

Saturday, 12 October

8am **Registration Desk Open 8:00am - 5:00pm**
Whitaker Hall Atrium, 1st Floor

8am **Continental Breakfast Served 8:00 - 8:45 am**
Parkside Cafe, Schnuck Pavilion

8:45am **Opening Ceremony**

» Liz Haswell and Guy Genin (Washington University in St. Louis)

8:50am **Welcome Address**
Whitaker Hall Auditorium, Room 100

» Phil Taylor (Bayer Crop Science USA)

8:55am **A brief introduction to CEMB, the NSF Science and Technology Center for Engineering MechanoBiology**

» CEMB Director, Vivek Shenoy (University of Pennsylvania)

9am **Session 1: Cardiac Mechanobiology: A Symposium in Memory of Bill Hunter**
Chaired by: Dr. Treena Arinzeh

9am **The mechanics of living tissues: the academic life of William C. Hunter, Ph.D. from a student, colleague, career mentor and friend**
» Prof. Brian Pfister¹ (1. New Jersey Institute of Technology)

9:45am **Mechano-sensing and thoracic aortic aneurysms**
» Prof. Jay Humphrey¹ (1. Yale University)

10:15am **Coffee Break**

10:30am **Session 2**
Chaired by: Anders Carlsson

10:30am **Making waves: the mechanics of oscillations in cilia and flagella**
» Prof. Philip Bayly¹, Mr. Louis Woodhams¹, Dr. Matthieu Bottier¹, Mx. Tianci Hu¹, Prof. Susan Dutcher¹ (1. Washington University in St. Louis)

11am **Zein protein fibrous matrices for promoting cell growth and osteogenic differentiation**
» Ms. Apurva Limaye¹, Ms. Jessica Cardenas Turner¹, Dr. Treena Arinzeh¹ (1. New Jersey Institute of Technology)

11:15am **Understanding directional growth in plants through cell wall mechanics**
» Dr. Siobhan Braybrook¹, Dr. Firas Bou Daher¹ (1. University of California, Los Angeles)

11:45am **Extracting mechanical properties of plant cells from atomic-force microscopy and micro-compression experiments**
» Ms. Leah Ginsberg¹, Dr. Eleftheria Roumeli¹, Prof. Guruswami Ravichandran¹, Prof. Chiara Daraio¹ (1. California Institute of Technology)

12pm **Developing artificial scaffolds for plant cell growth**
» Mr. Ryan Calcutt¹, Mr. Richard Vincent², Dr. Derrick Dean³, Dr. Treena Arinzeh², Dr. Ram Dixit¹ (1. Washington University in St. Louis, 2. New Jersey Institute of Technology, 3. Alabama State University)

12:15pm **Lunch**
Parkside Cafe, Schnuck Pavilion

1:15pm **Session 3**
Chaired by: Prof. Joel Boerckel



Continued from **Saturday, 12 October**

1:15pm **Substrate-grafted iPSC-derived micro heart muscles to investigate effects of mechanical loading on tissue physiology**
» Mr. Daniel Simmons¹, Ms. Jingxuan Guo¹, Ms. Mary Munsell¹, Mr. Brennan Kandalajt¹, Mr. David Schuftan¹, Dr. Nathaniel Huebsch¹ (1. Washington University in St. Louis)

1:30pm **Emergence of tissue-like mechanics from fibrous networks confined by close-packed cells**
» Dr. Anne van Oosten¹, Mr. Xingyu Chen², Dr. LiKang Chin², Ms. Katrina Kruz², Prof. Allison Patteson³, Prof. Katarzyna Pogoda⁴, Prof. Vivek Shenoy², Prof. Paul Janmey² (1. Leiden University, 2. University of Pennsylvania, 3. Syracuse University, 4. Polish Academy of Sciences)

1:45pm **Tearing down walls and other stories of resistance...to stress in plants**
» Prof. José Dinneny¹ (1. Stanford University)

2:15pm **Stress-dependent regulation of microtubule alignment during plant cell morphogenesis**
» Mr. Jing Li¹, Dr. Taeyoon Kim¹, Dr. Daniel Szymanski¹ (1. Purdue University)

