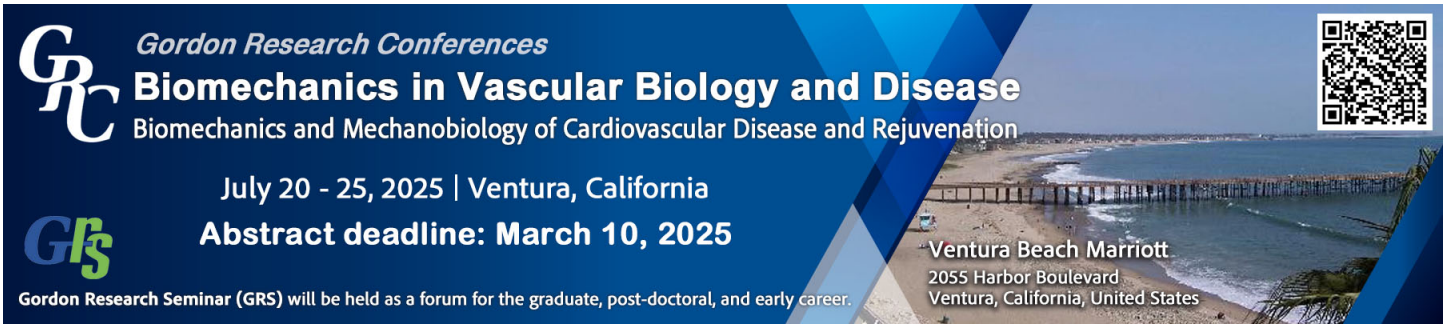


## 2025 GRC Biomechanics in Vascular Biology and Disease Program (tentative)
## Biomechanics and Mechanobiology of Cardiovascular Disease and Rejuvenation

| **Sunday (July, 20)** | |
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| 2:00 pm - 9:00 pm | Arrival and Check-in |
| 6:00 pm - 7:00 pm | Dinner |
| 7:30 pm - 7:50 pm | Introductory Comments by GRC Staff / Welcome and Introduction from the Chairs<br>Introduction of Keynote speakers by discussants |
| 7:50 pm - 9:30 pm | **Keynote Session:**<br>Discussants: **Frank Gijsen** (Erasmus Medical Center, Netherlands) and **Ellie Tzima*** (Oxford University, United Kingdom) |
| 7:50 pm - 8:20 pm | **Alison Marsden*** (Stanford University, United States) <amarsden@stanford.edu><br>"Model-guided treatment planning in pediatric cardiology" |
| 8:20 pm - 8:40 pm | Discussion |
| 8:40 pm - 9:10 pm | **Martin Schwartz** (Yale University, United States) <martin.schwartz@yale.edu><br>"The role of cell-cell junctions in endothelial fluid shear stress mechanotransduction" |
| 9:10 pm - 9:30 pm | Discussion |
| 9:30 pm - 10:30 pm | Social Hour |

| **Monday (July, 21)** | |
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| 7:30 am - 8:30 am | Breakfast |
| 8:30 am - 9:00 am | Group Photos |
| 9:00 am - 12:30 pm | **Mechanosensors and Signal Transduction**<br>**Discussants**: **Sharon Gerecht*** (Duke University, United States), **Julien Vermot** (Imperial College London, United Kingdom) |
| 9:00 am - 9:15 am | **Hanjoong Jo** (Emory University and Georgia Tech, United States) <hjo@emory.edu><br>"Flow-induced reprogramming of endothelial cells, FIRE, in atherosclerosis development" |
| 9:15 am - 9:20 am | Discussion |
| 9:20 am - 9:35 am | **David Beech** (University of Leeds, United Kingdom) < D.J.Beech@leeds.ac.uk><br>" Vascular Piezo mechanoreceptors " |
| 9:35 am - 9:40am | Discussion |
| 9:40am - 9:55 am | **Irena Levitan*** (University of Illinois at Chicago, United States) < levitan@uic.edu><br>" Lipid regulation of endothelial stiffness in obesity and aging " |
| 9:55 am - 10:00am | Discussion |

