
Cortes, Daniel H. ....	26, 64	Deshpande, Vikram .....	57	Earnest, Brittany .....	28	
Cosgrove, Brian D. ....	29	Deshpande, Vikram S.....	47, 70, 72	Easley, Thomas F. ....	25	
Cotsarelis, George.....	32	Desrosiers, Laurephile.....	53	Eaton, John K. ....	81	
Coudrillier, Baptiste.....	30	Devarakonda, S.....	43	Eberhardt, Alan.....	37, 65, 68	
Crane, Emily .....	57	Devesa-Cordero, Carolina.....	50	Eberhardt, Alan W.....	66	
Crawford, Sean A. ....	78	Devia-Cruz, Luis F. ....	83	Ebraheim, Nabil.....	25, 74	
Crestanello, Juan.....	81	Devia-Cruz, Luis Felipe .....	37	Eckmann, D. M.....	51	
Crestanello, Juan A. ....	35, 81	Devireddy, Ram .....	72	Edgar, Lowell T. ....	31	
Crestenello, Juan.....	81	De Vita, Raffaella.....	53, 58	Edison, Natalia .....	75	
Crognale, Valentina .....	76	de Winter, Robbert J.....	36	Effat, Mohamed A. ....	66	
Crompton, Phil.....	36	Deymier, Alix C. ....	42, 60	Effiong, Linda A. ....	27	
CUI, SHIHAI .....	78	Dhume, Rohit.....	59	Ehret, Alexander E.....	53	
Cumsky, Jameson L. ....	46	Dhume, Rohit Y.....	29, 33, 46	Einav, Shmuel.....	36	
Cunnane, Eoghan M.....	53	Diamond, Scott.....	56	Elgafy, Hossein.....	25, 74	
Cuomo, Federica .....	50	Diaz-Portela, Paola.....	25	El-Hamamsy, Ismail.....	77	
WITHDRAWN			DiCristofaro, Steve .....	41	Elias, John J. ....	70
Dahl, Joanna D.....	72	Dignam, John .....	69	Eliason, Travis .....	41	
Dai, Eric N. ....	29	Di Martino, Elena .....	79	Elkins, Christopher J.....	81	
Dai, Letian .....	72	Ding, Yonghui .....	33	Elliott, Dawn.....	34	
Dailey, Andrew T. ....	25	Dini, Daniele .....	78	Elliott, Dawn M.....	26, 34, 38, 45, 60, 65	
Dallo, Shatha F. ....	72	DiPrete, Caleb .....	28	Ellis, Benjamin J. ....	25	
Damaser, Margot.....	76	WITHDRAWN			Elmasry, Shady.....	74
Dames, Chris.....	43	Dollery, Jennifer.....	35, 81	Elovitz, Michal A. ....	53	
D'Amore, Antonio.....	38	Donatelli, Gregory M.....	37	Elsaid, Nahla .....	39	
Dandekar, Eshan M. ....	69	Dong, Chaoke.....	69	Elsner, Jonathan J. ....	75	
Daniel John, Jobin .....	74	Dorairaj, Syril K.....	39, 63	Emmott, Alexander .....	77	
D'Arcy, Sheena .....	68	Doud, Ryan.....	65	Emonet, Thierry .....	52	
Darke, Jim D.....	69	Dougherty, John .....	77	Enders, Jacob.....	72	
Das, Dipjyoti .....	52	Doughterty, Ronald L.....	61	Ennis, Christina .....	28	
Dasi, Lakshmi P. ....	35, 81	Doyle, Matthew G.....	78	Enomoto-Iwamoto, Motomi.....	47, 61	
Davidson, Lance.....	52	Doyran, Basak.....	38	Eppelheimer, Maggie.....	57	
Davis, Michael J. ....	32	Drach, Andrew .....	25, 36	Eppelheimer, Maggie S. ....	78	
Davis, Niall F.....	53	Drach, Borys.....	62	Eberhardt, Alan.....	37, 65, 66, 68	
Dawahare, James H. ....	45	Drakopoulos, Michael A.....	57	Erickson, Alek.....	51	
Deaton, Nancy J. ....	35	Drapaca, Corina S. ....	26	Eshtehardi, Parham.....	43	
de Bakker, Chantal M. J. ....	27, 44	Dray, Nicolas .....	52	Eskandari, Mark.....	59	
De Beule, Matthieu .....	58	Driscoll, Tristan P. ....	29	Eskandari, Mona.....	29	
Debski, Richard E.....	48, 70, 75	Drost, Joshua P. ....	69	Esmaily-Moghadam, Mahdi.....	81	
Debus, Kristian .....	82	Drost, Michael.....	32	Estell, Eben G.....	29	
Debusschere, Nic .....	58	Drouet, Christophe .....	42	Estrada, Ana C. ....	39	
Decker, William.....	57	Du, Yu .....	33	Ethier, Ross .....	30, 39, 44, 58	
Deepak, Vishwa.....	70	Dubini, Gabriele.....	36	Evans, Avery J.....	28	
de Kleijn, Dominique.....	82	Dudley, Andrew.....	51	Evans, McKenzie C. ....	69	
del Alamo, Juan Carlos.....	50	WITHDRAWN			Everingham, John B. ....	66
Delgado-Montero, Antonia.....	50	Duffy, Michael P. ....	44	Faghih, Mohammad M.....	27, 82	
Del Gaudio, Costantino .....	76	Duffy, Sharon .....	78	Fan, Li.....	38	
DeLorenzo, Robert A. ....	61	Duma, Stefan M.....	70	Fan, Shongshan .....	45	
Demtropolis, Constantine K.....	52	Dumoulin, C.....	43	Fanton, Michael G. ....	41	
Dender, Hunter T. ....	69	Dunaway, David.....	55	Farahmand, Masoud .....	80, 84	
Deng, Gang .....	51	Duncan, Neill .....	82	Färnqvist, K. ....	69	
Deng, Yuefan.....	28	Dunham, Chelsey .....	42, 45	Farrell, Megan J.....	32	
De Nisco, Giuseppe.....	50	Duraiswamy, Nandini.....	56	Farrokhi, Shawn .....	70	
De Oliveira, Victor.....	59, 66	Durney, Krista M. ....	44	Fatemifar, Fatemeh .....	40	





AUTHOR INDEX BY PAGE NUMBER

Kartha, Sonia.....	42, 45	Krausz, Judit.....	75	Levine, William N.....	47
Kasukonis, Benjamin.....	77	Krawiec, Jeffery T.....	38	Levitt, Michael R.....	55
Kaufman, Kenton.....	44	Ku, David N.....	56	Li, Bei.....	78
Kaul, Nayyan.....	80	Kucukal, Erdem.....	84	Li, Chen.....	50
Kavarana, Minoo.....	67	Kuhl, Ellen.....	26, 29, 80	Li, Chenghai.....	71
Kavarana, Minoo N.....	80	Kumar, Gautam.....	40	Li, David S.....	40, 79
Keah, Niobra M.....	42	Kumar, Pawan.....	33	Li, Guoan.....	26
Kealhofer, David A.....	52	Kung, Ethan.....	66, 67, 80	Li, Haiyan.....	78
Keely, Patricia.....	67	Kung, Ethan O.....	80, 84	Li, Haiyue.....	34, 76
Keller, Sara B.....	41	Kuo, Calvin.....	41, 49	Li, Jeffrey.....	67
Kelly, Daniel J.....	29, 41, 46	Kuo, C.-C Jay.....	60	Li, Mingqiang.....	47
Kenny, Melissa C.....	83	Kurniawan, Nicholas A.....	71	Li, Ning.....	33
Kensingler, Clark D.....	41	Kurt, Mehmet.....	29, 76	Li, Qing.....	38, 47, 61
Kent, Robert N.....	48	Kuruppumullage, Don Nadun S.....	31	Li, Xiuying.....	51
Kersh, Mariana E.....	27	Kuxhaus, Laurel.....	32, 36, 69, 84	Li, Yan.....	77, 78
Key, Nigel S.....	84	Kwon, Hyun-Jung.....	70	Li, Yihan.....	27, 44
Khalighi, Amir H.....	25, 36, 62	Kyrkou, Maria.....	40	Li, Zhe.....	61
Khan, Kamran Z.....	26	LaBarge, Mark A.....	33	Li, Zhen.....	72
Khandha, Ashutosh.....	48	Labuda, Richard.....	57, 78	Li, Zhigang.....	52, 57
Khang, Alex C.....	33	LaDisa, John.....	81	Liachenko, Serguei.....	25
Khani, Mohammadreza.....	43, 83	Lai, Eric.....	79	Liao, Dezhi.....	78
Khanna, Rohit.....	72	Lai, Victor K.....	33, 61	Liao, Jun.....	39, 52, 76, 79
Khoobyar, Anahid.....	31	Lake, Spencer.....	42, 45	Lin, Albert.....	48
Khoshgoftar, Mehdi.....	34	Lal, Hind.....	26	Lin, Liqiang.....	72
Khosravi, Ramak.....	26	Lally, Caitriona.....	26	Lin, Yuan.....	57
Kia, Mohammad.....	75	Lam, Wilbur.....	28	Linder-Ganz, Eran.....	75
Kiapour, Ali.....	25, 74	Lambeth, Emily P.....	75	Linderman, Stephen W.....	47
Kill, Birgitte Jul.....	27	Lan, Hongzhi.....	84		WITHDRAWN
Kim, Dong Hwa.....	38	Lanier, M.....	43	Lindsey, Stephanie.....	60
Kim, John.....	77	Lao, Yeh-Hsing.....	47	Linton, MacRae F.....	31
Kim, Jungsil.....	59	Lasch, Michael.....	61	Liphardt, Jan T.....	61
Kim, Louis J.....	55	Lavon, Karin.....	81	Litchman, Joshua.....	79
king, Brittany.....	73	Lawton, Andrew.....	52	Little, Jane A.....	84
Kingsley, David M.....	72	Leahy, Thomas.....	62	Liu, Anna.....	28
Kirby, Matthew L.....	73	Learn, Greg D.....	46	Liu, Eric.....	61
Kizilski, Shannen B.....	46	Leask, Richard.....	77	Liu, Janet.....	69
Klisch, Stephen M.....	62, 66, 69	Lee, Andrea H.....	60	Liu, Jie.....	25
Knapik, Derrick M.....	46	Lee, Chanyoung.....	73	Liu, X. Sherry.....	27, 38, 44
Knarr, Brian.....	32	Lee, Chung-Hao.....	61, 80	Liu, Yaling.....	28
Knight, Martin M. M.....	45	Lee, Hee Joon.....	73	Liu, Yang.....	27
Knoepp, Leise.....	53	Lee, Hee-Kyoung.....	56	Liu, Yingtao.....	61
Knutsen, Andrew K.....	49	Lee, Jia-Jye.....	77	Liu, Yue.....	34, 76, 79
Ko, Yi-An.....	43	Lee, JuEun.....	73	Lo, Ian K. Y.....	60
Kok, Annette M.....	43	Lee, Juhyun.....	60	Loaiza, Johnfredy.....	27
Kokai, Lauren E.....	38	Lee, Lik Chuan.....	54, 64, 71, 72	Lockwood, Howard.....	58
Kollech, Hirut G.....	30	Lee, Teng-Chun.....	81	Loerakker, Sandra.....	26, 42, 70, 80
Kondiboyina, Avinash.....	82	Lee, William E.....	66	Loh, Yue Yin.....	82
Kong, Fanwei.....	58	Lee, Wonsae.....	27	Long, Mian.....	33
Konieczny, Stephen.....	67	Lemmex, Devin B.....	60	Lopata, Richard G. P.....	42, 59
Korenczuk, Christopher.....	59	Lemons, Jack.....	65	Loth, Dorothy.....	57
Koshiyama, Kenichiro.....	65	Lenchik, Leon.....	27	Loth, Francis.....	43, 57, 78
Kotelsky, Alexander.....	38	Leo, Hwa Liang.....	60	Lou, Emil.....	71
Koya, Bharath.....	57	Leong, Kam W.....	47	Low, Adriel.....	82
Kraft, Reuben H.....	73	Leupin, Olivier.....	54	Lu, Jiaqi.....	29
Krams, Rob.....	82	Levenston, Marc E.....	29	Lu, Miao.....	67