2:30pm **Mechanical memory of cells arises from synergistic coupling between mechanosensitive transcription and cytoskeletal signaling**
» Mr. Jairaj Mathur¹, Prof. Vivek Shenoy², Dr. Amit Pathak¹ (1. Washington University in St. Louis, 2. University of Pennsylvania)

2:45pm **Coffee Break**

3:15pm **Session 4**
Chaired by: Dr. Lucia Strader

3:15pm **YAP and TAZ coordinate endochondral ossification**
» Mr. Joseph Collins¹, Prof. Nathaniel Dymant¹, Prof. Joel Boerckel¹ (1. University of Pennsylvania)

3:30pm **The role of mechanics in organ size and shape robustness of Arabidopsis**
» Prof. Adrienne Roeder¹ (1. Cornell University)

4pm **Microstructured hydrogels to probe paracrine and mechanosignaling during lung organoid formation**
» Dr. Claudia Loebel¹, Ms. Christina Hummel¹, Dr. Jarod Zepp¹, Prof. Edward Morrisey¹, Prof. Jason Burdick¹ (1. University of Pennsylvania)

4:15pm **Is cellulose synthesis a Brownian ratchet?**
» Prof. Tobias Baskin¹ (1. University of Massachusetts Amherst)

4:45pm **Expanding without exploding: measuring and modeling the biomechanics of pollen hydration**
» Ms. Kari Miller¹, Dr. Anders Carlsson¹, Prof. Elizabeth Haswell¹ (1. Washington University in St. Louis)

5pm **Registration Closes**
Whitaker Hall Atrium, 1st Floor

5pm **Poster Session Reception**
Whitaker Hall Atrium, 1st Floor

5pm **Poster Session**
Chaired by: Prof. Elizabeth Haswell

101 - Regulation of nuclear architecture, mechanics and nucleocytoplasmic shuttling of epigenetic factors by cell geometric constraints
» Dr. Farid Alisafaei¹, Dr. Doorgesh Sharma Jokhun², Prof. G.V. Shivashankar², Prof. Vivek Shenoy¹ (1. University of Pennsylvania, 2. National University of Singapore)

102 - Oligomerization and nucleocytoplasmic partitioning of NLP transcription factors in the plant nitrate response
» Mr. Jeffrey Allen¹, Dr. Lucia Strader¹ (1. Washington University in St. Louis)



Continued from **Saturday, 12 October**

103 - The mechanobiology of crawling Euglena

» Prof. Marino Arroyo¹ (1. Universitat Politècnica de Catalunya - BarcelonaTech)

104 - Is MSL10 involved in maintaining cellular mechanostasis during abiotic and biotic stresses?

» Dr. Debarati Basu¹, Prof. Elizabeth Haswell¹ (1. Washington University in St. Louis)

105 - A mechano-chemical approach to understanding directional plant growth patterns

» Ms. Natasha Bilkey¹, Mr. Huiyong Li¹, Dr. Marcus Foston¹, Dr. Ram Dixit¹ (1. Washington University in St. Louis)

106 - All models are not created equal: comparing and contrasting two modeling paradigms in mechanobiology

» Dr. Christopher Stubbs¹, Dr. Siobhan Braybrook², Dr. Douglas Cook³ (1. University of Idaho, 2. University of California, Los Angeles, 3. Brigham Young University)

107 - Patterning of cell populations by strain-cued solitary waves

» Mr. Brian Cox¹ (1. Independent)

108 - Simvastatin, but not Losartan, dose-dependently inhibits gel contraction and reduces viability of NIH3T3 and human elbow capsule cells in vitro

» Dr. Michael David¹, Mr. James Abraham¹, Dr. Aaron Chamberlain¹, Dr. Spencer Lake¹ (1. Washington University in St. Louis)

109 - An optics-free and in situ platform for measuring the mechanical properties of films and tissues with high temporal resolution

» Prof. Charles Dhong¹ (1. University of Delaware)