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| 10:00 am - 10:15am | **Luisa Ariela-Arispe*** (Northwestern University, United States) <arispe@northwestern.edu><br>" Mechanosensitive Notch1 transducer in the endothelium " |
| 10:15 am - 10:20 am | Discussion |
| 10:20 am - 10:50 am | Coffee Break |
| 10:50 am - 11:05 am | **Jun-ichi Abe** (MD Anderson, United States) <JAbe@mdanderson.org><br>" Endothelial Senescence and Metabolic Shifts Under Turbulent Flow " |
| 11:05 am - 11:10 am | Discussion |
| 11:10 am - 11:25am | **Alexander Cartagena-Rivera*** (National Institute of Biomedical Imaging and Bioengineering, NIBIB, United States) <alexander.cartagena-rivera@nih.gov><br>"Viscoelastic Property and Barrier Role of the Glycocalyx in Cells" |
| 11:25 am - 11:30 am | Discussion |
| 11:30 am - 11:45 am | **Kimiko Yamamoto** (The University of Tokyo, Japan) <kyamamoto@m.u-tokyo.ac.jp><br>"Distinct regulation of gene expression by laminar and disturbed flow in human vascular endothelial cells " |
| 11:45 am – 11:50 am | Discussion |
| 11:50 am – 12:05 pm | **Manu Platt** (NIBIB, National Institutes of Health, United States) <manu.platt@nih.gov><br>" Accelerated Elastin and Collagen Remodeling in Sickle Cell Disease: Biomechanical and Biochemical Stimuli " |
| 12:05 pm - 12:10 pm | Discussion |
| 12:10 pm - 12:25 pm | **Xiaohong Wang** (Department of Pharmacology at Tianjin Medical University, China) <iaohongwang@tmu.edu.cn><br>" Kindlin-2 in the Mechanical Regulation of Vascular Development and Disease " |
| 12:25 pm - 12:30 pm | Discussion |
| 12:30 pm - 1:40 pm | **Lunch with senior investigators** |
| 1:40 pm - 3:00 pm | Free Time |
| 3:00 pm - 4:00 pm | **The GRC Power Hour™**<br>Organizers: **Naomi Chesler*** (University of California, Irvine, United States), **Manu Platt** (NIH, United States) |
| 4:00 pm - 6:00 pm | **Poster Session**<br>Discussants**: Bianca Rodriguez*** (Oxford University, United Kingdom), **Yun Fang** (University of Chicago, United States), **B. Rita Alevriadou*** (University of Buffalo, United States), **Tríona Lally*** (Trinity College Dublin, Ireland) |
| 6:00 pm - 7:30 pm | Dinner<br>**Evening Sessions** |
| 7:30 pm - 9:30 pm | **Cardiovascular Hemodynamics and Resilience**<br>**Discussants: Jolanda Wentzel*** (Erasmus Medical Center, Netherlands), **Elena Aikawa*** (Harvard Medical School, United States), |
| 7:30 pm - 7:45 pm | **Peter Stone** (Brigham & Women's Hospital, Harvard Medical School, United States) <pstone@bwh.harvard.edu><br>" The Plaque Hypothesis: Fundamental Pathobiology of Coronary Atherosclerosis and Clinical Implications for Chronic Ischemic Heart Disease Management " |
| 7:45 pm - 7:50 m | Discussion |
| 7:50 pm - 8:05pm | **Osama Harraz** (University of Vermont, United States) <Osama.Harraz@uvm.edu><br>" Bain endothelial Piezo1 channel in health and disease " |
| 8:05 pm - 8:10 pm | Discussion |

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| 8:10 pm – 8:25 pm | **Yabing Chen*** (Oregon Health Science University, United States) <yabingchen@uabmc.edu><br>" Vascular smooth muscle cell resilience and aging " |
| 8:25 pm – 8:30 pm | Discussion |
| 8:30 pm – 8:45 pm | **Guillermo Luxan** (Goethe University Frankfurt, Germany) <uxan@med.uni-frankfurt.de><br>"The cardiac microvasculature responses in the context of ageing " |
| 8:45 pm – 8:50 pm | Discussion |
| 8:50 pm - 9:05 pm | **Nicolas Baeyens*** (Université libre de Bruxelles, Belgium) <nicolas.baeyens@ulb.be><br>" Contribution of flow mechanotransduction in vascular anomalies " |
| 9:05 pm - 9:10 pm | Discussion |
| 9:10 pm - 9:25 pm | **Chiara Bellini** (Northeastern University, United States) < c.bellini@northeastern.edu><br>" Deciphering Aortic Aging: Lessons from Mouse Models" |
| 9:25 pm - 9:30 pm | Discussion |