Lu, Xin L. ....	38	Martin, E. ....	71	Michalek, Arthur J. ....	32, 69
Lu, X. Lucas.....	45	Martin, John T. ....	38	Michna, Rhys.....	28
Lu, Yintong.....	76	Martin, Peter T. ....	66	Midgett, Dan.....	39
Lu, Yuan-Chiao.....	49	Martinez-Legazpi, Pablo.....	50	Midha, Prem.....	35, 40
Lubkin, Sharon.....	33	Martino, Carlos.....	71	Migliavacca, Francesco.....	31, 36
Lucio, Adam A.....	52	Martin-Peña, Alfonso.....	29	Miller, Jonathon.....	78
Luetkemeyer, Callan M.....	75	Martufi, Giampaolo.....	79	Miller, Kristin S.....	35, 53, 75
Lugo-Cintrón, Karina M. ....	67	Masen, Marc A.....	73	Miller, Mark Carl.....	74
Lujan, Trevor J.....	64, 66	Mason, Devon E.....	45	Miller, R. Matthew.....	75
Luongo, Mary E.....	52	Mass, Steve.....	56	Mirramezani, Mehran.....	27
Lv, Mengxi.....	45	Masters, Kristyn S.....	25	Mirzaei, Ehsan.....	67, 80
Lv, Wenle.....	78	Matsagkas, Miltiadis.....	55	Mitchell, Jennifer E.....	37, 64
Ma, Ronghui.....	37, 67, 68	Mattar, Nurfarah Zaini.....	53	Mitra, Kunal.....	37, 71
Ma, Yu.....	74	Mattucci, Stephen.....	25	Moalli, Pamela A.....	53
Ma, Yuntao.....	68	Mauck, Robert L.....	29, 34, 38, 42, 65	Moerman, Astrid.....	31
Maak, Travis G.....	34	Maureira, Pablo.....	35, 81	Mofrad, Mohammad R. K.....	25
Macaskill, Charlie.....	32, 83	Mazhar, Khadijah.....	51	Mohaghegh, Fazlolah.....	81
Macruz, Fabiola.....	76	Mazlan, Muhammad.....	82	Molony, David S.....	31, 43
Maghsoudi-Ganjeh, Mohammad.....	73	Mazza, Edoardo.....	53	Mongeon, Francois-Pierre.....	77
Mahadevan, L.....	41	Mazzocca, Augustus.....	54	Mongera, Alessandro.....	52
Mahadevan, Nikhil.....	41	McCarthy, Mary Beth.....	54	Monson, Kenneth L.....	45
Mahendroo, Mala.....	58	McClellan, Phillip E.....	46	Moon, Hye-ran.....	28
Maher, Gabriel D.....	83	McCulloch, Andrew D.....	26, 30	Moon, Nicolas.....	27
Maher, Suzanne A.....	34	McDermott, Anna M.....	41	Moore, Axel C.....	34, 45
Mahipat, Aman.....	77	McDonough, Ryan C.....	33	Moore, Emily R.....	44
Mahluf, Lotem.....	75	McElhinney, Doff.....	81	Moore, James E.....	31
Mahmoodi, S. Nima.....	69	McEvoy, Eoin.....	47, 57	Morbiducci, Umberto.....	31, 50, 55, 76
Mahmoudzadeh Akherat, S. M. Javid.....	82	McEvoy, Eóin.....	79	Moreno, Michael R.....	63, 77
Mahutga, Ryan R.....	78	McGarry, Patrick.....	26, 47, 57, 73, 78, 79	Morgan, Elise F.....	27
Main, Russell.....	27	McGee, Orla M.....	44	Morgan, Joshua T.....	33
Main, Russell P.....	38	McGinnis, Kevin.....	48	Morley, Cameron.....	33
Maisonnette, Mariana R.....	25	McGinnis, Ryan S.....	41	Morris, Christopher J.....	31
Maiti, Spandan.....	53, 58, 59, 75	McGrane, Bryan.....	41	Morrison, John C.....	44
Majka, Susan.....	68	McGuire, Jeffrey.....	58	Morss Clyne, Alisa.....	36, 71
Malhotra, Neil R.....	34	McHugh, Peter.....	26	Mortazavi, S. Negin.....	68
Malliaras, P.....	69	McHugh, Peter E.....	78, 79	Mortensen, Jonathan D.....	41
Malve, Mauro.....	83	McIntyre, Oliver.....	42	Morton, Ryan P.....	55
Manal, Kurt.....	48	McLean, Nathan.....	54	Moshkforoush, Arash.....	65
Mancini, Viviana.....	31, 79	McNally, Craig.....	41	Mossa-Basha, Mahmud.....	83
Mankame, Omkar.....	65, 71	McNamara, Laoise M.....	44, 70, 73	Mubyana, Kuwabo.....	54
Mankame, Omkar V.....	60	Meadows, Kyle D.....	26	Mueller, Becky C.....	41
Mann, Brenda.....	56	Mecham, Robert.....	59	Mueser, Ashlyn.....	27
Manning, Keefe B.....	27, 36, 63, 64, 65	Mecham, Robert P.....	49	Mugler, Andrew J.....	28
Marais, Louise.....	79	Meckes, Daniel P.....	37	Mukherjee, Debanjan.....	82
Marchi, Benjamin C.....	75	Medero, Rafael.....	50, 66	Muli, Dominic.....	42
Margolis, David S.....	42	Mehta, Vikram V.....	82	Muliana, Anastasia.....	77
Marino, Michele.....	45	Merchant, Naeem.....	79	Muluk, Satish.....	59, 66
Marom, Gil.....	36, 81	Merkle, Andrew.....	57	Mulvihill, John.....	30
Marra, Kacey G.....	38	Merkle, Andrew C.....	52	Munden, Paul M.....	61
Marsden, Alison L.....	43, 54, 60, 80, 81, 83, 84	Merkow, Jameson M.....	83	Munson, Jennifer M.....	37
Martin, Bryn.....	67	Merrill, Thomas L.....	37, 64, 67	Munuhe, Timothy.....	37, 67, 68
Martin, Bryn A.....	43, 63, 83	Merryman, W. David.....	25, 26, 29, 31, 68	Murali, Karthik.....	31
Martin, Connor L.....	69	Merryweather, Andrew S.....	41	Murikinati, Sasidhar.....	51
Martin, Diego R.....	40	Mertens, Luc.....	44	Murphy, Brian.....	41
		Meyers, Brett A.....	50		

WITHDRAWN

AUTHOR INDEX BY PAGE NUMBER

Musahl, Volker.....	48, 75	Ohashi, Toshiro.....	70	Pekkan, Kerem.....	84
Myers, Kristin.....	53, 58	Ohta, Makoto.....	81	Peloquin, John M.....	26, 65
Myers, M.....	43	Okada, Yohei.....	48	Penkova, Anita N.....	31
Mysore, Sandeep.....	83	Okafor, Ikay.....	40	Perez, Manuel.....	65, 71
Nair, Arun.....	42	Okafor, Ikechukwu.....	35	Perez del Villar, Candelas.....	50
Nakadate, Hiromichi.....	49, 65	Okamoto, Ruth J.....	52, 63	Perez-Nevarez, Manuel.....	71
Nakamura, Shinichi.....	49	Oliveira, Amanda.....	37	Pernot, Mathieu.....	44
Narayanan, Sriram.....	79	Olivier, Alicia K.....	78	Pescador, Ricardo.....	61
Natesan, Harishankar.....	43	Omens, Jeffrey H.....	26, 30	Peters, James.....	77
NedreLOW, David S.....	61, 75	Onar-Thomas, Arzu.....	61	Peters, Kara.....	74
Nelson, Celeste M.....	52	Ono, Yohei.....	60	Pettersen, Niels J.....	59
Nerurkar, Nandan L.....	30, 51	Oomen, Pim J. A.....	26, 42	Pewowaruk, Ryan J.....	45
Neu, Corey P.....	34, 38	O'Reilly, Brian L.....	79	Pfeiffer, Ferris.....	73
Neuberger, Thomas U.....	26	Ortigosa, Rogelio.....	80	Pfeiffer, Ferris M.....	35, 68
Newby, N.....	49	Oshima, Marie.....	66	Pham, Dzung L.....	49
Ng, Eddie.....	79	Oshinski, John.....	31, 43, 49, 50	Philip, Anisha.....	28
Nguyen, Hong.....	79	Ostrowski, Michael C.....	28	Philippi, Julie A.....	59
Nguyen, Quynhhoa T.....	57	O'Sullivan, Laura M.....	73	Phuntsok, Rinchen.....	25
Nguyen, Thao.....	39	Ouyang, Liu.....	38	Piedrahita, Jorge A.....	75
Nguyen, Thao D.....	62, 76	Oxland, Thomas.....	25	Piepmeier, Joseph.....	51
Nhan-Chang, Chia-Ling.....	53	Ozkaya, Efe.....	29, 76	Pierce, David M.....	34, 68
Nia, Hadi T.....	47	Pagoulatou, Stamatia Zoi.....	82	Pierce, Eric L.....	35
Nicholls, Art.....	41	Païdoussis, Michael P.....	81	Pierce, Robert S.....	69
Nicolella, Daniel.....	41, 74	Pankow, Mark.....	74	Pindado, Jesus.....	41
Niedert, Elizabeth.....	83	Pant, Anup D.....	35, 39, 63, 64	Piñero, Alejandro.....	71
Nielsen, Sten L.....	79	Parchami, Neda.....	37	Pirola, Selene.....	36
Nielsen, Steven O.....	68	Pardoe, Jennie P.....	68	Piskin, Senol.....	84
Niki, Kiyomi.....	66	Paredes, J. J.....	75	Pitarresi, Jason R.....	28
Nikolaou, Petros.....	40	Parekh, Aron.....	29	Plank, Gernot.....	40
Nikou, Amir.....	26	Parikh, Shalin.....	66	Poh, Kian.....	82
Nishimoto, Keisuke.....	65	Parisi, Cristian.....	78	Polk, Andrew.....	73
Nizami, Saquib.....	27	Park, Jaekeun.....	31	Ponsky, Todd A.....	58
Nolan, David.....	73	Parle, Eoin P.....	73	Ponzini, Raffaele.....	50
Nolan, David R.....	79	Passoni, Giuseppe.....	50	Porte, Elze M.....	73
Noles, Kristen.....	37	Pasteris, Jill D.....	42	Potter, Samuel.....	62
Noor, Mariam A.....	81	Patel, Dharmesh.....	59	Pour Issa, Elnaz.....	71
Notermans, Thomas M. W.....	70	Patel, Miten B.....	82	Prabhakar, Saurabh.....	36
Novak, Tyler.....	38	Patel, Shyamal.....	41	Prabhu, Raj.....	39, 52
Noyvirt, Roni.....	75	Pathak-Ray, Vanita.....	39, 63	Prabhu, Rajkumar.....	78
Nunes, Kenia.....	37, 71	Patnaik, Sourav.....	77, 79	Preciado, Julian A.....	71
Nunes Bruhn, Kenia.....	71	Patnaik, Sourav S.....	76	Price, Christopher.....	33, 34, 45
Nygaard, Hans.....	79	Patterson, Kelly.....	32	Price, Theodore.....	51
O'Hern, Corey.....	52	Patterson, Rita M.....	32	Price, Veronica A.....	56
O'Regan, Declan P.....	36	Patterson, Rita P.....	69	Prince, Jerry L.....	39
Oakes, Jessica M.....	31	Pauly, Hannah.....	38	Pujari, Akshay.....	32
Oba, Ryan W.....	81	Pauly, Kim B.....	76	Puri, Ajit.....	79
Oberai, Assad A.....	71	Pauzenberger, Leo.....	54	Pursell, Erica R.....	50, 80
O'Brien, Fergal J.....	46, 53	Pazos, Marta.....	44	Putnam, Jacob.....	49
O'Cain, Cody M.....	75	Pearle, Andrew D.....	48, 75	Puttlitz, Christian M.....	58, 74
O'Connell, Grace.....	65, 74	Pearson, S.....	69	Pyles, Connor.....	57
O'Connell, Grace D.....	46, 74, 76	Pedersen, Claus B. W.....	34	Pyles, Connor O.....	52
O'Connor, Catherine A.....	79	Pedrigi, Ryan M.....	82	Pyne, Jeffery D.....	58
Odegard, Gregory.....	44	Peelukhana, Srikara V.....	66	Qian, Yi.....	81
Oftadeh, Ramin.....	47, 62	Peirce, Shayn M.....	77	Qin, Alexander.....	70
Oguz, Gokce Nur.....	84	Peirlinck, Mathias.....	58	Qin, Ling.....	38, 47

