ASMB Biennial Meeting ◆ September 12-15, 2021
Hyatt Regency St. Louis Arch
St. Louis, MO

"The Matrix in Focus: Matrix, Cells, and Interactions in Health, Disease, Aging, and Regeneration"

Meeting Chair: Jeffrey Miner, *Washington University in St. Louis*

Sunday, September 12th

7:30am Fun Run/Walk Around Arch
Join ASMB colleagues for a 5K scenic run/walk. Meet at the hotel entrance on Chestnut Street at 7:15am.

9:00am - 6:00pm Registration
Location: Grand Foyer

10:00am - 12:00pm Special Sessions

Special Interest Session 1: Functional Roles of the Extracellular Matrix in Glaucoma
(All Virtual Speakers)
Location: Grand ABC
Co-Chairs, Kate E. Keller, PhD, *Oregon Health & Science University* and Donna M. Peters, PhD, *University of Wisconsin- Madison.*

10:00am **Cell-Matrix Interactions and IOP, Jennifer A. Faralli, PhD** *University of Wisconsin-School of Medicine & Public Health*

10:20am **Fibronectin Matrix Assembly in ECM Function, Donna M. Peters, PhD** *University of Wisconsin-School of Medicine & Public Health*

10:40am **Thrombospondin-1 and Glaucoma Kate Keller, PhD,** *Oregon Health & Science University*

11:00am **Mechanotransduction in TM dysfunction, Vijaykrishna Raghunathan, PhD,** University *of Houston, College of Optometry*

11:20am **Many Faces of LOXL1 Rachel Kuchtey, M.D., PhD.,** *Vanderbilt University*

11:40am **ADAMTS and Fibrillin in Glaucoma Pathogenesis, John Kuchtey, PhD**, *Vanderbilt University*

Poster Flash Talks
Location: Grand D
Chairs: Ambra Pozzi, *Vanderbilt University Medical Center* and Dirk Hubmacher, *Icahn School of Medicine at Mount Sinai*

Highly recognized abstracts that were not selected for a concurrent session will be presented in this fast-paced forum. Talks will be five minutes with one minute for questions.

ADAMTS10 Modulates Skeletal Muscle Differentiation: An In-Vitro Study, Keron Rose, *The Icahn School of Medicine at Mount Sinai;* Poster: 1

Proteomic and Metabolomic Signatures Reveal Novel Pathways and Targets Involved in Fat-Cartilage Crosstalk, Kelsey Collins, *Washington University St. Louis;* Poster: 2 – Virtual Only

Conditional deletion of ECM protein ADAMTSL2 delays skeletal muscle repair after injury, Nandaraj Taye, *Icahn School of Medicine at Mount Sinai at New York;* Poster: 3

Basement membrane repair dynamics in the Drosophila midgut, Aubrie Stricker, *Vanderbilt University;* Poster: 4

Engineered Biomaterials to Investigate Etiology of Cardiac Fibrosis Post-Myocardial Infarction, Aryssa Simpson, *North Carolina State University;* Poster: 5

Characterizing the mechanism and functional impact of extracellular chaperone eHsp90 phosphorylation by secretory tyrosine kinase VLK, Fiza Hashmi, *Upstate Medical University;* Poster: 6

The Physiological Relevance of TIMP2 Dimer Formation, Carolyn Lazaroff, *National Institutes of Health – NCI;* (Virtual) Poster: 7 - Virtual Only

Novel Ex Vivo Culture System Using Patterned Matrix Proteins Reveals Mechanosensitive, Sarcomere-Like Stress Fibers During Podocyte Spreading, Shumeng Jiang, *Washington University in St. Louis;* Poster: 8 – Virtual Only

Topical Elastase Administration Decreases Elastin Content and Alters Mechanical Properties in an Abdominal Aortic Mouse Model, Ande Marini, *University of Pittsburgh;* Poster: 9

Modulation of Human Adipose Stem Cell ECM Synthesis by Mechanosensing of Substrate Architecture Through the Piezo1 Ion Channel, Neda Rashidi, *Washington University in St. Louis;* Poster: 10

The Role of Kruppel-Like Factor 6 in Prolidase Transcription, Ireti Eni-Aganga, *Meharry Medical College;* Poster: 12

Left, right, and center: characterizing the novel midline barrier of the dorsal mesentery and its effect on asymmetric gut looping, Cora Demler, *Cornell University;* (Virtual) Poster: 13 – Virtual Only

Directional Cues in the Tumor Microenvironment, Suzanne Ponik, *University of Wisconsin School of Medicine and Public Health*; Poster: 14

Utilizing proximity labeling to identify protein-protein interactions in the extracellular matrix, Sadeechya Gurung, *National Cancer Institute;* Poster: 15

Extracellular matrix protein turnover markers are associated with axSpA a comparison with control subjects with or without pelvic, buttock or back pain, Helena Port, *Nordic Bioscience;* Poster: 16

Exploring the influence of a fibrotic extracellular matrix on pancreatic ductal adenocarcinoma cell behavior with progressively stiffened hydrogels in vitro, Athenia Jones, *Worcester Polytechnic Institute;* Poster: 17

Local TGF-beta sequestration by fibrillin-1 regulates vascular wall homeostasis in the thoracic aorta, Violette Deleeuw, *Ghent University;* (Virtual) Poster: 18 – Virtual Only