| **Tuesday (July, 22)** | |
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| 7:30 am - 8:30 am | Breakfast: |
| 9:00 am - 12:30 pm | **Biomechanics and Mechanobiology of Aneurysms and Disease**<br>**Discussants**: **Robert Taylor** (Emory University, United States), **Luisa Ariela-Arispe** *(Northwestern University), |
| 9:00 am - 9:15 am | **Jay Humphrey** (Yale University, United States) <jay.humphrey@yale.edu><br>"Mechanobiological control of vascular adaptation and disease progression" |
| 9:15 am -9:20 am | Discussion |
| 9:20 am – 9:35 am | **Bianca Rodriqguez*** (Oxford University, United Kingdom) <blanca.rodriguez@cs.ox.ac.uk><br>" Digital Twins:  Biophysical Targeted based Drug Delivery to Brain Aneurysms " |
| 9:35 am -9:40 am | Discussion |
| 9:40 am -9:55 am | **Choon Hwai Yap** (London Imperial College, United Kingdom) <c.yap@imperial.ac.uk><br>" Deep Learning Generation of Intracranial Aneurysm Geometries to Specific Clinical Morphological Parameters for Fluid Dynamic Investigations " |
| 9:55 am - 10:00 am | Discussion |
| 10:00 am – 10:15 am | **Ellie Tzima*** (Oxford University University, United Kingdom) <ellie.tzima@cardiov.ox.ac.uk><br>" Mechanotransducers for endothelial homeostasis " |
| 10:15 am - 10:20 am | Discussion |
| 10:20 am - 10:50 am | Coffee Break |
| 10:50 am - 11:05 am | **Peter Weinberg** (Imperial College London, United Kingdom) <p.weinberg@imperial.ac.uk><br>" Screening for heart failure by pulse wave analysis " |
| 11:05 am - 11:10 am | Discussion |
| 11:10 am - 11:25 am | **Mabruka Alfaidi*** (UNMC, United States) <malfaidi@unmc.edu><br>" Mechanical activation of Endothelial Reprograming by an Interleukin-1 Receptor Mechanism " |
| 11:25 am – 11:30 am | Discussion |

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| 11:30 am - 11:45 am | **Naomi Chesler*** (University of California, Irvine, United States) <nchesler@uci.edu><br>" Pulmonary biomechanics and mechanobiology from bench to bedside " |
| 11:45 am - 11:50 am | Discussion |
| 11:50 am - 12:05 pm | **Phil Owens** (University of Cincinnati, United States) <phillip.owens@uc.edu><br>"Dual Roles of Mechanosensitive Platelets in Aneurysm Initiation and Progression" |
| 12:05 pm - 12:10 pm | Discussion |
| 12:10 pm - 12:25 pm | **Robert Taylor** (Emory University, United States) <w.robert.taylor@emory.edu><br>“The Role Endothelial PGC1α in AAA” |
| 12:25 pm - 12:30 pm | Discussion |
| 12:30 pm - 1:30 pm | Lunch |
| 1:30 pm - 4:00 pm | Free Time |
| 4:00 pm - 6:00 pm | **Poster Session**<br>Poster Professors: **Jay Humphrey** (Yale University, United States)<br>**Mabruka Alfaidi*** (UNMC, United States), **Yabing Chen*** (Oregon Health Science University, United States), **Arnold Lining Ju** (University of Sydney, Australia), Marc Pritzker |
| 6:00 pm - 7:00 pm | Dinner<br>**Evening Session** |
| 7:30 pm - 9:30 pm | **Valvular Biomechanics and Mechanobiology**<br>Discussants: **Hanjoong Jo** (Emory University and Georgia Tech, United Sates); **Alison Marsden*** (Stanford University, United Sates) |
| 7:30 pm - 7:45 pm | **Julien Vermot** (Imperial College London, United Kingdom) <j.vermot@imperial.ac.kr><br>" Cell Mechanics in the Process of Endocardial Remodeling and Cardiac Valve Morphogenesis " |
| 7:45 pm - 7:50 pm | Discussion |
| 7:50 pm - 8:05 pm | **Linda L. Demer*** (UCLA, United States) <ldemer@mednet.ucla.edu><br>" Mechanics and mechanobiology of vascular calcification " |
| 8:05 pm - 8:10 pm | Discussion |
| 8:10 pm - 8:25 pm | **Joshua Hutcheson** (Florida International University, United States) <jhutches@fiu.edu><br>" Atypical populations in aortic valve structure and function " |
| 8:25 pm - 8:30 pm | Discussion |
| 8:30 pm - 8:45 pm | **Kartik Balachandran** (University of Arkansas, United States) < kbalacha@uark.edu ><br>" Role of ACE/ACE2 in mediating aortic valve mechanics and disease " |
| 8:45 pm - 8:50 pm | Discussion |
| 8:50 pm - 9:05 pm | **Cassandra Clift*** (Harvard Medical School / Brigham and Women's Hospital, United States) <clclift@bwh.harvard.edu><br>" Integration of Cellular Proteomics and Vesiculomics to Assess 3D Bioprinted Model of Calcific Aortic Valve Disease " |
| 9:05 pm – 9:10 pm | Discussion |
| 9:10 pm – 9:25 pm | **Jonathan T. Butcher** (Cornell University, United States) <jtb47@cornell.edu><br>" Mechanobiological regulation of fetal outflow tract morphogenesis " |
| 9:25 pm - 9:30 pm | Discussion |
| 9:30 pm - 10:30 pm | Social Hour |