110 - Piconewton forces measured using vinculin and α -Actinin tension sensors at the sarcomere within induced pluripotent stem cell-derived cardiomyocytes

» Dr. Palash Dutta¹, Dr. Anant Chopra¹, Ms. Paige Cloonan¹, Dr. Subramanian Sundaram¹, Ms. Jourdan Ewoldt¹, Prof. Christopher Chen¹ (1. Boston University)

111 - A multi-resolution approach for modeling and characterization of biological tissues

» Prof. Ahmed Elbanna¹ (1. University of Illinois at Urbana-Champaign)

112 - Comparative biomechanical characterization of maize brace roots within and between plants

» Mx. Lindsay Erndwein¹, Ms. Elahe Ganji¹, Dr. Megan Killian¹, Dr. Erin Sparks¹ (1. University of Delaware)

113 - Structural determinants of the SPIRAL2 protein important for chiral plant growth

» Dr. Ram Dixit¹, Dr. Yuanwei Fan¹, Ms. Natasha Bilkey¹ (1. Washington University in St. Louis)

114 - Investigating the role of deformation-deposition in anti-fouling response of mammalian fur

» Prof. Ranajay Ghosh¹, Mr. Hessein Ali¹, Dr. Dipankar Biswas¹, Mr. Milos Krsmanovic¹, Prof. Andrew Dickerson¹ (1. university of central florida)

115 - Extracting mechanical properties of plant cells from atomic-force microscopy and micro-compression experiments

» Ms. Leah Ginsberg¹, Dr. Eleftheria Roumeli¹, Prof. Guruswami Ravichandran¹, Prof. Chiara Daraio¹ (1. California Institute of Technology)

116 - Characterization of Arabidopsis hypocotyl viscoelasticity

» Mr. Ethan Hoppe¹, Mr. Reid Chunn², Mr. Ryan Emenecker¹, Dr. Roger Rowe¹, Dr. Kenneth Pryse³, Dr. Barbara Pickard¹, Dr. Lucia Strader¹, Prof. Guy Genin¹ (1. Washington University in St. Louis, 2. Harris Stowe State University, 3. Washington University in Saint Louis)



Continued from **Saturday, 12 October**

117 - Bioprinting of complex 3D vascular networks within cell-laden hydrogels

» Mr. Shen Ji¹, Prof. Murat Guvendiren¹ (1. New Jersey Institute of Technology)

118 - Distinguishing mechanical and structural effects on cellular mechano-responsiveness in a 3D porous scaffold

» Mr. Shumeng Jiang¹, Mr. Cheng Lyu², Prof. Guy Genin¹, Prof. Yanan Du² (1. Washington University in St. Louis, 2. Tsinghua University)

119 - Upscaling active-gel theory of actomyosin cortex to epithelial mechanics

» Dr. Sohan Kale¹, Mr. Adam Ouzeri², Dr. Alejandro Torres-Sánchez², Prof. Marino Arroyo² (1. Virginia Tech, 2. Universitat Politècnica de Catalunya - BarcelonaTech)

120 - Magnetoactive substrates for cell mechanobiology

» Mx. Emile Kraus¹, Mr. Andy Clark², Dr. Alexander Bennett¹, Prof. Paul Janmey¹, Prof. Xuemei Cheng² (1. University of Pennsylvania, 2. Bryn Mawr College)

121 - A spiral growth study to reveal chemical nature and plant cell wall mechanics using AFM-IR

» Mr. Huiyong Li¹, Ms. Natasha Bilkey¹, Dr. Marcus Foston¹, Dr. Ram Dixit¹ (1. Washington University in St. Louis)

122 - In silico exploration of mechanical properties of extracellular matrix and cation channel activity in cartilage

» Mr. Deng Li¹, Mr. Kai chih Yeh¹, Prof. Shu-Wei Chang¹ (1. National Taiwan University)

123 - Opposite responses of normal hepatocytes and hepatocellular carcinoma cells to substrate viscoelasticity

» Dr. Kalpana Mandal¹, Dr. Ze Gong¹, Mrs. Alexis Rylander Bennett¹, Prof. Vivek Shenoy¹, Prof. Paul Janmey¹ (1. University of Pennsylvania)