Hemodynamic Regulators of Vascular Development, Amber Stratman, *Washington University School of Medicine;* (Virtual) Poster: 19 – Virtual Only

An in-vitro Model to Study the Endothelial Glycocalyx under Laminar Shear Stress in a Native/Near-Native State, Shailey Gale Twamley, *Charité Universitätsmedizin Berlin;* Poster: 20

Guest Symposium I: The Histochemical Society: ECM in the time of COVID
Location: Grand E
Chairs: Stephen Hewitt, *Editor-in-Chief, The Journal of Histochemistry and Cytochemistry*, and Liliana Schaefer, *President, The Histochemical Society.*

10:00am **The Interactome of Glycosaminoglycans: from Interactions to Functions,** Sylvie Ricard-Blum, *University Lyon, Institute of Molecular and Supramolecular Chemistry and Biochemistry* (Virtual)

10:30am **The Indispensable Role of ECM Proteolysis in Embryogenesis,** Suneel Apte, *Cleveland Clinic Lerner Research Institute*

11:00am **New Tricks for an Old Dog – Complement as Regulator of Normal Cell Physiology,** Claudia Kemper, *DIR, NHLBI, NIH* (Virtual)

12:00-6:00pm **Exhibits**
Location: Grand Foyer

12:00-1:00pm **Break – Lunch on Your Own**

1:00-2:30pm **Concurrent Sessions**

Concurrent 1: Fibroblasts & ECM Remodeling
Location: Grand ABC
Chair: Amy Bradshaw, *Medical University of South Carolina*
CoChair: Julie DiMartino, *Icahn School of Medicine at Mount Sinai*

1:00pm **Cardiac Fibroblasts: Purveyors of Ventricular Stiffness**, Amy Bradshaw, *Medical University of South Carolina*

1:30pm **Defining the role of PIEZO1 in tendon fibroblast activation during flexor tendon healing,** Anne Nichols, *Center for Musculoskeletal Research, University of Rochester Medical Center;* Poster: 21

1:45pm **Fibroblasts promote blood-brain barrier repair and stroke recovery in a TIMP2-dependent manner,** Yao Yao, *University of South Florida;* (Virtual) Poster: 22 – Virtual Only

2:00pm **The use of the Chicken Chorioallantoic Membrane model to study ECM,** Julie Di Martino, *Icahn School of Medicine at Mount Sinai;* Poster: 23

2:15pm **Limited tryptic digestion as a strategy towards structural matrisomics,** Fred Lee, *University of Illinois at Chicago College of Medicine;* Poster: 24

Concurrent 2: Game of Bones: ECM & Skeletal Biology
Location: Grand D
Chair: Andrea Alford, *University of Michigan*
Co-Chair: Arin Oestreich, *Washington University School of Medicine*

1:00pm **Global Knockout Mouse Models Reveal Cooperative Effects of Thrombospondins 1 and 2 on Bone Cell Physiology**, Andrea Alford, *University of Michigan*

1:30pm **Enhancing effects of miR-181a/b-1 on bone matrix formation via regulating mitochondrial metabolism,** Audrey McAlinden, *Washington University;* Poster: 25 – Virtual Only

1:45pm **DDR1 in the Aging Bone,** Kimberly Denman, *The Ohio State University;* Poster: 26

2:00pm **Maternal high-fat high-sugar diet impairs bone but not cartilage integrity in aged offspring,** Arin Oestreich, *Washington University School of Medicine;* Poster: 27

2:15pm **Osteoblast Lineage Cells Play a Critical Role in Murine Digit Tip Regeneration,** Feini Qu, *Washington University in St. Louis;* Poster: 28

Concurrent 3: Basement Membranes and Disease
Location: Grand E
Chair: Douglas Gould, *University of California, San Francisco*
Co-Chair: Steven Funk, *Washington University*

1:00pm **Therapeutic Implications of Mechanistic Heterogeneity in Patients with COL4A1 and COL4A2 Mutations**, Douglas Gould, *University of California, San Francisco*

1:30pm **The Loss of Peroxidasin Leads to a Sex-Dependent Susceptibility to Vascular Injury,** Selene Colon, *VUMC;* Poster: 29

1:45pm **A basement membrane discovery pipeline uncovers gene network complexity, new components, regulators, and human disease associations,** Mychel Morais, *The University of Manchester;* (Virtual) Poster: 30 – Virtual Only

2:00pm **Kidney glomerular basement membrane changes in transplant glomerulopathy revealed by super-resolution**

microscopy, Pongpratch Puapatanakul, *Washington University School of Medicine;* Poster: 31

2:15pm **Characterization of renal pathology in Col4a1 mutant mice,** Dawiyat Massoudi, *UCSF;* Poster: 32

2:30-2:45pm Break
Location: Grand Foyer

2:45-4:15pm Concurrent Sessions

SIS 2: Not Just Tissue Inhibitors of Metalloproteinases (TIMPs)
Chair: David Peeney, *National Cancer Institute*
Location: Grand ABC

2:45pm **Tissue homeostasis & stem cell niches in TIMP deficient mice,** Rama Khokha, *University of Toronto, Canada* (Virtual)