Qin, Yi-Xian.....	70	Roberts, Kevin.....	71	Samuels, Brian.....	30
Qin, Zhao.....	42	Robles, Vicente.....	37	Sander, Ed.....	70
Qin, Zhenpeng.....	51, 67, 68	Roccabianca, Sara.....	64, 72, 75, 76, 77	Sanders, Roy.....	66
Qiu, Suhao.....	57	Rodriguez, Andrea G.....	33	Sanders, Stefan.....	79
Quigley, Harry.....	39	Rodriguez, Jose F.....	83	Sanford, Ryan M.....	78
Quindlen, Julia C.....	64, 76	Rodriguez Florez, Naiara.....	55	Sansom, Kurt Russell.....	83
Quinn, Kyle.....	71	Rodriguez-Vila, Borja.....	34	Santare, Michael H.....	45
Qureshi, Hamna J.....	53	Rodriguez y Baena, Ferdinando.....	78	Santner, Thomas L.....	75
Qwam Alden, Arz Y.....	55	Rogers, John.....	43	Santos, Stephany.....	68
Raanani, Ehud.....	81	Roldán-Alzate, Alejandro.....	50, 60, 66	Santschi, Elizabeth M.....	73
Rabidou, Jake E.....	56	Rolland du Roscoat, Sabine.....	55	Sarntinoranont, Malisa.....	65, 67, 76
Rabin, Yoed.....	68	Rollick, Natalie C.....	60	Sass, Lucas R.....	63, 83
Race, Jonathan A.....	75	Romereim, Sarah.....	51	Sather, Benjamin J.....	57
Rachev, Alexander.....	58	Ronan, William.....	72	Sathy, Binulal N.....	29
Radhakrishnan, R.....	51	Roner, Michael.....	67	Saucerman, Jeffrey J.....	30
Raghav, Vrishank.....	35, 40	Rossini, Lorenzo.....	50	Savoie, Felix H.....	75
Raghavan, M.....	50	Rothenberger, Sean M.....	26, 63	Savvopoulos, Fotios.....	82
Raghavan, Suresh M. L.....	83	Rotman, Oren M.....	36	Saw, Shier Nee.....	53
Rahman, Munsur.....	48, 73	Routzong, Megan R.....	53	Scali, Salvatore T.....	81
Rais-Rohani, Sammira.....	39	Rowe, David.....	54	Scalo, Carlo.....	50
Raj, Milan.....	41	Rowghanian, Payam.....	52	Scheig, Elizabeth M.....	69
Raju, Nivetha.....	60	Rowson, Bethany.....	70	Schiavazzi, Daniele E.....	43, 80
Ramachandra, Abhay B.....	43	Rowson, Daniel T.....	45	Schiavone, Nicole K.....	81
Ramasubramanian, Anand K.....	72	Rowson, Steven.....	41, 66, 70	Schievano, Silvia.....	55
Ramaswamy, Sharan.....	60, 65, 71	Roy, Anuradha.....	73	Schluns, Jacob.....	71
Ramo, Nicole L.....	58, 74	Roy, Shuvo.....	41	Schmidig, Gregg.....	55
Randrianalisoa, Jaona.....	67	Royall, Lorraine.....	79	Schmidt, John L.....	52
Rao, Akshay.....	77	Rozan, Samuel.....	47	Schmuck, Eric G.....	40
Raptis, Anastasios.....	55	Rozen, Nimrod.....	75	Schoell, Samantha L.....	27
Rattanakijsumtorn, Komsan.....	31	RUAN, SHIJIE.....	78	Scholl, Frank.....	60
Rausch, Manuel K.....	50, 80	Ruberti, Jeffrey A.....	76	Schreier, David A.....	31, 40
Ray, Nicole.....	32	Rubin, J. Peter.....	38	Schroeder, Megan.....	33
Read, A. Thomas.....	39	Ruppel, Edward F.....	38	Schumacher, A.....	50
Reeves, Jonathan.....	79	Rutkowski, David R.....	60	Schwamer, Stephen A.....	44, 58
Rego, Bruno V.....	25	Rutten, Marcel.....	79	Schwartz, Andrea G.....	60
Reid Bush, Tamara.....	32, 69, 76	Rutten, Marcel C. M.....	42, 71	Schwendinger-Schreck, Jamie.....	52
Reilly, Matthew.....	77	Ryan, Alan J.....	53	Scott, Justin.....	32
Reiter, Alex.....	42	Rylander, Marissa N.....	28	Screen, Hazel R. C.....	45, 54, 59
Rejeski, W. Jack.....	27	Saaïd, Hicham.....	35	Seelbinder, Benjamin.....	38
Renani, Mohsen.....	55, 69	Sack, Kevin L.....	40	Segers, Patrick.....	31, 35, 44, 58, 79
Revuru, Naga Arvind.....	67	Sacks, Michael S.....	25, 33, 35, 36, 40, 42, 62, 79, 80	Seiber, Breanna N.....	42
Rex, David.....	79	Sadhal, Satwinder S.....	31	Seker, Drew.....	57
Rexwinkle, Joe.....	73	Saez, Pablo.....	82	Selby, John.....	70
Rey, Julian.....	67	Safa, Babak N.....	45	Sen-Gupta, Ellora.....	41
Reynaud, Juan.....	58	Saffarzadeh, Mona.....	49	Serino, Gianpaolo.....	76
Reynolds, Noel.....	57	Safonov, Alexander.....	46	Serre, Maud.....	67
Rezvan, Amir.....	31	Saha, Amit K.....	72	Serruys, Patrick W.....	36
Richards, Mark.....	82	Sailer, Anna M.....	54	Servidio, Damon.....	55
Ridwan, Yanto.....	31	Sako, Edward Y.....	25	Serwane, Friedhelm.....	52
Rigos, Jacob.....	42	Saleh, Kamiel A.....	38	Seta, Francesca.....	46
Riley, Graham P.....	59	Salinas, Manuel.....	65	Seyed Vosoughi, Ardalan.....	25, 74
Ristori, Tommaso.....	70	Salloum, Maher.....	67	Seykora, Thomas F.....	32
Rizzo, Giovanna.....	50	Samady, Habib.....	31, 43	Sganga, Jake A.....	41
Roach, Koren E.....	41	Sampath, Smita.....	82	Shabanisamghabady, Mitra.....	80
Robbins, Andrew B.....	63, 77				

AUTHOR INDEX BY PAGE NUMBER

Shadden, Shawn C.....	27, 28, 40, 68, 77, 82, 84	Solanki, Prem K.....	68	Swaminathan, Swathi.....	71
Shah, Anoli.....	25, 74	Solivio, Morwena J.....	37	Sweet, Daniel T.....	32
Shaik, S.....	71	Solomon, Ruth A.....	74	Swei, Anisa.....	51
Shang, Jessica K.....	81	Somasekhar, Likitha.....	71	Swillens, Abigail.....	44
Shar, Jason.....	82	Somers, Jeffrey.....	49	Szczesny, Spencer E.....	65
Sharifi Renani, Mohsen.....	48, 73	Song, Jonathan W.....	28, 33, 72	Szeri, Andrew J.....	76
Sharp, M. Keith.....	27, 67, 82	Sori, Andrew L.....	73, 74	Szivek, John A.....	42
Shavik, Sheikh Mohammad.....	72	Soslowsky, Louis J.....	38, 53	Taber, Larry A.....	34
Shay, Sheila.....	68	Sotiropoulos, Fotis.....	35	Tabima, Diana.....	31
Shazly, Tarek.....	58, 77	Soung, Do Y.....	27	Tabima, Diana M.....	45
Shcherbakova, Darya.....	44	Spang, Jeffrey T.....	75	Tabin, Cliff.....	30, 51
Shedd, Daniel F.....	52	Spasic, Milos.....	44	Takagi, Tetsuya.....	48
Shemesh, Maoz.....	75	Spiesz, Ewa M.....	59	Takenaga, Tetsuya.....	48
Shemirani, Atena Irani.....	34	Spinale, Francis G.....	77	Talman, Lee.....	77
Shenoy, Vivek.....	33, 57	Sprague, Eugene.....	46	Tamimi, Ehab A.....	58, 65, 76
Shenoy, Vivek B.....	57, 61	Spurlin, James W.....	52	Tan, Andrea R.....	29
Sheriff, Jawaad.....	28	Sridharan, Rukmani.....	46	Tan, Jifu.....	56
Sherman, William.....	70	Srinivasan, Dinesh.....	79	Tan, J.L.....	71
Sheth, Nirav.....	41	Srivastava, Vasudha.....	33	Tan, Philip M.....	30
Shetye, Snehal S.....	53	Staiculescu, Marius.....	59	Tan, Wei.....	33
Shi, Wentao.....	28	Stalker, Timothy J.....	27	Tan, X. Gary.....	52
Shi, Xiaodan.....	79	Stannard, James P.....	35	Tan, Zhengchu.....	78
Shirasaki, Shota.....	65	Stemper, Brian.....	74	Tanabe, Reo.....	65
Shishvan, Siamak S.....	47, 70	Stephens, Sam E.....	25	Tanaka, Martin L.....	64, 69
Shishvan, Siamak Soleymani.....	29	Stergiopoulos, Nikolaos.....	82	Tao, Luyang.....	57
Shoga, Janty.....	33	Steucke, Kerianne E.....	30	Tashjian, Robert.....	77
Showalter, Brent L.....	34	WITHDRAWN		Tasso, Paola.....	31, 55
Shuman, Jessica.....	72	Stewart, Gregory.....	43	Taylor, W. Robert.....	49
Siedlecki, Chris A.....	27	Stewart, Wade G.....	33	Teasley, Aura.....	66
Siersema, Peter.....	58	Stiansen, Nicholas.....	45	Teeter, Stephanie D.....	75
Sigal, Ian A.....	39	Stitzel, Joel D.....	27, 49	Teo, Tabitha H. T.....	61
Silva, Ikaro.....	41	Stoker, Aaron.....	35, 73	Teramoto, Atsushi.....	48
Simionescu, Dan T.....	46	Stolarski, Henryk.....	35	Tessier, Shannon N.....	51
Simon, Peter.....	66	Stone, Maureen L.....	39	Tetzlaff, Wolfram.....	25
Singh, Anita.....	32, 37, 73, 84	Stone, Nicholas.....	28	Tewari, Shivendra G.....	45
Singh, Sagar.....	49	Storaci, Hunter W.....	77	Thabit, Abdullah.....	44
Sinno, Talid.....	56	Stott, Shannon L.....	51	Thacker, Shyam.....	79
Skaro, Jordan M.....	66	Stratton, Amanda.....	28	Thakore, Mayur.....	55
Skinner, Matthew J.....	37	Strother, Charles.....	55	Thames, Alison T.....	77
Skov, Søren N.....	81	Stylianou, Antonis.....	48, 73	Thein, Ran.....	48
Slepian, Marvin J.....	28, 36	Subramaniam, Vish.....	72	Thirugnanasambandam, Mirunalini.....	46, 59, 66, 77
Smith, Chad.....	60	Sucosky, Philippe.....	69, 82	Thomas, Ashley.....	25
Smith, Harvey E.....	38	Sugawara, Motoaki.....	66	Thomas, Vineet S.....	35, 64
Smith, Jordan L.....	42	Sulchek, Todd.....	28	Thommasin, Daniela.....	79
Smith, Kenneth L.....	25	Sulkar, Hema.....	77	Thomopoulos, Stavros.....	42, 47, 60
Smith, Lachlan J.....	38	Sultan, Sherif.....	26, 79	Thompson, Christopher C.....	37
Smith, Lucas.....	61	Summers, Richard L.....	39	Thomsen, Jesper S.....	27
Smith, Olivia.....	45	Sun, Mei.....	38, 47	Thornton, Gail M.....	60
Snider, J. Caleb.....	26	Sun, Wei.....	44, 71	Thorpe, Chavaunne T.....	54, 59
Snyder-Mackler, Lynn.....	48	Sunderland, Kevin.....	55	Thunes, James.....	75
Soares, Joao S.....	42, 79	Sun Han Chang, Raul A.....	54	Thunes, James R.....	59
Soares, João S.....	40	Sunyer, Raimon.....	76	Thurrow, Brian.....	35
Socha, John J.....	83	Suresh, Hamsini.....	29	Tian, Limei.....	43
Soe, Mi Thant Mon.....	71	Suryanarayanan, Raj.....	68	Tillman, Shea.....	68
		Susilo, Monica E.....	76		