124 - The functional impact of Nav1.5 sodium channel mechanosensitivity modeled by an in silico smooth muscle cell model

» Mr. Arnaldo Mercado-Perez¹, Mr. Peter Stregé¹, Dr. Gianrico Farrugia¹, Dr. Arthur Beyder¹ (1. Mayo Clinic)

125 - Controlling osteoblast activity with copper-free azide-alkyne cycloaddition of integrin binding peptides to alginate hydrogels

» Ms. Sydney Neal¹, Dr. Era Jain¹, Ms. Rama Balasubramaniam¹, Dr. Nathaniel Huebsch¹, Dr. Lori Setton¹ (1. Washington University in St. Louis)

126 - Beyond tensegrity the Pavlides Elastegritty (PE)

» Prof. Eleftherios Pavlides¹ (1. Roger Williams University)

127 - Functional characterization of plant members of the Piezo mechanosensitive ion channel family

» Dr. Ivan Radin¹, Mr. Ryan Richardson¹, Dr. Carlisle Bascom², Mr. Ethan Weiner¹, Prof. Magdalena Bezanilla³, Prof. Elizabeth Haswell¹ (1. Washington University in St. Louis, 2. University of California, San Diego, 3. Dartmouth College)

128 - Mechanisms of efficient hierarchical compaction of collagen by fibroblasts

» Dr. Delaram Shakiba¹, Dr. Farid Alisafaei², Mr. Alireza Savadipour¹, Dr. Roger Rowe³, Mr. Zhangao Liu¹, Dr. Kenneth Pryse¹, Prof. Vivek Shenoy², Prof. Elliot Elson¹, Prof. Guy Genin¹ (1. Washington University in St. Louis, 2. University of Pennsylvania, 3. Washington University in Saint Louis)

129 - Tissue interfacial stresses modulate cell-ECM interactions

» Mr. Xuechen Shi¹, Mr. Tiankai Zhao¹, Prof. Sulin Zhang¹ (1. The Pennsylvania State University)

130 - Maintaining self-control: Intramolecular regulation of cell death signaling by mechanosensitive channel MSL10

» Ms. Jennette Shoots¹, Dr. Debarati Basu¹, Prof. Elizabeth Haswell¹ (1. Washington University in St. Louis)



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Notes

131 - Efficient fabrication of lung-on-a-chip device with in situ imaging capabilities

» [Ms. Whitney Sinclair](#)¹, Dr. Deborah Leckband¹, Dr. Paul Kenis¹, Dr. Catherine Murphy¹ (1. University of Illinois at Urbana-Champaign)

132 - MD modeling of YAP mechanosensing in cancer progression

» Mr. Tom Stadtmüller¹, Prof. Patrick Onck¹, Prof. Siewert-Jan Marrink¹, [Prof. Erik Van der Giessen](#)¹ (1. University of Groningen)

133 - Evaluating the effect of surface charge of piezoelectric fibrous scaffolds for plant cell culture

» [Mr. Richard Vincent](#)¹, Mr. Ryan Calcutt², Dr. Derrick Dean³, Dr. Ram Dixit², Dr. Treena Arinze¹ (1. New Jersey Institute of Technology, 2. Washington University in St. Louis, 3. Alabama State University)

134 - Epithelial cells sense distant stiffness through ECM deformation and realignment

» [Dr. Christopher Walter](#)¹, Dr. Amit Pathak¹ (1. Washington University in St. Louis)

135 - Mechanosensitive ion channels MSL7 and MSL8 play multiple roles in pollen biology

» [Dr. Yanbing Wang](#)¹, Prof. Elizabeth Haswell¹, Mr. Gregory Jensen¹ (1. Washington University in St. Louis)

136 - Biomolecular condensates in motion

» [Mr. Edward Wilkinson](#)¹, Mr. Ryan Emenecker¹, Dr. Lucia Strader¹ (1. Washington University in St. Louis)

137 - Mechanomorphogenesis of bacterial biofilms

» [Prof. Jing Yan](#)¹ (1. Yale University)