3:05pm **Moonlighting TIMP-1 signals via invariant chain (CD74) by its N-terminal domain,** Achim Krüger, *Technische Universität München, Munich, Germany* (Virtual)

3:25pm **TIMP2: A secretory co-chaperone of extracellular molecular chaperone Hsp90**, Dimitra Bourboulia *Upstate Medical University, Syracuse, NY*

3:50pm **Fibrosis and Beyond: The many roles of TIMP3 in the lung**, Sean E. Gill, *University of Western Ontario, Canada* (Virtual)

Concurrent 4: Elastic Fibers
Location: Grand D
Chair: Jessica Wagenseil, *Washington University in St. Louis*
Co-Chair: Justin Weinbaum, *University of Pittsburgh*

2:45pm **Elastic Fibers and Arterial Mechanics**, Jessica Wagenseil, *Washington University in St. Louis*

3:15pm **Macromolecular Crowding Enhances Fibrillin-1 Deposition in the Extracellular Matrix,** Brandon Satz-Jacobowitz, *Icahn School of Medicine at Mount Sinai;* Poster: 33

3:30pm **Lysyl oxidase insufficiency exacerbates the vascular disease caused by Fibulin-4 mutations,** Kara Jones, *Washington University in St. Louis;* Poster: 34

3:45pm **EFEMP1 plays a role in elastic fiber formation and mechanics of the extrahepatic bile duct,** Jessica Llewellyn, *University of Pennsylvania;* Poster: 35

4:00pm **Angiotensin II Type 2 Receptor Contributes to Hypertension in Elastin Insufficiency,** Carmen Marie Halabi, *Washington University School of Medicine;* Poster: 36

Concurrent 5: Mechanisms of Fibrosis
Location: Grand E
Chair: Valerie Horsley, *Yale University*
Co-Chair: Corina Borza, *Vanderbilt University Medical Center*

2:45pm **Cellular and Molecular Regulation of Matrix Protein Production**, Valerie Horsley, *Yale University* (Virtual)

3:15pm **Progressive fibrosis and ultrastructural changes in the trabecular meshwork of a novel mouse model of glaucoma,** Colleen McDowell, *UW-Madison;* Poster: 37

3:30pm **Clusterin abrogates Transforming growth factor β2 (TGFβ2)-mediated fibrogenic response and helps maintain the ocular pressure,** Padmanabhan Pattabiraman, *Indiana University Purdue University Indianapolis;* Poster: 38

3:45pm **Discoidin Domain Receptor 1 contributes to kidney inflammation and fibrosis by promoting the phosphorylation of Breakpoint Cluster Region protein and STAT3,** Corina Borza, *Vanderbilt University Medical Center;* Poster: 39

4:00pm **Maternal in utero and early life dietary exposures result in persistent shifts in the gut microbiome and visceral fat metabolism lasting to adulthood**

predisposing offspring to adipose tissue inflammation and fibrosis, Katherine Cook, *Wake Forest University;* Poster: 40

4:15-4:30pm **Break**
Location: Grand Foyer

4:30-6:00pm **President's Welcome & Award Talks**
Location: Grand D-E

4:30pm ***Junior Investigator Awardee***
Colloidal-based Materials for Investigating and Controlling Cell Migration and Wound Healing, **Ashley Brown,** *North Carolina State University and University of North Carolina at Chapel Hill*

5:00pm ***Iozzo Award Winner***
Elastin, Arterial Mechanics, and Stenosis, **Jessica Wagenseil,** *Washington University in St. Louis*

5:30pm ***Senior Investigator Awardee***
Proteolytic Pathways in Immunity, **William Parks,** *Cedars-Sinai Medical Center*

6:00-7:00pm **Welcome Reception**
Location: Grand Foyer

7:00-7:15pm **Founders Award Talk**
Location: Grand D-E

Hierarchical extracellular mechanisms regulating vascular integrity, Heena Kumra, *McGill University*

7:15-8:00pm **Keynote Lecture**
Location: Grand D-E

Cell-Matrix Dynamics: Past and Future, Kenneth Yamada, *National Institutes of Health/National Institute of Dental and Craniofacial Research* (Virtual)

Monday, September 13th

7:15-8:30am **Career Mentoring Breakfast**
Discussion begins at 7:30am
Location: Mills Room TBD
Organizer: Justin Weinbaum, *University of Pittsburgh*

7:30am-5:30pm **Registration and Exhibits**
Location: Grand Foyer

7:30-8:30am **Breakfast**
Location: Grand Foyer

8:30-10:00am **Plenary I: Stem Cells, Organogenesis, and Regeneration**
Location: Grand D-E
Chair: Roy Zent, *Vanderbilt University Medical Center*

8:30am **Skeletal Stem Cells in the Growth Plate: Deeply Embedded in the Niche,** Noriaki Ono, *University of Michigan*

9:00am **Adventures in Asymmetry: Transcriptional Control and ECM Interactions During Gut Morphogenesis**, Natasza Kurpios, *Cornell University*

9:30am **Injectable ECM Hydrogels for Regenerative Engineering**, Karen L. Christman, *University of California, San Diego* (Virtual)