AUTHOR INDEX BY PAGE NUMBER

Woodard, Tim .....	62	Yuan, Jessica X. ....	37
Worke, Logan J. ....	38	Yuhn, Changyoung .....	66
Wright, Alexander C. ....	34	Zakerzadeh, Rana .....	80
Wright, John .....	41	Zakko, Phillip .....	54
Wu, Jiacheng .....	77	Zaman, Muhammad Hamid .....	34
Wu, Lyndia C. ....	49	Zambrano, Byron A. ....	54
Wu, Michael C.H. ....	80	Zarei, Vahhab .....	72
Wu, Mingming .....	33	Zaretsky, Uri .....	36
Wu, Wei .....	36, 83	Zarins, Christopher K. ....	40
Wujciak, Anna .....	26	Zarkoob, Hoda .....	70
Wykrzykowska, Joanna J. ....	36	Zaw, Myo Min .....	37, 67, 68
Xenos, Michalis .....	55	Zeigler, Stacey L. ....	32, 69
Xi, Ce .....	71	Zeller, Jillynne .....	43
Xiang, Yujiang .....	70	Zeng, Wei .....	72, 73, 77
Xing, Ruoyu .....	31	Zeng, Xiaowei .....	72, 73
Xing, Tao .....	43, 63	Zgonis, Miltiadis H. ....	42
Xu, Bin .....	76	Zhan, Li .....	37, 51, 68
Xu, Fei .....	80	Zhang, Aili .....	37, 68
Xu, Feng .....	51	Zhang, Jiangyue .....	57
Xu, Gang .....	30	Zhang, Kangwei .....	37
Xu, Hao .....	60	Zhang, Lina .....	77
Xu, Lisa .....	37, 68	Zhang, Mingzi .....	81
Xu, Xiao Y. ....	36	Zhang, Peng .....	28
Xu, Xiao Yun .....	56	Zhang, Qinkun .....	26
Xuan, Guanghui .....	72	Zhang, Sijia .....	41, 49, 72
Xuan, Yue .....	77	Zhang, Song .....	79
Yamakawa, Satoshi .....	48, 75	Zhang, Will .....	42
Yamashita, Toshihiko .....	48	Zhang, Yanhang .....	34, 46, 49, 76
Yanagisawa, Hiromi .....	59	Zhao, Ansha .....	33
Yang, Bo .....	46, 74, 76	Zhao, Feng .....	57, 73
Yang, Haisheng .....	27	Zhao, Hongbo .....	27, 44
Yang, Hao .....	33	Zhao, Shiqing .....	68
Yang, Hongli .....	44, 58	Zhao, Wei .....	37, 49, 52, 57, 78
Yang, Hua .....	72	Zhao, Xiaodan .....	54
Yang, Sarah H. ....	49	Zhao, Xuefeng .....	57
Yang, Yi .....	67	Zheng, Wenjun .....	72
Yang, Yuchen .....	44	Zhong, L. ....	71
Yap, Choon Hwai .....	53, 60, 61, 82	Zhong, Liang .....	54
Yap, Choon-Hwai .....	82	Zhong, Shengkui .....	72
Yarimitsu, Seido .....	65	Zhong, Xiaodong .....	43, 49
Yoder, Claude H. ....	42	Zhou, Enhua .....	76
Yoder, Mervin C. ....	45	Zhou, Jiangbing .....	51
Yoganandan, Narayan .....	74	Zhou, Lei .....	31
Yoganathan, Ajit .....	35	Zhou, Minhao .....	65, 74
Yoganathan, Ajit P. ....	25, 35, 40	Zhou, Yilu .....	45
Yoon, Donghwan .....	47	Zhu, Jian .....	61
Yoshida, Kyoko .....	26, 58	Zhu, liang .....	37, 54, 67, 68
Yoshida, Masahito .....	48	Zhu, Ya Xing .....	44
Yotti, Raquel .....	50	Zhuo, Jiachen .....	39
Yousaf, Awais .....	79	Zimmerman, Brandon K. ....	44
Yousefi, Atieh .....	81	Zorlutuna, Pinar .....	42
Yu, Guanglin .....	67	Zou, Huashan .....	34
Yu, Meilin .....	67	Zou, Jincheng .....	37, 68
Yu, Xunjie .....	46, 49	Zuby, David S. ....	41
Yuan, Chun .....	83	Zuniga-Romero, Carlos A. ....	83

## Session Chair/Co-Chair Index

Abramowitch, Steven.....	58	Nerurkar, Nandan L. ....	51
Alford, Pat.....	30, 37	Nicolella, Dan .....	27
Andarawis-Puri, Nelly .....	41	Oakes, Jessica M. ....	31
Andreas, Anayiotos.....	60	O'Connell, Grace D. ....	34
Arruda, Ellen.....	54	Pedrigi, Ryan .....	44
Baek, Seungik .....	26	Peloquin, John.....	25
Baker, Brendon.....	33	Pfeiffer, Ferris .....	36
Bellini, Chiara .....	26	Pierce, David M. ....	38
Bischoff, Jeff .....	61	Pierce, Scott .....	61
Bluestein, Danny .....	36	Qin, Zhenpeng.....	51
Boerckel, Joel.....	29	Ramaswamy, Sharan .....	32
Buck, Amanda .....	35	Roccabianca, Sara .....	61
Chahine, Nadeen.....	56	Roldán-Alzate, Alejandro .....	50
Chan, Deva.....	38, 57	Rowson, Steven .....	41
Chao, Pen-hsiu Grace.....	29	Ruberti, Jeffery .....	44
Coats, Brittany.....	49	Rylander, Chris .....	37
Corr, David.....	32	Rylander, M. Nichole .....	56
Cortes, Daniel H. ....	34	Sander, Ed.....	61
Davidson, Lance.....	51	Sarntinoranont, Malisa.....	56
De Vita, Raffaella.....	46, 53	Shadden, Shawn .....	27
Eberhardt, Alan.....	47	Sigal, Ian A. ....	39, 46
Feng, Yuan .....	39	Singh, Anita .....	32, 36
Feola, Andrew.....	39	Sparks, Jessica .....	42
Figuroa, C. Alberto.....	54	Stott, Shannon.....	51
Finol, Ender A.....	36, 58	Stylianou, Antonis .....	48
Fisher, Matt.....	42	Sucosky, Philippe .....	43
Gargac, Joshua .....	45	Sun, Wei .....	25
Gayzik, Francis.....	52	Tan, Wei.....	33
Gijssen, Frank .....	31	Timmins, Lucas H.....	40, 49
Goergen, Craig .....	50	Valdez-Jasso, Daniela .....	44
Han, Bumsoo.....	28	Valen-Sendstad, Kristian .....	54
Hatami-Marbini, Hamed.....	46	Vande Geest, Jonathan .....	58
Hood, Robert L. ....	25	Vanderby, Ray .....	59
Huang, Alice .....	54	Vарner, Victor .....	30
Iaquinto, Joseph .....	41	Vedula, Vijay .....	60
Jaramillo, Paola .....	32	Vigmostad, Sarah .....	43
Ji, Songbai.....	57	Wagenseil, Jessica .....	34
Kersh, Mariana .....	41	Wenk, Jonathan.....	45
Kurt, Mehmet.....	52	Wilson, Sara E.....	55
Kuxhaus, Laurel.....	47	Winkelstein, Beth.....	25
Lake, Spencer .....	59	Wolchok, Jeff .....	44
Lee, Chung-Hao .....	55	Yoganathan, Ajit.....	40
Lee, Lik Chuan .....	34, 39	Zhang, Aili.....	37
Lessner, Susan.....	49	Zhang, JiangYue.....	49
Liao, Jun .....	29	Zhou, Jiangbing .....	28
Lujan, Trevor.....	46		
Maiti, Spandan.....	29		
Manning, Keefe .....	27		
Marsden, Alison .....	31		
Martin, Bryn A. ....	31		
McGarry, Patrick .....	56		
Michael Keith, Sharp .....	35		
Miller, Kristin .....	53		
Miller, Mark .....	48		
Morgan, Elise.....	27		



## Streamlined Research

Spend less time on building tools and more time answering clinical questions.

## Expansive Capabilities

Test any joint. Test any load.  
Test any range of motion.

## Customizable Solutions

Choose the modules and services to fit your exact research needs.

simVITRO is a flexible merging of software and hardware components for orthopaedic biomechanical testing. It is designed to provide flexibility for end users to select the anatomical joint and have the appropriate set of software tools to support their business and/or research needs.



### Software

Designed as a universal musculoskeletal simulator. Specimen modules are available for in vitro simulation of major joints including the spine, knee, foot/ankle, hip, shoulder, elbow, wrist and more.



### Hardware

Systems are scalable, flexible, and configurable. simVITRO can be built around new or existing robotic infrastructure in your laboratory or testing facility.



### Integration

Utilize the expertise of the Cleveland Clinic BioRobotics Laboratory to help you develop your state of the art facility.



### Let us help you configure your system

Designed with flexibility and customization in mind, simVITRO® can be configured to provide unique solutions to your challenges. Our team's extensive experience allows us to provide turn-key solutions based on our systems engineering approach.

**Call Us:** 216.505.0003 | **Email Us:** [simVITRO@ccf.org](mailto:simVITRO@ccf.org)

[Learn More at simVITRO.clevelandclinic.org](http://simVITRO.clevelandclinic.org)

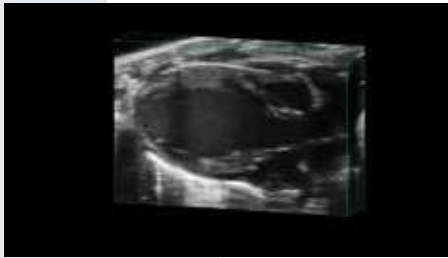
# Seeing More Matters



biomechanics  
bioengineering  
biotransport

**Visualize, Analyze** and **Quantify** mechanics of the cardiovascular system, blood flow dynamics and other *in vivo* tissue interactions, all in real-time with high resolution.

## 4D IMAGING

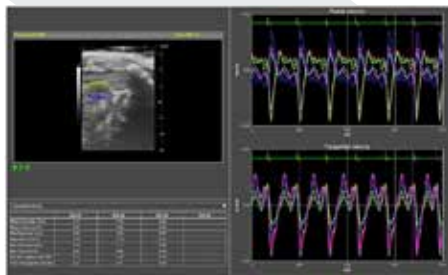


Cardiac Hypertrophy in 4D

- Obtain incredible images and data from your study animals without any assumptions
- Dynamic motion of the myocardium throughout the cardiac cycle with the 3D geometry of the heart

Full access to RF mode or raw data formats for offline processing algorithms in Matlab or other programming environments.