| **Wednesday (July, 23)** | |
|---|---|
| 7:30 am - 8:30 am | Breakfast |
| 9:00 am - 12:30 pm | **Developmental and Stem Cell Biomechanics toward Precision Medicine**<br>Discussants: **Jun-ichi Abe** (MD Anderson, United States), **Susann Beier*** (UNSW, Sydney, Australia) |
| 9:00 am - 9:15 am | **Sharon Gerecht*** (Duke University) < sharon.gerecht@duke.edu><br>" Matrix mechanics regulation of vascular formation and homeostasis " |
| 9:15 am - 9:20 am | Discussion |
| 9:20 am - 9:35 am | **Beth Pruitt** (UC Santa Barbara, United States) <blp@ucsb.edu><br>" Dissecting mechanosignaling in hiPSC disease models " |
| 9:35 am - 9:40 am | Discussion |
| 9:40 am - 9:55 am | **Peter Yingxiao Wang** (University of Southern California, United States) <ywang283@usc.edu><br>" Reprogramming Mechanogenetics for Cell Therapy" |
| 9:55 am - 10:00 am | Discussion |
| 10:00 am – 10:15 am | **Konstantinos Konstantopoulos** (Johns Hopkins University, Unites States) <Konstant@jhu.edu><br>" Mechanoenzyme and Cell Mechanointelligence " |
| 10:15 am-10:20 am | Discussion |
| 10:20 am - 10:50 am | Coffee Break |
| 10: 50 am - 11:05 am | **Elena Aikawa*** (Harvard Medical School, United States) <eaikawa@bwh.harvard.edu><br>" Discovery of inflammation-dependent mechanisms of cardiovascular calcification " |
| 11:05 am –11:10 am | Discussion |
| 11:10 am - 11:25 am | **Ngan F. Huang*** (Stanford University) <ngantina@stanford.edu><br>" Extracellular matrix mechanics on endothelial phenotype " |
| 11:25 am - 11:30am | Discussion |
| 11:30 am - 11:45 am | **Yun Fang** (University of Chicago) <yfang1@bsd.uchicago.edu><br>" Precision Nanomedicine Targeting Novel Endothelial Mechano-Sensing Mechanisms to Treat Vascular Disease " |
| 11:45 am – 11:50 am | Discussion |
| 11:50 am - 12:05 pm | **Elizabeth Jones*** (KU Leuven, Belgium) <liz.jones@kuleuven.be><br>" Integrating Mechanical Microenvironments the Interplay of Shear Stress Tissue Stiffness and Gene Expression " |
| 12:05 am - 12:10 pm | Discussion |
| 12:10 pm - 12:25 pm | **Ying Shen** (Baylor College of Medicine, United States) <hyshen@bcm.edu><br>" Dynamic Phenotypic Transitions of Smooth Muscle Cells in Aortic Disease Progression" |
| 12:25 pm - 12:30 pm | Discussion |
| 12:30 pm - 1:30 pm | **Lunch with senior investigators** |
| 1:30 pm - 4:00 pm | Free Time |
| 4:00 pm - 6:00 pm | **Poster Session**<br>Poster Professors: **Sharon Gerecht*** (Duke University, United States), **Peter Yingxiao Wang** (University of Southern California, United States), **Mabruka Alfaidi*** (UNMC, United States), **Irena Levitan*** (University of Illinois at Chicago, United States) |