10:00-10:30am **Coffee Break**
Location: Grand Foyer

10:30am-12:00pm **Plenary II: Let's Not Forget the Microenvironment**
Sponsored by The Histochemical Society *and the Journal of Histochemistry & Cytochemistry.*
Location: Grand D-E
Chair: Alexandra Naba, *University of Illinois at Chicago*

10:30am **Unraveling Disease Mechanisms Using Human Pluripotent Stem Cell Organoid Models for Cartilage and Kidney**

Development, Sue Kimber, *University of Manchester* (Virtual)

11:00am **Multiple Roles of Tenascin-C in Cancer Progression,** Gertraud Orend, *INSERM, Strasbourg* (Virtual)

11:30am **Tumor ECM Remodeling to Facilitate Metastasis,** Greg Longmore, *Washington University in St. Louis*

12:00-12:30pm **ASMB Special Presentation**
Location: Grand D-E

Impact of Diversity in STEM Fields,
Nikki Doughty, MSW, *Associate Director of Strategic Initiatives for the Institute for School Partnership at Washington University*

12:30-2:30pm **Lunch and Poster Session I**
Location: Grand FGH
Odd Number Boards Present
Grab a lunch in the Grand Foyer and visit the poster presentations.

2:30-4:00pm **Concurrent Sessions**

Concurrent 6: Matricellular Proteins
Location: Grand ABC
Chair: Douglas Hamilton, *University of Western Ontario*
Co-Chair: Davy Vanhoutte, *Cincinnati Children's Hospital Medical Center*

2:30pm **At the Nexus of Contraction and Matrix Synthesis: Periostin as a Modulator of Soft Tissue Repair,** Douglas Hamilton, *University of Western Ontario* (Virtual)

3:00pm **Thrombospondin-1-mediated TGF-β signaling regulates skeletal muscle mass via ATF4-mediated activation of autophagy and the ubiquitin-proteasome system,** Davy Vanhoutte, *Cincinnati Children's Hospital Medical Center;* Poster: 41

3:15pm **Blockade of CD47/Thrombospondin-1 signaling modulates cellular energetics as a protective mechanism from chemotherapy-induced cardiac injury,** Steven Bronson, *Wake Forest School of Medicine;* Poster: 42

3:30pm **Mutation in Fbln4 Impairs Endothelial Function in Resistance Vessels,** Carmen Halabi, *Washington University St. Louis;* Poster: 43

3:45pm **SPARC: A Critical Member of Basement Membrane Homeostasis,** Samuel Delage, *University of Toronto;* (Virtual) Poster: 44 – Virtual Only

Concurrent 7: Mechanobiology
Location: Grand D
Chair: Nico Strohmeyer, *ETH Zurich*
Co-Chair: Ryan Petrie, *Drexel University*

2:30pm **Biochemical and Biophysical Regulation of Integrin-mediated Adhesion Initiation to Fibronectin,** Nico Strohmeyer, *ETH Zurich* (Virtual)

3:00pm **EGFR as a mechano-organizer orchestrating integrin-mediated cell adhesion,** Tejeshwar Rao, *University of Alabama at Birmingham;* Poster: 45

3:15pm **Role of Lamellipodin in Cellular Mechanotransduction,** Joseph Brazzo, *Jacobs School of Medicine and Biomedical Sciences, University at Buffalo, State University of New York;* (Virtual) Poster: 46 - Virtual Only

3:30pm **Fibrosis development in engineered adipose tissue models of obesity,** Evangelia Bellas, *Temple University;* Poster: 47

3:45pm **The Ras-MAPK pathway senses 3D matrix structure to regulate hydraulic pressure and the mode of cell migration,** Tia Jones, *Drexel University;* Poster: 48 – Virtual Only

Concurrent 8: Genetics of Connective Tissue Disorders
Location: Grand E
Chair: Dianna M. Milewicz, *The University of Texas Health Science Center at Houston, McGovern Medical School*
Co-Chair: Vivian Lee-Kim, *Brigham and Women's Hospital | Harvard Medical School*

2:30pm **Genetic Variants, Aortic Dissection, and Receptor-Matrx Interactions**, Dianna M. Milewicz, *The University of Texas Health Science Center at Houston, McGovern Medical School*

3:00pm **AT1R blockade together with AT2R stimulation prevents aortic aneurysm in mice with progressively severe Marfan syndrome,** Keiichi Asano, *Icahn School of Medicine at Mount Sinai;* Poster: 49

3:15pm **Tspan14-Noncoding variants at the 10q23 CAD GWAS locus regulate TSPAN14 expression and ECM organization,** Vivian Lee-Kim, *Brigham and Women's Hospital | Harvard Medical School;* Poster: 50

3:30pm **Endothelial dysfunction drives aneurysm development in Marfan syndrome,** Anna Cantalupo, *Icahn School of Medicine at Mount Sinai;* Poster: 51

3:45pm **Vascular cell changes and gene expression differences between thoracic and abdominal aortic aneurysms,** Chien-Jung Lin, *Washington University in St. Louis;* Poster: 52 (Virtual)

4:00-4:30pm **Coffee Break**
Location: Grand Foyer

4:30-6:00pm **Concurrent Sessions**

Concurrent 9: Therapeutic Targeting of Matrix
Location: Grand ABC
Chair: Jacqueline Hecht, *The University of Texas Health Science Center at Houston, McGovern Medical School*
Co-Chair: Carmen Halabi, *Washington University School of Medicine*