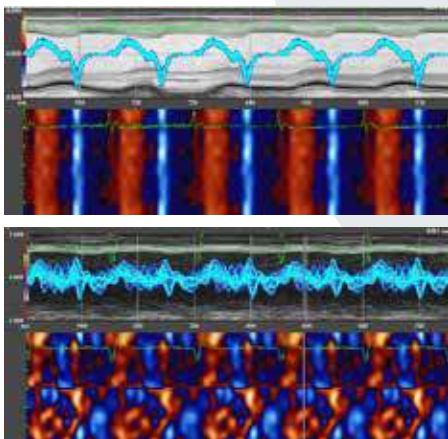
## VEVO VASC SOFTWARE



Vascular analysis using Vevo Vasc software

- Quantify wall motion
- Measure vessel microanatomy and Intima Media Thickness (IMT)
- Assess stiffness using pulse wave velocity

## VEVO STRAIN SOFTWARE

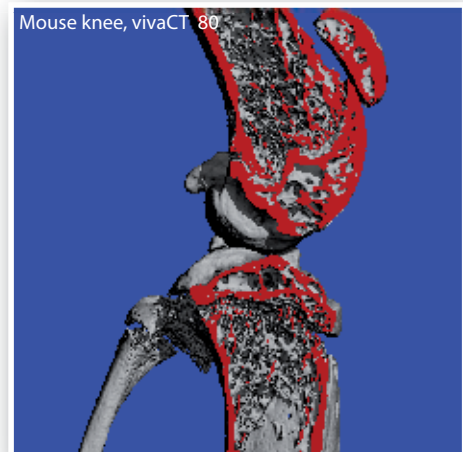
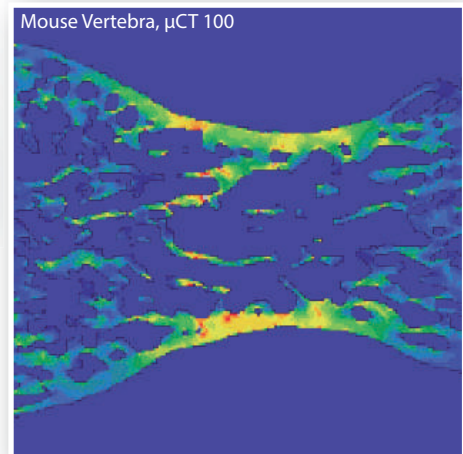
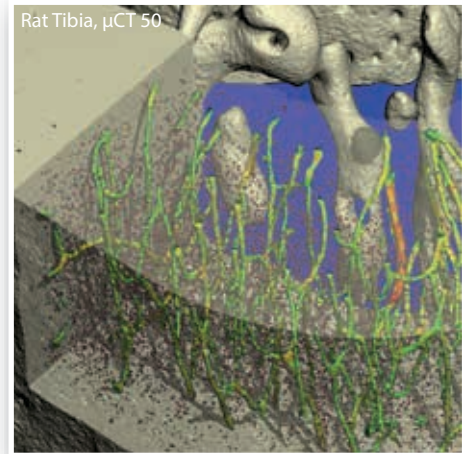


Clear differences seen between normal heart (top) and infarcted heart (bottom)

- Detect regional abnormalities and tissue deformation to determine disease onset
- Evaluate longitudinal, radial, and circumferential strain
- Measure dyssynchrony and track disease progression



## MicroCT Systems & Solutions



- high resolution imaging for accurate results
- automatic sample changer
- large field of view/large samples
- streamlined, advanced 3D analysis
- compression/tension stage
- optional FE analysis
  
- scan and analysis services

[www.scanco.ch](http://www.scanco.ch)  
[www.microct.com](http://www.microct.com)  
[info@scanco.ch](mailto:info@scanco.ch)

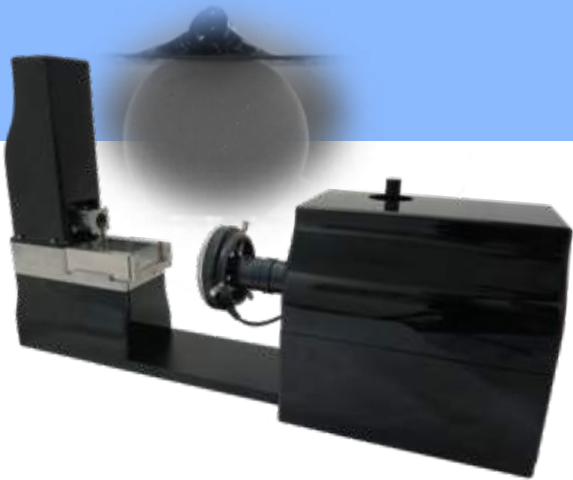
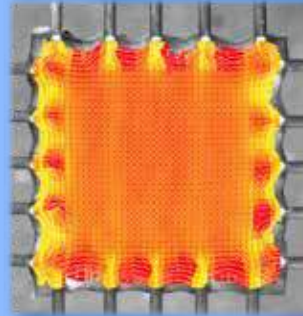
# You don't drive finishing hammer



## The BioTester:

### Biaxial testing for soft planar specimens

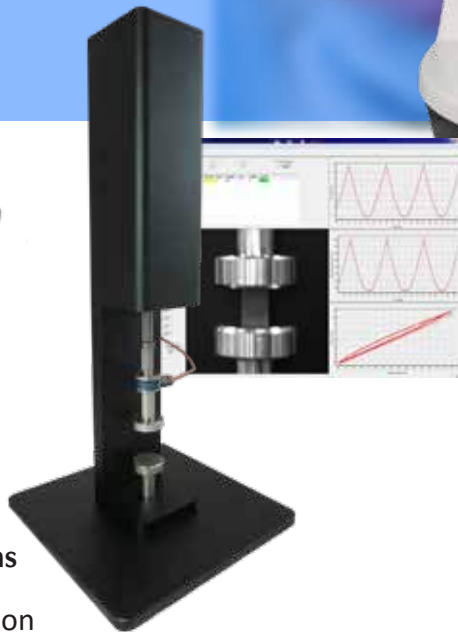
The BioTester makes biaxial testing more accessible than ever before. It can accommodate several mounting configurations including our patented BioRakes, force balanced tethers, and mechanical grips.



## The MicroSquisher:

for small specimens

on



Visit our booth at SB3C to find out more



[info@cellscale.com](mailto:info@cellscale.com)  
[www.cellscale.com](http://www.cellscale.com)

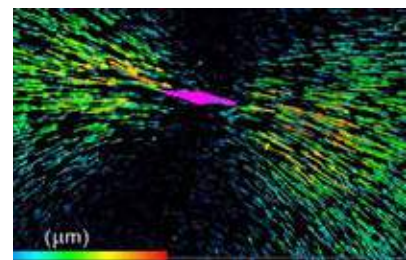


## APPLY NOW FOR GRADUATE STUDIES IN MECHANOBIOLOGY



We train graduate students to work across disciplines. Incoming engineers and physicists expand their knowledge in organismal, cellular, and molecular biology and develop a practical understanding of the nature of biological research. Similarly, incoming biologists grow in their understanding of mechanics and quantitative methods. Together, these trainees communicate and collaborate in innovative and meaningful ways in the center's integrative research projects.

CEMB seeks graduate students from across science and engineering disciplines, and from all cultural and socio-economic backgrounds. Opportunities are available at all sites for students from backgrounds that have typically been under-represented in the sciences, including the specialized mentoring to ensure the success of all its trainees.



### HOW TO APPLY

CEMB graduate fellows are admitted through standard graduate group/graduate program channels. Prospective students should contact individual CEMB faculty members and the associated individual graduate programs as they prepare their applications.

LEARN MORE AT: [www.cemb.org](http://www.cemb.org)

# UltraFocus

## Digital Radiography System

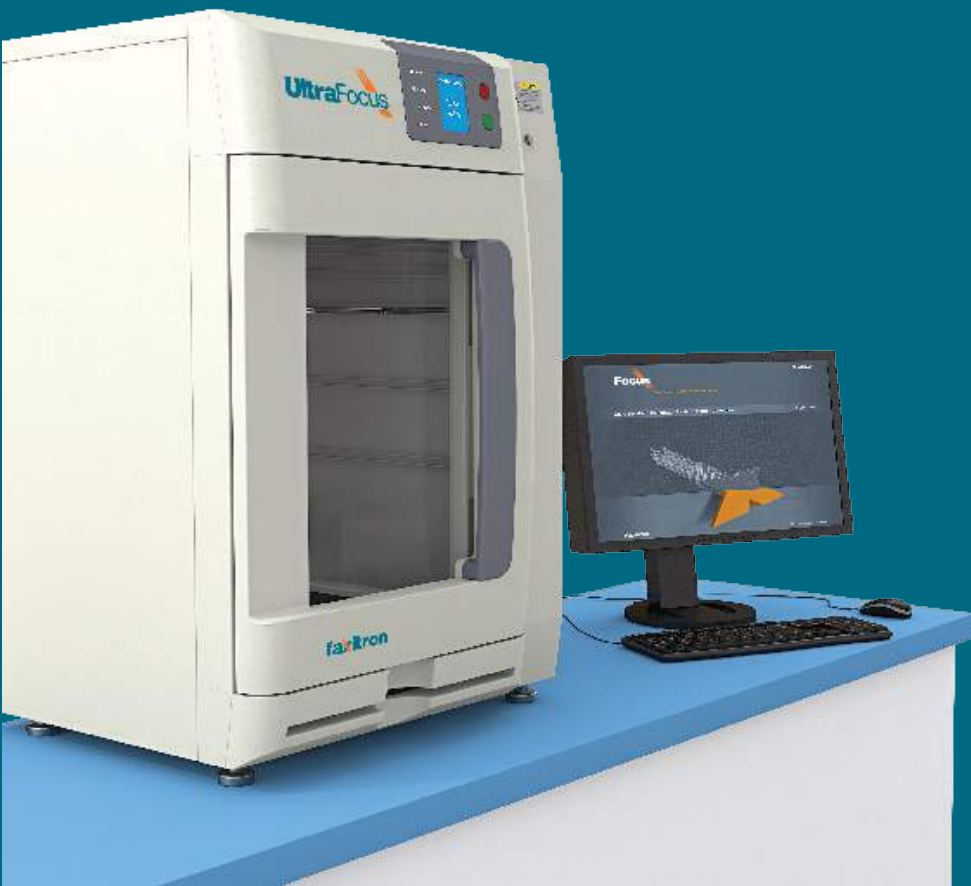
Delivering a large field of view and ultra-high resolution

The compact and fully shielded X-ray cabinet can be placed directly on the benchtop in your lab or where you need access to imaging.

Medical Device & Implant:

- Product Development
- Quality Control
- Failure Analysis

# Focus on the bigger picture



faxitron®

Let your cell cultures  
**Mimic Nature**  
with equipment from  
**FLEXCELL® INTERNATIONAL**

**APPLY PHYSIOLOGICAL LOADS WITH THE FX-5000™ SYSTEMS**



Computer regulated bioreactors for applying tension or compression to cells *in vitro*.

Simulate *in vivo* tissue strains and frequencies.

Apply up to 33% substrate elongation with the tension system or up to 14 lbs of force with the compression system.

Program & regulate multiple strain amplitudes, frequencies, duration, and waveform shapes.

**GROW CELLS IN A DYNAMIC 3D MICROENVIRONMENT WITH THE TISSUE TRAIN® SYSTEM**

Create cell-seeded bioartificial tissue constructs.

Various shapes (i.e., linear, trapezoidal, or circular) to create biologically relevant constructs.

Apply tensile strain to growing bioartificial tissues to simulate strains experienced *in vivo*.

Hydrogel kits for creating reproducible cell-seeded collagen matrices.



# Low-Flow Anesthesia

SomnoSuite®



**NEW** Touch Screen



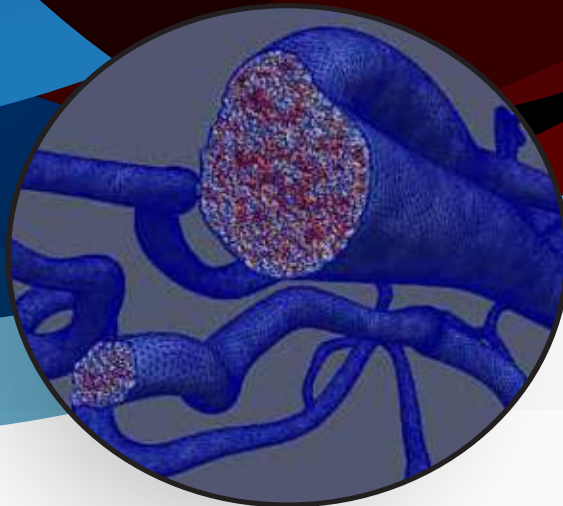
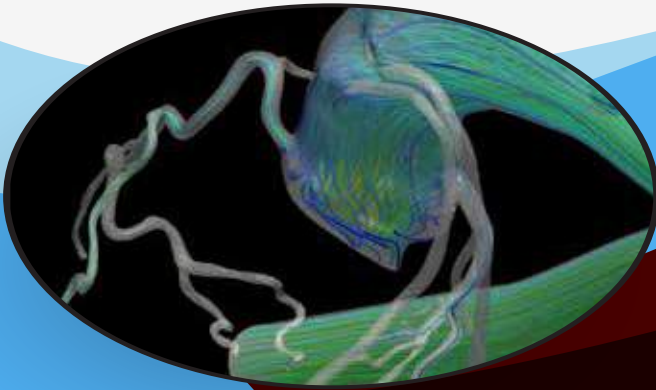
- **Integrated digital vaporizer**  
*Auto-calculates flow rate based on animal weight*
- **Built-in air compressor**  
*Use room air or compressed gas*
- **Flow rates from 25mL to 1L**  
*Use less isoflurane*

*Safer for you, safer for your animals.*



**Kent Scientific**  
CORPORATION

[www.kentscientific.com/somno](http://www.kentscientific.com/somno)  
888-572-8887 | 860-626-1172



Come visit our booth at SB<sup>3</sup>C!