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| 6:00 pm - 7:00 pm | Dinner<br>**Evening Session** |
| 7:30 pm - 9:30 pm | **Plaque Biomechanics in Atherosclerosis**<br>Discussants: **Paul Evans** (Queen Mary University, United Kingdom), **Linda L. Demer *** (UCLA, United States) |
| 7:30 pm - 7:45 pm | **Daniela Pirri*** (Queens Mary University, London, United Kingdom) <d.pirri@imperial.ac.uk><br>" EPAS1 Attenuates Atherosclerosis Initiation at Disturbed Flow Sites Through Endothelial Fatty Acid Uptake " |
| 7:45 pm - 7:50 pm | Discussion |
| 7:50 pm - 8:05 pm | **Tríona Lally*** (Trinity College Dublin, Ireland) <lallyca@tcd.ie><br>" Imaging Carotid Plaque Structure to Help Predict Rupture " |
| 8:05 pm - 8:10 pm | Discussion |
| 8:10 pm - 8:25 pm | **Jolanda Wentzel*** (Erasmus Medical Center, Netherlands) <j.wentzel@erasmusmc.nl><br>" Influence of Multidirectional Wall Shear and Structural Stress on Plaque Progression of Different Phenotype in Human Coronary Arteries " |
| 8:25 pm - 8:30 pm | Discussion |
| 8:30 pm - 8:45 pm | **John Shyy** (UC San Diego, United States) <jshyy@ucsd.edu><br>" ACE2, shear stress, and EC biology " |
| 8:45 pm – 8:50 pm | Discussion |
| 8:50 pm – 9:05 pm | **Mahsa Dabagh*** (University of Wisconsin—Milwaukee, United States) <dabaghme@uwm.edu><br>" Quantifying the impact of disturbed flow and arterial stiffening on mechanotransduction in endothelial cells" |
| 9:05 pm – 9:10 pm | Discussion |
| 9:10 pm – 9:25 pm | **Mike (Chia Lun) Wu** (University of Sydney, Australia) <chia.wu@sydney.edu.au><br>"RBC-Membrane Adhesive Tangles (MATs): A Biomechanical Catalyst for Plaque Thrombosis" |
| 9:25 pm – 9:30 pm | Discussion |

| **Thursday (July, 24)** | |
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| 7:30 am - 8:30 am | Breakfast |
| 8:30 am - 9:00 am | **Business Meeting**<br>*Nominations for the Next Vice Chair(s); Complete the GRC Evaluation Forms; Discuss Future Dates and Venue; Election of the Next Vice Chair(s)* |
| 9:00 am - 12:30 pm | **Cardiovascular Imaging and Computation**<br>Discussants: **Konstantinos Konstantopoulos** (Johns Hopkins University, United States); **Yun Fang** (University of Chicago) |
| 9:00 am - 9:15 am | **Lihong Wang** (California Institute of Technology, United States) <lihong@caltech.edu><br>" Photoacoustic, Light-Speed, and Quantum Imaging " |
| 9:15 am - 9:20 am | Discussion |
| 9:20 am - 9:35 am | **John Oshinski** (Emory University, United States) <jnoshin@emory.edu><br>" Assessment of prothrombotic hemodynamics in the carotid arteries in subjects who have had a stroke or TIA " |
| 9:35 am - 9:40 am | Discussion |