4:30pm **Pseudoachondroplasia/COMPopathy: Stressful disorder**, Jacqueline Hecht, *The University of Texas Health Science Center at Houston, McGovern Medical School* (Virtual)

5:00pm **Linker Protein Repair of Lama2-deficiency by AAV Somatic Gene Therapy,** Karen K. McKee, *Rutgers University*; Poster: 53

5:15pm **Nonsense codon readthrough therapy in the hereditary basement membrane disease Alport syndrome,** Kohei Omachi, *Washington University School of Medicine;* Poster: 54

5:30pm **Genetic profiling of thoracic aortic aneurysms reveals a role of miR-122 in pathogenetic inflammatory pathways,** Rong-Mo Zhang, *McGill University;* (Virtual) Poster: 55 – Virtual Only

5:45pm **Targeting tumor stroma: First-in-class anti-Periostin antibody induces tumor immune modulation and anti-tumor responses,** Jeanine Pignatelli, *Boehringer Ingelheim;* Poster: 56

Special Interest Session 2: Novel Regulators of Vascular Remodeling and Matrix Assembly
Location: Grand D
Organizer: Matthew Scott, *LSUHSC Shreveport*
Chair: Zhen Zhou, McGovern Medical School

4:30pm **Disruption of the Extracellular Matrix Activates Focal Adhesion Signaling and Leads to Acute Aortic Dissections,** Zhen Zhou, *McGovern Medical School: The University of Texas Health Science Center at Houston, Department of Internal Medicine | Division of Medical Genetics;* Poster 57

5:00pm **The aortic aneurysm degradome and the substrates of MMP9 and mast cell chymase in aortic disease,** Daniel Martin, *Department of Biomedical Engineering, Lerner Research Institute, Cleveland Clinic*

5:30pm **Smooth muscle cell subpopulations and neointimal formation in mouse models of elastin insufficiency,** Chien-Jung Li, *Cardiovascular Division, Barnes-Jewish Hospital, Washington University at St. Louis* (Virtual)

Concurrent 10: Matrix Proteases: Chop 'til They Drop
Location: Grand E
Chair: Stephen Weiss, *University of Michigan*
Co-Chair: Sumit Bhutada, *Cleveland Clinic*

4:30pm **Membrane-Anchored Matrix Metalloproteinases & the Pathophysiologic Remodeling of the Extracellular Matrix**, Stephen Weiss, *University of Michigan*

5:00pm **The proteases ADAMTS10 and ADAMTS17 cooperatively determine bone length and skin architecture,** Dirk Hubmacher, *Icahn School of Medicine at Mount Sinai;* Poster: 58

5:15pm **Proteolysis of fibrillin-2 microfibrils is essential for normal skeletal development,** Timothy Mead, *Cleveland Clinic;* Poster: 59

5:30pm **TAILS identifies candidate substrates and biomarkers of ADAMTS7, a therapeutic protease target in coronary artery disease,** Bryan MacDonald, *Broad Institute of MIT and Harvard;* Poster: 60

5:45pm **Degradomics of human knee osteoarthritic cartilage reveals extensive destruction of ECM and defines the role of the serine protease HtrA1,** Sumit Bhutada, *Cleveland Clinic;* Poster: 61

Tuesday, September 14th

7:15-8:30am **Career Mentoring Breakfast**
Discussion begins at 7:30am
Location: Mills Room TBD
Organizer: Justin Weinbaum, *University of Pittsburgh*

7:30am-5:30pm **Registration and Exhibits**
Location: Grand Foyer

7:30-8:30am **Breakfast**
Location: Grand Foyer

8:30-9:30am **Plenary III: Matrix, Infection, & Metabolism**
Location: Grand D-E
Chair: Joanne Murphy-Ullrich, U*niversity of Alabama at Birmingham*

8:30am **Anne Woods Memorial:** Joanne Murphy-Ullrich, *ASMB Past-President*

8:35am **Syndecan Interactions in Innate Immunity and Gram+ Infections**, Pyong Woo Park, *Boston Children's Hospital and Harvard Medical School*

9:00am **Cell-mediated Collagen Degradation in Homeostasis and Disease,** Kamran Atabai, *University of California, San Francisco*

9:30-10:15am **ISMB Distinguished Investigator Award Presentation**
Location: Grand D-E
Introduction: Suneel S. Apte, *Lerner Research Institute, Cleveland Clinic*

All Matrix Is Local: Why Cells Make What They Do, Robert Mecham, *Washington University School of Medicine*

10:15-10:30am **Coffee Break**
Location: Grand Foyer

10:30-12:00pm **Plenary IV: Little Guys, Big Questions- Matrix in Model Organisms**
Location: Grand D-E
Chair: Jean Schwarzbauer, *Princeton University*

10:30am **Basement Membrane Dynamics in Homeostasis and Repair**, Andrea Page-McCaw, *Vanderbilt University*

11:00am **The B-LINK: a Basement Membrane-Basement Membrane Adhesion that Connects Adjacent Tissues,** David Sherwood, *Duke University* (Virtual)

11:30am **Lizard Tail Regeneration As an Instructive Model of Enhanced Healing Capabilities in an Adult Amniote**, Thomas Lozito, *University of Southern California Keck School of Medicine* (Virtual)

12:00-12:30pm **ASMB Business Meeting**
Location: Grand D-E

12:30-2:30pm **Lunch and Poster Session II**
Location: Grand FGH and Park View
Even Number Boards Present
Grab a lunch in the Grand Foyer and visit the poster presentations.