And check us out online: [www.simvascular.org](http://www.simvascular.org)

- **Image Analysis:** volume rendering, image denoising, edge detection
- **Model Construction:** level set segmentation, model repair tools
- **Meshing:** radius-based and boundary layer meshing, adaptive mesh refinement
- **Simulation:** deformable walls, variable properties, highly parallelized solver

## New Features!

New Graphical User Interface.

Broader Image Segmentation Capabilities.

Enhanced CAD Modeling.

Versatile Physiologic Boundary Conditions.

Expanded Documentation for Research and Education.

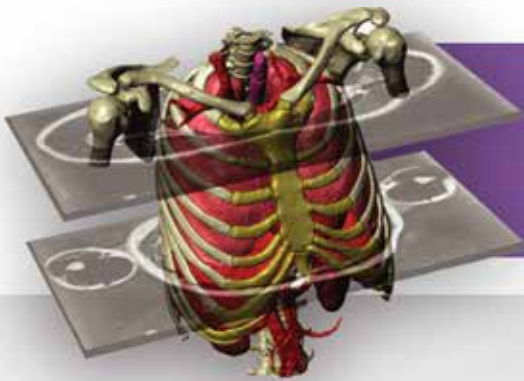
## Simpleware Software

For 3D Image Visualization, Analysis and Model Generation

- Process data from a wide range of 3D imaging modalities
- Extensive segmentation and measurement tools
- Industry leading, robust and fast multi-part meshing
- Direct export to all leading FEA and CFD solvers
- Customizable with scripting and macros



Download Free Trial

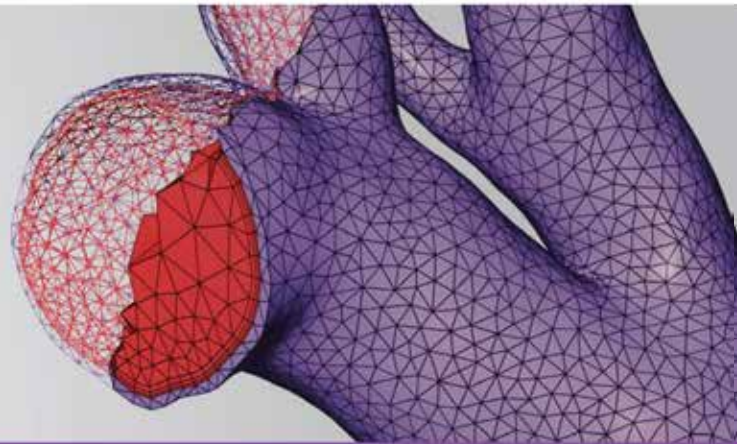


### Visualization & 3D Image Processing

Accurately reconstruct, process and quantify 3D image data

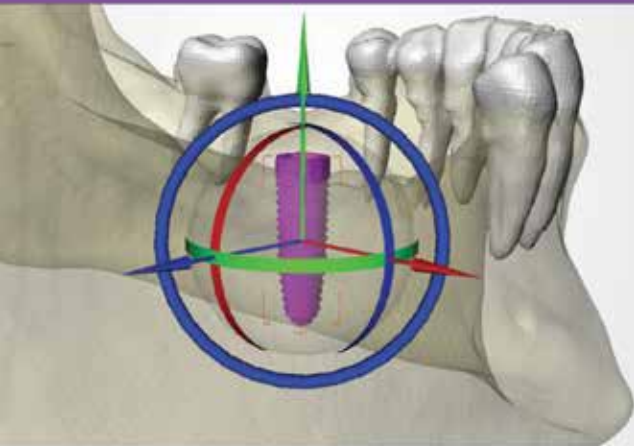
### Model Generation for CAD and CAE

Generate watertight computational models for design and simulation



### Integrate CAD and 3D Image Data

Position medical devices within anatomies



### 3D Printing

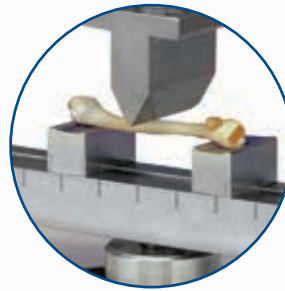
Create and optimize models for 3D printing



# INDUSTRY-LEADING PERFORMANCE, VERSATILITY, and DURABILITY



3200 with  
BioDynamic Bioreactor  
Chamber



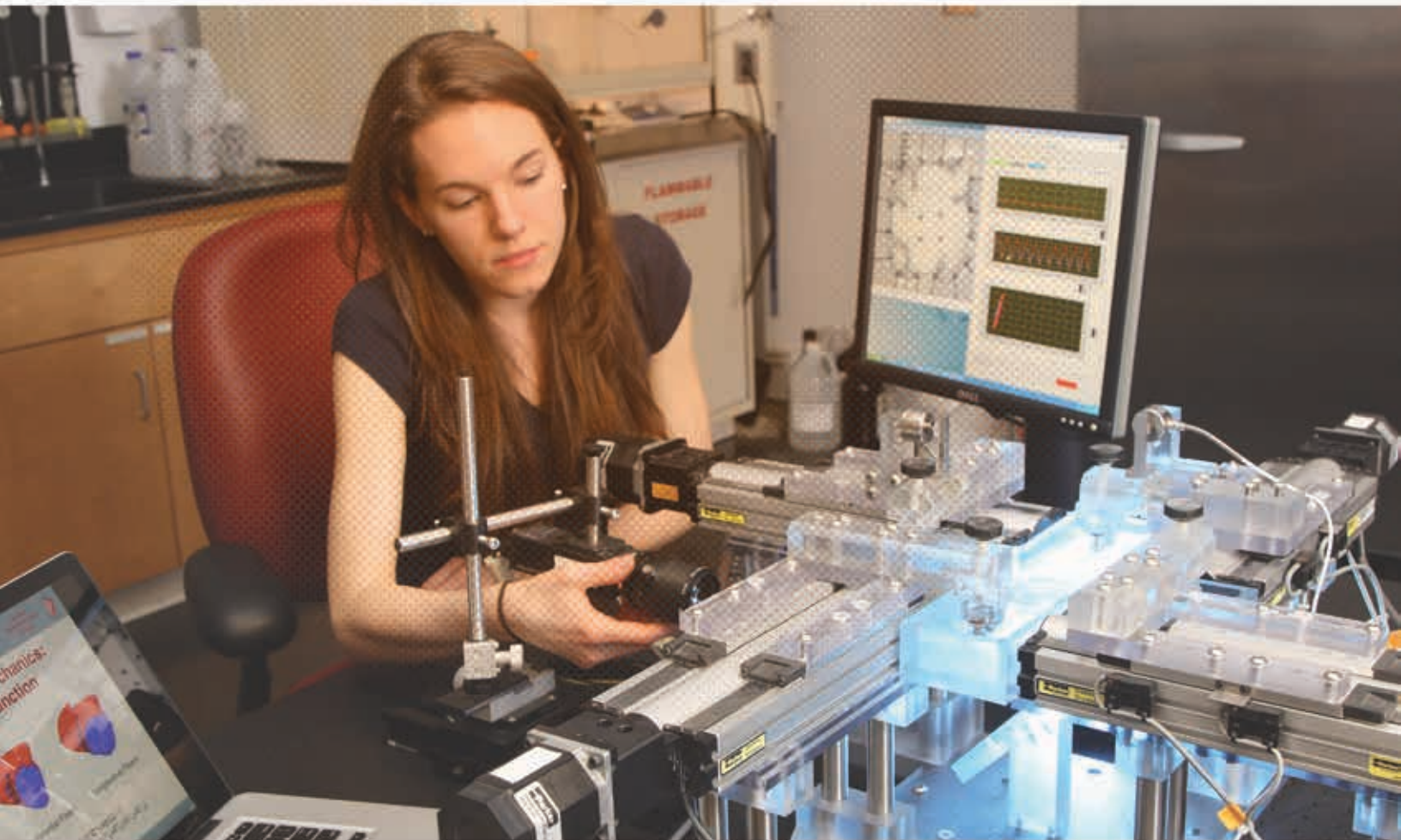
## MECHANICAL TEST INSTRUMENTS

- Biomaterials
- Musculoskeletal Tissues
- Vascular Tissues
- Organs
- Cardiovascular Devices
- Orthopaedic Devices
- Fatigue
- Failure Testing
- Stress Relaxation/Creep
- In Vivo Loading
- Sterile Mechanical Stimulation
- Multi-axial (Axial/Torsion/Pulsatile)



1967 - 2017

# **ANNOUNCING 50 YEARS OF BME AT UVA**



**ENGINEERING**  
Department of Biomedical Engineering



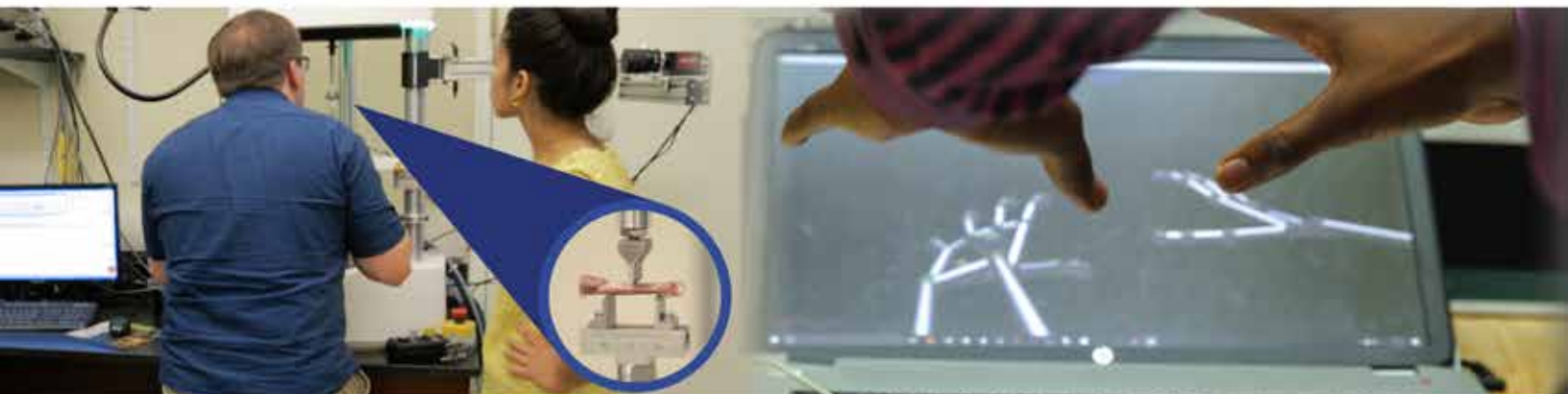
## BIOMEDICAL ENGINEERING



The VCU Department of Biomedical Engineering, located in the dynamic capital of Richmond, Virginia, offers B.S., M.S., and Ph.D. degrees in Biomedical Engineering as well as a combined M.D./Ph.D. program. The graduate program was founded in 1984, making it one of the first biomedical engineering programs in Virginia.

**We are undertaking a significant expansion of our graduate programs.**

We maintain a close, collaborative relationship with VCU Health, a leading academic medical center, where students receive personalized attention as they work on groundbreaking research. Faculty specialize in a variety of research areas including mechanobiology and regenerative medicine, rehabilitation engineering, human-computer interfaces, biomechanics, biomaterials, imaging and cardiovascular devices.