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| 9:40 am - 9:55 am | **Jennifer Chung*** (University of Toronto, Canada) <jennifer.chung@uhn.ca><br>" Magnetic Resonance Imaging for Aortic Biomechanics to Evaluate Risk of Aortic Dissection " |
| 9:55 am - 10:00 am | Discussion |
| 10:00 am - 10:15 am | **Frank Gijsen** (Erasmus Medical Center, Netherlands) <f.gijsen@erasmusmc.nl><br>" Tensile and Compressive Mechanical Behavior of Human Blood Clot Analogues " |
| 10:15 am - 10:20 am | Discussion |
| 10:20 am - 10:50 am | Coffee Break |
| 10:50 am - 11:05 am | **Arnold Lining Ju** (University of Sydney, Australia) <arnold.ju@sydney.edu.au><br>**"** Towards a 'Digital Twin' for stroke prevention: A microengineered carotid artery platform for personalized thrombotic risk assessment and drug **"** |
| 11:05 am - 11:10 am | Discussion |
| 11:10 am - 11:25 am | **Renita Horton*** (University of Houston, United States) <rehorton@central.uh.edu><br>" Modeling the vascular microenvironment: Implications in Cardiac Health " |
| 11:25 am - 11:30 am | Discussion |
| 11:30 am - 11:45 am | **Yichen Ding** (UT Dallas, United States) <yichen.ding@utdallas.edu><br>" Characterize cardiac morphology and contractile function across the entire heart with cellular resolution " |
| 11:45 am - 11:50 am | Discussion |
| 11:50 am – 12:05 pm | **Liya Yin*** (University of Arizona, United States) <lyin@arizona.edu><br>" 3D Imaging of Coronary Vascular Architecture in the Mouse Model of Repetitive Ischemia " |
| 12:05 pm - 12:10 pm | Discussion |
| 12:10 pm – 12:25 pm | **Anne Robertson** (University of Pittsburgh, United States) <rbertson@pitt.edu><br>"On the role of calcification in the pathology of cerebral aneurysms" |
| 12:25 pm - 12:30 pm | Discussion |
| 12:30 pm - 1:30 pm | **Lunch with senior investigators** |
| 1:30 pm - 4:00 pm | Free Time |
| 4:00 pm - 6:00 pm | **Poster Session**<br>Poster Professors**: Elizabeth Jones*** (KU Leuven, Belgium), **John Oshinski** (Emory University, United States); **Julia Mack***(UCLA, United Sates), **Ngan F. Huang*** (Stanford University, United States), |
| 6:00 pm - 7:00 pm | Dinner<br>**Evening Session** |
| 7:30 pm - 9:30 pm | **Cardiovascular Biomechanics and mechanobiology from Bench to Bedside**<br>Discussants: **Eno Ebong***(Northeastern University, United States), **Ngan F. Huang*** (Stanford University, United States) |
| 7:30 pm - 7:45 pm | **Marc Pritzker** (University of Minnesota, United States) < pritz001@umn.edu><br>" Thera-mechanics: From force to therapy" |
| 7:45 pm - 7:50 pm | Discussion |
| 7:50 pm - 8:05 pm | **Susann Beier** (UNSW, Sydney, Australia) <s.beier@unsw.edu.au><br>" Latest insights into atherosclerosis and shear stress using machine learning " |
| 8:05 pm - 8:10 pm | Discussion |
| 8:10 pm - 8:25 pm | **Julia Mack*** (UCLA, United States) <jmack@mednet.ucla.edu> |

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| | " Flow modulation of endothelial Ca2+ signaling dynamics " |
| 8:25 pm - 8:30 pm | Discussion |
| 8:30 pm - 8:45 pm | **Stefania Nicoli*** (Yale University, United States) <stefania.nicoli@yale.edu><br>" The Hidden Life of Untranslated mRNAs at Local Adhesions " |
| 8:45 pm - 8:50 pm | Discussion |
| 8:50 pm - 9:05 pm | **B. Rita Alevriadou*** (University at Buffalo-SUNY, United States) <alevri@buffalo.edu><br>" Horizontal Mitochondrial Transfer from Endothelial Cells under Mechanochemical Stress " |
| 9:05 pm - 9:10 pm | Discussion |
| 9:10 pm - 9:25 pm | **Hoda Hatoum*** (Michigan Technological University, United States) <hhatoum@mtu.edu><br>"Beyond Flow Patterns: Paving the Way Toward Mechanobiological Insights in Cardiovascular Disease " |
| 9:20 pm - 9:30 pm | Discussion |
| 9:30 pm - 10:00 pm | **Award Ceremony (Young Investigator & Best Poster Awards) and Social Hour** |
| **Friday (July, 25)** | |
| 7:30 am - 8:30 am | Breakfast |
| 9:00 am | Departure |