2:30-4:00pm **Concurrent Sessions**
Concurrent 11: ECM Changes with Aging
Location: Grand ABC
Chair: Ian Sigal, *University of Pittsburgh School of Medicine*
Co-Chair: Justin Parreno, *University of Delaware*

2:30pm **Catching Pressure: Collagen and Glaucoma,** Ian Sigal, *University of Pittsburgh School of Medicine* (Virtual)

3:00pm **Depletion of ScxLin cells in adult murine flexor tendons disrupts homeostasis and might accelerate ECM-related aging features,** Antonion Korcari, *University of Rochester;* Poster: 62

3:15pm **Stromal Cell-derived ECM Provides a Unique Model for Studying Tissue-specific and Aging-related Attributes of the Mesenchymal Stem Cell Niche,** Milos Marinkovic, *University of Texas Health San Antonio;* Poster: 63 – Virtual Only (Virtual)

3:30pm **Skin wound healing is a mirror to cardiac wound healing,** Mediha Becirovic Agic, *University of Nebraska Medical Center;* Poster: 64

3:45pm **Molecular mechanism of the effects of Pro-Hyp peptide on tendon cells,** Kazunori Mizuno, *Nippi, Inc.;* (Virtual) Poster: 65

Concurrent 12: Cell Migration through ECM
Location: Grand D
Chair: Paul Martin, *University of Bristol*
Co-Chair: Fabien Bock, *Vanderbilt University Medical Center*

2:30pm **Live Imaging of the Inflammatory Response and Its Consequences in Wound Repair and Cancer**, Paul Martin, *University of Bristol* (Virtual)

3:00pm **SNED1: a novel extracellular matrix protein regulating neural crest cell migration and craniofacial morphogenesis,** Anna Barque, *University of Illinois at Chicago*; Poster: 66

3:15pm **α-Parvin facilitates ureteric bud branching morphogenesis by regulating actin-dependent cell movement and polarity,** Xinyu Dong, *Vanderbilt University Medical Center;* Poster: 67

3:30pm **Differences in neurite outgrowth and morphology on 3D fibronectin and fibronectin-collagen extracellular matrices,** Archana Sharma, *Princeton University;* Poster: 68

3:45pm **Rac1 promotes kidney collecting duct integrity by limiting actomyosin activity,** Fabien Bock, *Vanderbilt University Medical Center;* Poster: 69

Guest Symposium II: Tissue Engineering and Regenerative Medicine International Society (TERMIS) Americas
Location: Grand E

Organizers: Thomas Barker, *University of Virginia,* Vince Fiore *Boehringer-Ingelheim,* and Riccardo Gottardi, *Children's Hospital of Philadelphia*

2:30pm **Tissue and matrix mechanics in malignancy and fibrogenesis**, Vince Fiore, *Boehringer-Ingelheim*

3:00pm **Dissecting cell-specific contributions to pulmonary fibrosis using new biomaterials and microphysiologic models**, Brendon Baker, *University of Michigan*

3:30pm **Metacells for regenerative medicine: Using synthetic biology to engineer artificial gene circuits**, Farshid Guilak, *Washington University*

4:00-4:30pm **Coffee Break**
Location: Grand Foyer

4:30-6:00pm **Concurrent Sessions**

Concurrent 13: Home is Where the Matrix is: Stem Cell Niches
Location: Grand ABC
Chair: Jeffrey Millman, *Washington University School of Medicine in St. Louis*
Co-Chair: Kelsey Collins, *Washington University School of Medicine in St. Louis*

4:30pm **Controlling the Cytoskeleton to Build a Better Pancreas,** Jeffrey Millman, *Washington University in St. Louis*

5:00pm **Leptin is Necessary and Sufficient for the Regulation of Muscle Mass by Adipose Tissue,** Kelsey Collins, *Washington University St Louis;* Poster: 70

5:15pm **The extracellular matrix of the developing murine myotendinous junction undergoes morphological changes which depend on muscle cell migration and contraction,** Sarah Lipp, *Purdue University;* Poster: 71

5:30pm **Generating Designer Adipose Tissue using Genome Engineering to Disentangle Mechanisms of Adipose Tissue Signaling,** Erica Ely, *Washington University in St. Louis;* Poster: 72

5:45pm **Cell-derived extracellular matrices are a simple and biologically relevant model of cell-matrix interactions,** Travis Block, *StemBioSys Inc;* Poster: 73

Concurrent 14: Structural Aspects of ECM, Receptors, & Adhesion
Location: Grand D
Chair: Junichi Takagi, *Osaka University*
Co-Chair: Suzanne Ponik, *University of Wisconsin-Madison*

4:30pm **Structural Mechanism of Laminin Recognition by Integrins**, Junichi Takagi, *Osaka University* (Virtual)

5:00pm **The role LTBP3 in adipogenesis,** Karan Singh, *NYU Grossman School of Medicine, New York;* Poster: 74