For more information about our programs, contact undergraduate director **Paul Wetzel** ([pawetzel@vcu.edu](mailto:pawetzel@vcu.edu)) or graduate director **Jennifer Wayne** ([jwayne@vcu.edu](mailto:jwayne@vcu.edu))

**[biomedical.egr.vcu.edu](http://biomedical.egr.vcu.edu)**



# 8th World Congress of Biomechanics

8 - 12 July 2018  
Dublin, Ireland

[www.wcb2018.com](http://www.wcb2018.com)



wcb2018

**Call for Abstracts**  
26<sup>th</sup> June 2017

**Registration Opens**  
1<sup>st</sup> August 2017

**Submission Deadline**  
19<sup>th</sup> December 2017



## Plenary Speakers



Prof Elazer Edelman  
Harvard-MIT, USA



Prof David Elad  
Tel Aviv University, Israel



Prof Jay Humphrey  
Yale University, USA



Prof Takuji Ishikawa  
Tohoku University, Japan



Prof Chwee Teck Lim  
National University of Singapore,  
Singapore



Prof Lori Setton  
Washington University  
in St Louis, USA



Prof Julie Steele  
University of Wollongong,  
Australia



Prof Merryn Tawhai  
University of Auckland,  
New Zealand



Prof Xavier Trepap  
IBEC Barcelona, Spain



Prof Clemens van  
Blitterswijk  
Maastricht University,  
The Netherlands



## UNDERGRADUATE AND MASTERS DEGREES

Our unique undergraduate curriculum builds around a core of **6** courses to provide students with a multidisciplinary base for the quantitative analysis of biological systems, which leads to a choice of one of four possible concentrations to dive deeply into an area of great importance to bioengineering. Students can continue onto a masters degree program in these concentrations which will provide significant opportunities for student research.

## 4 CONCENTRATIONS

- » Bioimaging and Signal Processing
- » Cell and Tissue Engineering
- » Biomechanics
- » Biomedical Devices

“ What I like about Northeastern's Bioengineering program is its interdisciplinary nature which gives you the freedom to shape your educational experience through a variety of concentrations, coops across the industry, and accessible on-campus research. Sharing this journey with passionate students and faculty in the heart of Boston's innovative biotech scene makes it an exciting program to be a part of. ”



— Zachary Flinkstrom, bioengineering student

## PHD DEGREES

Our interdisciplinary PhD program in Bioengineering draws on the expertise of faculty across the University and reflects the significant strengths of bioengineering research in multiple areas. Students accepted to the program will complete a rigorous core curriculum in basic bioengineering science followed by completion of an immersion track curriculum.

## 8 TRACKS

- » Bioimaging and Signal Processing
- » Biomechanics and Mechanobiology
- » BioMEMs/BioNANO
- » Biochemical and Bioenvironmental Engineering
- » Motor Control
- » Biocomputing
- » Cell and Tissue Engineering
- » General Bioengineering Studies

“ My goal starting graduate school was to acquire the knowledge and skills necessary to be part of the cutting edge of human progress as we learn how to engineer biology. The courses I took, combined with the experimental techniques and computational methods practiced in my research, met that goal and exceeded my expectations. Mentoring undergraduate research and being involved in the diverse research community at Northeastern and in Boston has made my PhD journey even more rewarding and fulfilling. Without a doubt Bioengineering at Northeastern was the right choice for me! ”



— Jeffrey Bouffard, bioengineering PhD student

## COOPERATIVE EDUCATION AND EXPERIENTIAL LEARNING

Experiential learning, anchored by our signature cooperative education program, lies at the heart of a Northeastern education. Our broad mix of experience-based education programs—including co-op, student research, service learning, and global learning—build the connections that enable students to transform their lives. These connections enrich classroom studies, fuel intellectual and personal growth, and provide students with opportunities to explore their path and discover their passion.

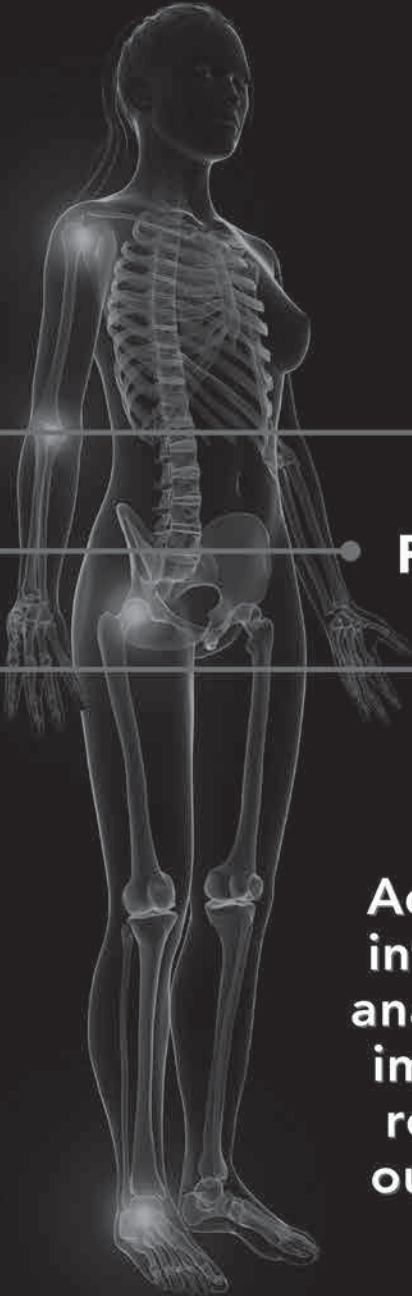
These points of real-world engagement—at a university that is a world leader in experiential learning—mean that our students are better prepared to succeed in the lives they choose. It's the Northeastern difference.

Contact us: 212 A Lake Hall, Northeastern University, Boston, MA 02115; [bioe@neu.edu](mailto:bioe@neu.edu)

**Better Data.  
Better Decisions.  
Better Results.**



Ultra-thin  
sensors



- **Accurate & reliable pressure data**
- **Peer accepted & research validated system**
- **Synchronize with external systems**

**Advanced  
intra-joint  
analysis for  
improved  
research  
outcomes**

**Objective plantar  
pressure data  
for enhanced  
gait analysis**



**VISIT THE TEKSCAN BOOTH  
FOR A DEMONSTRATION!**



+1.617.464.4281



1.800.248.3669



info@tekscan.com



www.tekscan.com/medical



**SAMUELI**  
SCHOOL OF ENGINEERING  
UNIVERSITY of CALIFORNIA • IRVINE

Department of  
Biomedical  
Engineering

The UCI [Department of Biomedical Engineering's](http://www.bme.uci.edu) mission is to inspire engineering minds for the advancement of human health.

Established in 2002, the UCI BME Department offers two undergraduate degree programs, M.S. and Ph.D. degrees in biomedical engineering and a combined M.D./Ph.D. degree in conjunction with the UCI Scholl of Medicine. There are currently 23 full-time faculty and 59 affiliated faculty. Research areas include micro/nano medicine, biophotonics, biocomputation and tissue engineering, with clinical emphases in neuroengineering, cardiovascular diseases, cancer and ophthalmology.

Included in these opportunities are major campus research centers at the Beckman Laser Institute (biophotonics), the Edwards Lifesciences Center for Advanced Cardiovascular Technology, the Chao Family Comprehensive Cancer Center, the Integrated Nanosystems Research Facility, the Laboratory of Fluorescence Dynamics, and the Micro/nano Fluidics Fundamentals Focus Center. Because of its interdisciplinary nature, biomedical engineering attracts students with a variety of backgrounds.

<http://www.bme.uci.edu>

## Static and Dynamic Biomechanical Test Equipment

[www.testresources.net](http://www.testresources.net)

### PRODUCT LINE

Our test machines have a unique modular design of interchangeable components. Modularity ensures affordable highly flexible systems that can be configured to serve a wide range of applications.

### STATIC & DYNAMIC TEST MACHINES

Our electrodynamic test machines are the best of both worlds: delivering a broad speed range of .001 hz to 15 hz and forces from 50 grams to 100 Kn.

### SERVO HYDRAULIC TEST MACHINES

TestResources also offers electromechanical and servo hydraulic machines to match your static and dynamic test applications. For test requirements of 25 to 100 kN, take a look at our 900 Series product line on our website.

Call our engineers today!

**800.430.6536**

[www.testresources.net](http://www.testresources.net)



830 Family Electrodynamic Test Machine

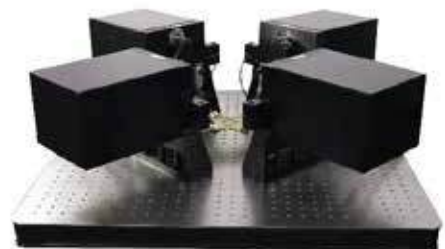
- TestResources presents a modular product family of biomechanical test equipment made for flexibility and affordability
- Our turnkey design allows for ease of use and convenient service
- With a reputation as creative problem solvers, TestResources has delivered innovative solutions to over 2000 customers located in more than 25 countries - including top biomechanics research universities and major medical companies all over the world.



840 Family Compact Electrodynamic Test Machine

**SB<sup>3</sup>C** biomechanics.  
bioengineering.  
biotransport.

Give us a call and talk to an application engineer to discuss your unique biomechanical testing application needs.



574LE Family Electrodynamic Test Machine

## DEGREE PROGRAMS

The Joint Department of Biomedical Engineering is incorporated into both NC State University and the University of North Carolina at Chapel Hill. We offer Doctor of Philosophy (Ph.D.), Master of Science (M.S.), and Professional Science Masters (P.S.M.) degrees.

## RESEARCH CENTERS AND FACILITIES

The **Biomedical Research Imaging Center (BRIC)**, established in 2005 and located in the brand new (2014) Marsico Hall, serves as a backbone for pre-clinical and clinical imaging research, and includes some of the most state-of-the-art biomedical imaging facilities in the world. Core resources include multiple MRI systems (9.4 T, 7 T and 3 T), including one of only a handful of MR-PET systems in the country, two cyclotrons, and a radiochemistry facility. State-of-the-art systems for other imaging modalities include ultrasound, optical imaging, PET-CT, SPECT-CT, and carbon nanotube CT.

Micro and Nano devices are fabricated on both campuses using state-of-the-art facilities: the **NC State Nanofabrication Facility (NNF)** at NC State University and the **Chapel Hill Analytical and Nanofabrication Laboratory (CHANL)** at UNC. An 800 sq.-ft.-class 1000 cleanroom is housed within the BME department. It contains tools for micro/nanofabrication and is geared towards studies at the interface of engineering and biology. Advanced 3-D printing tools and technologies are present on both campuses.

**Regenerative Medicine infrastructure** spans multiple colleges at both NC State and UNC to include facilities within the School of Medicine, College of Veterinary Medicine, College of Textiles, Center for Comparative Medicine and Translational Research, and the College of Engineering. Infrastructure encompasses core facilities and research labs with capabilities of stem cell isolation, expansion, and differentiation; novel scaffolding and biomaterial development, testing, and scale-up; cell and tissue bioreactors; small and large animal model evaluation; and more. A **GMP facility** is currently being designed and built on the NC State campus to further advance and translate novel regenerative medicine products.



The **Rehabilitation Engineering Center (REC)** is a new center across both campuses. The state-of-the-art gait lab is located in Engineering Building III room 1408 (1,400 square feet) on NC State's Centennial Campus and is handicap accessible. The gait lab is equipped with two motion capture systems, multiple EMG systems, a EEG system, a dual-belt instrumented treadmill with incline, a portable indirect calorimetry system, a real-time ultrasound system, a biodex dynamometer, a powered overhead bodyweight support System, and a plantar pressure measurement system. Right next to the gait lab is a fabrication lab (700 square feet), dedicated to fabricating braces and experimental components. A similar setup is also available at **UNC-Chapel Hill at the Motion Analysis Laboratory**. Additionally, clinical resources are available at UNC for patient recruitment, screening, fabricating and fitting prosthetics and orthotics, PT/OT training, and outcome measurement. Furthermore, advanced 3-D printing machines and machine shops are present on both campuses.

## DEGREE REQUIREMENTS

A minimum of 30 semester hours of graduate study is required for the Master of Science (M.S.) degree. A minimum of 3 credit hours is required for thesis research.