5:15pm **The human metastatic ECM as a target for noninvasive imaging and therapy using alpaca-derived nanobodies,** Noor Jailkhani, *Massachusetts Institute of Technology;* Poster: 75 – Virtual Only (Virtual)

5:30pm **A Method to Identify the Newly Synthesized Matrisome in Developing and Adolescent Tissues,** Kathryn Jacobson, *Purdue University;* Poster: 76

5:45pm **Investigating the role of endocytic recycling in collagen fibrillogenesis,** Joan Chang, *University of Manchester;* (Virtual) Poster: 77 – Virtual Only

Concurrent 15: Proteoglycans & Glycobiology
Location: Grand E
Chair: Yu Yamaguchi, *Sanford Burnham Medical Discovery Institute*
Co-Chair: Timothy Mead, *Cleveland Clinic*

4:30pm **Cell Surface Hyaluronan Degradation and Cell Behavior**, Yu Yamaguchi, *Sanford Burnham Prebys Medical Discovery Institute*

5:00pm **Rhamm and Hyaluronan Are Critical for the Toll-Like Receptor 7- and SARS-CoV-2-Mediated Cytokine Storm and Inflammation,** Rashmin C. Savani, *University of Texas Southwestern Medical Center;* Poster: 78

5:15pm **Combined genetic-pharmacologic inactivation of tightly linked ADAMTS proteases in mice uncovers the impact of versican and glypican-6 in cardiac development,** Timothy Mead, *Cleveland Clinc;* Poster: 79

5:30pm **Versican in human and experimental cardiac diseases with fibrosis,** Athiramol Sasi, *Oslo University Hospital, Institute for Experimental medical research;* (Virtual) Poster: 80 – Virtual Only

5:45pm **Viable Brain Microvessels to Advance the Understanding of the Microvascular Extracellular Matrix in Aging and Alzheimer's Disease,** May J. Reed, *University of Washington;* Poster: 81

7:00pm Social Event – Ballpark Village Crown Room, 601 Clark Street *(All are invited!)*

Wednesday, September 15th

8:00am-12:00pm Registration
Location: Grand Foyer

8:00am-11:00am Exhibits
Location: Grand Foyer

7:30-8:30am Breakfast
Location: Grand Foyer

8:30-9:30am Iozzo Trainee Award Finalists' Presentations
Location: Grand D-E
Chair: Joanne Murphy-Ullrich, ASMB Award Committee Chair

Student Category

Harnessing the plasma proteome to predict cardiac remodeling after myocardial infarction, Upendra Chalise, *University of Nebraska Medical Center*

The extracellular matrix of the developing murine myotendinous junction undergoes morphological changes which depend on muscle cell migration and contraction. Sarah Lipp, *Purdue University*

Cancer cell invasion through a complex and dynamic smooth muscle microenvironment Kendra Marr, *University of Arizona*

Post-Doc Category

Proteomic and Metabolomic Signatures Reveal Novel Pathways and Targets Involved in Fat-Cartilage Crosstalk, Kelsey Collins, *Washington University St Louis*

Nonsense codon readthrough therapy in the hereditary basement membrane disease Alport syndrome, Kohei Omachi, *Washington University School of Medicine*

Conditional deletion of ECM protein ADAMTSL2 delays skeletal muscle repair after injury, Nandaraj Taye, *Icahn School of Medicine at Mount Sinai at New York*

9:30-9:45am Break

9:45-11:15am Plenary V: Mechanotransduction: Biology Meets Engineering
Location: Grand D-E
Chair: Thomas Barker, *University of Virginia Fibrosis Initiative*

9:45am **Three-dimensional Tunable Collagen-fibronectin Scaffolds for Cancer Research,** Delphine Gourdon, *University of Glasgow* (Virtual)

10:15am **Myofibroblast Matrix – Memory, Mechanics, and Mechanisms**, Boris Hinz, *University of Toronto* (Virtual)

10:45am **Matrix Mechanics in Cancer Progression,** Cynthia Reinhart-King, *Vanderbilt University*

Announcement of Iozzo Trainee Award Winners

11:15-11:30am **Coffee Break**
Location: Grand Foyer

11:30am -1:00pm **Concurrent Sessions**

Concurrent 16: Cardiovascular Biology & ECM Remodeling
Location: Grand ABC
Chair: Zamaneh Kassiri, *University of Alberta*
Co-Chair: Upendra Chalise, *University of Nebraska Medical Center*

11:30am **Role of Disintegrin and Metalloproteinases (ADAMs) in Fibroblast Function and Fibrosis in Heart Disease,** Zamaneh Kassiri, *University of Alberta* (Virtual)

12:00pm **Harnessing the plasma proteome to predict cardiac remodeling after myocardial infarction,** Upendra Chalise, *University of Nebraska Medical Center;* Poster: 82

12:15pm **Cardiovascular Tolerance of Fibroblast Loss,** Michelle Diane Tallquist, *University of Hawaii;* (Virtual) Poster: 83 – Virtual Only

12:30pm **Inositol-requiring enzyme-1 (IRE1) signaling impacts triple-negative breast cancer chemotherapy sensitivity preventing chemotherapy-related cardiotoxicity,** Yismeilin Feliz Mosquea, *Wake Forest University School of Medicine;* (Virtual) Poster: 84 – Virtual Only