Ph.D. students must complete a core curriculum of 27 hours of course work including research seminar, written and oral comprehensive preliminary examinations, in-depth research, a written research dissertation, and a final oral defense of the research.

## GRADUATE RESEARCH

With more than 30 tenured and tenure-track faculty members, our graduate program embraces interdisciplinary collaboration within five sub-disciplines of biomedical engineering, as well as dozens of other collaborative areas.

### RESEARCH AREAS

#### Biomedical Imaging

Research in the Biomedical Imaging area includes hardware, image processing, signal processing, imaging contrast agents, image segmentation, applications, and imaging informatics. Modalities of particular interest include ultrasound imaging, magnetic resonance imaging, x-ray, SPECT, PET and live-cell imaging.

#### Biomedical Microdevices

Research in Biomedical Microdevices involves lab-on-chip, organ-on-chip, rare-cell capture devices, single-molecule DNA sequencers, integrated sensors and other micro-scale technologies. Microdevices are engineered for clinical diagnostics and therapeutics as well as for applications in basic biomedical research.

#### Pharmacoengineering

Pharmacoengineering research works at the interface of engineering and pharmaceutical sciences to develop safer and more effective medicines and drug delivery systems. Focus areas include immunoengineering, design of nanoparticles with embedded sensors and payloads, stem-cell delivery technologies, and image-guided therapeutics.

#### Rehabilitation Engineering

Research in Rehabilitation Engineering aims to restore the motor function and quality of life of individuals with physical disabilities. Focus areas include the study of tissue/musculoskeletal biomechanics, sensorimotor integration, human movement control in healthy persons and individuals with sensorimotor deficits, development and translation of bio-inspired prosthetics and orthotics, rehabilitation robotics, neural interfaces, and technologies for fall prevention.

#### Regenerative Medicine

Research in the Regenerative Medicine area includes cutting-edge approaches to replace, engineer, or regenerate tissues and/or organs. Approaches encompass functional tissue engineering and the use of molecular biology, bioreactors, biomechanics, cytomechanics, synthetic and extracellular matrix derived biomaterials and scaffolds, biomimetics, stem cells, and mechanobiology to engineer living tissues. Investigations are performed at both the basic and applied science level with emphasis on translational investigations to best improve patient care.

## ADMISSIONS

In addition to the minimum admissions requirements below, all applicants must have competitive GRE scores. International applicants must have a total score of at least 80 on the Internet-based Test (iBT), or an overall band score of at least 6.5 on the International English Language Testing System (IELTS).

### ADMISSIONS REQUIREMENTS

Transcript(s) documenting an undergraduate or graduate degree in engineering or a quantitative science. A minimum GPA of 3.0 on a 4.0 scale is required; historically, admitted BME applicants have GPAs above 3.33/4.0. Scores from the GRE general exam taken within the last five years. Minimum V/Q GRE scores greater than the 50th percentile is required; historically, admitted BME applicants have V/Q GRE scores above the 50th/70th percentile, respectively. A 1–2 page personal statement discussing research interests and relevant background experience. The statement must identify professors within the department with whom you are interested in working. Three recommendation letters that discuss your potential for graduate study.

### COST OF STUDY

Tuition and fees for full-time study are set by North Carolina State University or The University of North Carolina at Chapel depending on the institution receiving the student's application.

### FINANCIAL AID

The department guarantees all admitted Ph.D. students funding for the first year. This funding comes from one of three sources: internal fellowships, teaching assistantships (TAs), and research assistantships (RAs). Internal fellowships and TAs are funded from department and university resources. RAs are granted by faculty members to students who are interested in working on projects in faculty member's lab. After the first year of study students are expected to transfer to RAs. Regardless of the funding source, tuition and health insurance are paid for the student by the department or faculty grant. Student out-of-pocket expenses are limited to student fees.

### APPLICATION DEADLINES

Current deadlines are posted on the BME website at: <http://www.bme.ncsu.edu/admissions-info/>

# NOTES

---

The 2017 Summer Biomechanics, Bioengineering, and Biotransport Conference (SB<sup>3</sup>C) organizers gratefully acknowledge the support of our Academic and Industry Sponsors.

**SCANCO MEDICAL**

**FUJIFILM**  
Value from Innovation

**simVITRO**<sup>®</sup>



**VISUAL SONICS**

**Cleveland Clinic**

**bioROBOTICS**

**Kent Scientific**  
CORPORATION

**UCI Samueli**  
School of Engineering

Department of  
**Biomedical Engineering**

**FLEXCELL**<sup>®</sup>  
INTERNATIONAL CORPORATION

**VCU**  
VIRGINIA COMMONWEALTH UNIVERSITY

School of Engineering | Biomedical Engineering



8th World Congress  
of Biomechanics  
8-12 July 2018  
Dublin, Ireland  
[www.wcb2018.com](http://www.wcb2018.com)

Joint Department of  
**BIOMEDICAL ENGINEERING**



**UNC**  
CHAPEL HILL

**NC STATE**  
UNIVERSITY

Department of Bioengineering  
ENGINEERING IN A BIOLOGICAL CONTEXT



**Northeastern University**  
College of Engineering

**SimVascular**

**faxitron**<sup>®</sup>



**ElectroForce**<sup>®</sup>

**SYNOPSIS**<sup>®</sup>

**TESTRESOURCES**

**UNIVERSITY of VIRGINIA**

**ENGINEERING**

Department of Biomedical Engineering

**CellScale**  
biomaterials testing

**Tekscan**<sup>™</sup>

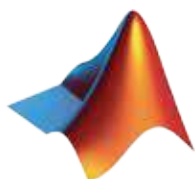


**VirginiaTech**  
*Invent the Future*<sup>®</sup>

DEPARTMENT OF BIOMEDICAL  
ENGINEERING AND MECHANICS

**SimTK**

enabling open access to  
simulation tools, models,  
and data



**MathWorks**<sup>®</sup>



**CEMB**  
Center for Engineering MechanoBiology

## SB<sup>3</sup>C 2017 - PROGRAM AT A GLANCE

Room	Tucson AB	Tucson CD	Tucson GH	Tucson IJ	San Ignacio	San Luis	San Pedro
<b>WEDNESDAY, June 21, 2017</b>							
7 am-1:20 pm	<b>Committee Meetings</b> (see page 5 for room numbers)						
1:30-2:30 pm	<b>'How-To' Session:</b> SimVascular	<b>'How-To' Session:</b> FEBio					
2:45-4:15 pm	Heart Valve Mechanics	Spine Mechanics	Thrombosis	CV Growth, Remodeling, & Repair	Bone Biomechanics	Biotransport and Microfluidics	Regulation of Mechano-Transduction
4:15-4:30 pm	<b>Break</b> (Arizona Foyer)						
4:30-6:00 pm	Soft Tissue Characterization and Modeling	<b>Taber Session:</b> Growth & Remodeling	Atherosclerosis	Biofluids	Micro-Engineered Physiologic Systems	Strategies to Improve Rehabilitation Treatments	Microenvironmental Control of Tissue Formation and Cell Function
6:15-8:00 pm	<b>Opening Reception</b> (Ania Terrace)						

<b>THURSDAY, June 22, 2017</b>							
11 am - 12 pm	<b>Diversity / Mentoring Event</b> (Arizona 3-5, <i>registration required</i> )						
11:15-12:30 pm	<b>Lunch and Poster Viewing</b> (Arizona 6-12)						
12:30-2:00 pm	Multiscale Analysis of Cartilage and Intervertebral Disk	Soft Tissue Mechanobiology	Heart Valve Flow and Function	Cardiovascular Devices	Active Learning in Biomechanical Eng. Education	Hyperthermia, Cryotherapy, and Cryopreservation	Disease Models and Engineered Therapies
2:00-2:15 pm	<b>Break</b> (Arizona Foyer)						
2:15-3:45 pm	Mechanics and Modeling of Musculoskeletal Soft Tissues	Ocular Biomechanics	<b>Giddens Session:</b> Cardiovascular Fluid Dynamics / Atherosclerosis	Cardiac Mechanics	Mechanical Regulation of Remodeling and Repair	Measurement in Movement and Trauma	Therapeutic Materials for Repair and Regeneration
3:45-4:00 pm	<b>Break</b> (Arizona Foyer)						
4:00-5:30 pm	<b>FUNG, MOW, AND WOO AWARD LECTURES</b> (Tucson EF)						
5:30-7:30 pm	<b>POSTER SESSION I and Happy Hour -- Including BS &amp; MS Student Paper Competitions</b> (Arizona 6-12)						
9:00-10:30 pm	<b>Open Executive Committee Meeting</b> (San Ignacio)						

<b>FRIDAY, June 23, 2017</b>							
All Day	<b>Poster Viewing</b> (Arizona 6-12)						
11 am-12:30pm	Workshop: Additive Manufacturing and Biofabrication	Workshop: Ocular Biomechanics: What's Our Vision?		Workshop: Grad School Pro Tips		Workshop: Medical Imaging for Physiological Flows	
12:30-2:00 pm	<b>POSTER SESSION II</b> (Arizona 6-12, with Lunch)						
2:00-2:15 pm	<b>Break</b> (Arizona Foyer)						
2:15-3:45 pm	<b>PhD Competition:</b> Imaging, Biofluid Mechanics, and Biotransport	<b>PhD Competition:</b> Tissue Mechanics and Characterization	<b>PhD Competition:</b> Cell Mechanics and Mechanobiology	<b>PhD Competition:</b> Diseases, Injury, and Remodeling		<b>PhD Competition:</b> Extracellular Matrix Biomechanics	<b>PhD Competition:</b> Biomaterials and Material-Cellular Interaction
3:45-4:00 pm	<b>Break</b> (Arizona Foyer)						
4:00-5:30 pm	Upper and Lower Extremity Joint Mechanics	Head Injury & Injury Biomechanics 1	Imaging and Diagnostics	<b>Undergraduate Design Competition</b>	Vascular Mechanics	Nano- and Micro-Therapeutics	Mechanical Regulation of Morphogenesis
5:30-5:45 pm	<b>Break</b> (Arizona Foyer)						
5:45-6:45 pm	<b>PLENARY LECTURE – L. Mahadevan - “On Growth and Form – Geometry, Physics and Biology”</b> (Tucson EF)						
6:45-7:45 pm	<b>SB3C Women’s Networking Event</b> (Arizona 2) and <b>IAB / SLC Networking Mixer</b> (Arizona 3-5, <i>registration required</i> )						
8:00-10:00 pm	<b>BEDROCK CONCERT</b> (Ania Terrace)						

<b>SATURDAY, June 24, 2017</b>							
10:30 am-2 pm	<b>Industry Advisory Board (IAB) Workshop</b> (Tucson AB) and <b>Connection Luncheon</b> ( <i>registration required</i> ) --- details on page 8						
11:00-11:50 am	<b>Student Leadership Council Meeting</b> (San Ignacio)						
12:30-2:00 pm	Workshop: Bench to Bedside - Tendon Repair and Regeneration	Workshop: MATLAB in Education and Research					
2:00-2:15 pm	<b>Break</b> (Arizona Foyer)						
2:15-3:45 pm	Head Injury & Injury Biomechanics 2	Reproductive Biomechanics	Aneurysm	Vascular, Lymphatic, and Ocular Transport	Tendon Tissue Engineering and Regeneration	Experimental Modeling for Clinical Surgical Applications	Measures / Models of Cell Mechanics & Microenvironment ( <b>Tucson EF</b> )
3:45-4:00 pm	<b>Break</b> (Arizona Foyer)						
4:00-5:30 pm	Head Injury & Injury Biomechanics 3	Reproductive, Ocular, and Gastrointestinal Biomechanics	Pediatric Flow	Aneurysm Mechanics	Tendon Mechanics and Structure	Surgical Device Design Applications	Measures / Models of Materials and Tissues ( <b>Tucson EF</b> )
5:30-5:45 pm	<b>Break</b> (Arizona Foyer)						
5:45-6:45 pm	<b>LISSNER MEDAL AWARD LECTURE</b> (Tucson EF)						
6:45-7:15 pm	<b>Lissner Reception</b> (Ania Terrace)						
7:15-9:30 pm	<b>Banquet and Awards Ceremony</b> (Arizona 6-7)						