12:45pm **Compromised pulmonary function and pulmonary artery mechanics in Fibulin-5 deficient mice,** Abhay Ramachandra, *Yale University,* Poster: 85 – Virtual Only

Special Interest Session 3:
ECM Characterization Modalities
Location: Grand D

Organizers: Lauren Schmitt and Maxwell McCabe, *University of Colorado Anschutz Medical Campus*

Conformation of Integrin Binding Domain of Fibronectin Affects Fibroblasts Behavior, Leandro Moretti, *University of Virginia*

Updates to Matrisome DB, Alexandra Naba, *University of Illinois at Chicago*

Human-mouse cross-species xenograft proteomics/ProteoClade, Jason Held, *Washington University in St. Louis*

Multiplex IHC for ECM Proteins, Alexandra Quackenbush, *Oregon Health & Science University* (Virtual)

Comparative Evaluation of Proteomic Methods for ECM Characterization, Lauren Schmitt & Max McCabe, *University of Colorado Anschutz Medical Campus*

Concurrent 17: Collagens & Friends
Location: Grand E
Chair: Kimani Toussaint, *Brown University*
Co-Chair: Sergei Boudko, *Vanderbilt University Medical Center*

11:30am **Quantifying 3D Collagen-fiber Organization,** Kimani Toussaint, *Brown University* (Virtual)

12:00pm **Fibroblast pyruvate carboxylase is required for collagen production in the tumor microenvironment,** Simon Schwörer, *Memorial Sloan Kettering Cancer Center;* Poster: 86

12:15pm **Mapping the collagen network in the vitreous gel of the eye using confocal reflection microscopy,** Eileen Hwang, *University of Utah;* Poster: 87

12:30pm **Lysyl hydroxylase 3 is an essential coordinator to launch type IV collagen to its destination from the ER,** Yoshihiro Ishikawa, *University of California San Francisco;* Poster: 88

12:45pm **Up and down mechanisms of Goodpasture disease and Alport syndrome,** Sergei Boudko, *Vanderbilt University Medical Center;* Poster: 89

POSTER ONLY PROGRAM

All selected talks will also present a poster. See talk listings above for poster number.

Odd number posters present in Session 1. Monday, September 13, 12:30 – 2:30pm

Even number posters present in Session 2. Tuesday, September 14, 12:30 – 2:30pm

SEMA7A, a critical cis-regulator of a5b1 integrin and mechanotransduction in human lung fibroblasts, Grace Bingham, *University of Virginia;* Poster: 90

Tendon matrix homeostasis is dependent on Tropomyosin stabilization of F-actin, Justin Parreno, *University of Delaware;* Poster: 91

Cartilage Matrix Homeostasis is Regulated by Tropomyosin 3.1 Stabilization of Cellular F-Actin on Stiff Substrates, Mandy Schofield, *University of Delaware;* Poster: 92

Reorganization of cytoplasmic F-actin networks in native chondrocytes regulates matrix homeostasis in an Osteoarthritis model, Sofia Gonzalez-Nolde, *University of Delaware;* Poster: 93

Longitudinal bone overgrowth in Marfan Syndrome is driven by loss of TGFβ signaling in the outer perichondrium, Lauriane Sedes, *Icahn school at mount Sinai;* Poster: 94

SVAS in Patients with Upstream ELN Deletions, Sara Procknow, *Washington University in St. Louis;* Poster: 95

STC1 is a serum biomarker and functional target for hepatitis B virus-associated liver fibrosis, Kristy Chan, Poster: 96

The dorsal root ganglion reveals its true colors, Robin Vroman, *Ghent University;* Poster: 98

Further insights in the rare kyphoscoliotic Ehlers-Danlos Syndrome: report of 3 unrelated individuals and 2 new pathogenic variants, Delfien Syx, *Ghent University;* Poster: 99

Whole organism profiling of Timp gene expression, David Peeney, *National Cancer Institute;* Poster: 100

Identification of novel ADAMTS1, ADAMTS4 and ADAMTS5 cleavage sites in versican using a label-free quantitative proteomics approach, Daniel Martin, *Cleveland Clinic;* Poster: 101

Diet-induced inflammation, fibrosis and adipose tissue remodeling during colorectal cancer initiation, Linda Gutierrez, *Wilkes University;* Poster: 102 – Virtual Only

Plin5 deficiency in podocyte negatively affects the communication between lipid droplets and mitochondria in Alport Syndrome, Jinju Kim, *University of Miami;* Poster: 103 – Virtual Only

Exploring the Impact of IL-17A on Joint Tissue Remodeling in an Ex Vivo Cartilage Model Stimulated with Conditioned Medium from Th17 Cells, Solveg Skovlund Groen, *University of Copenhagen;* Poster: 104

Evaluation of the MMP9 rs4810482 polymorphism in neovascular age-related macular degeneration, Robert Mullins, *The University of Iowa;* Poster: 105 – Virtual Only

Neonatal vs. Adult Fibrin Formation and Implications in Wound Healing, Kimberly Nellenbach, *North Carolina State University;* Poster: 106

Hyperglycemia, hypoxia, and the expression of thrombospondin-2 in diabetic wound healing, Yaqing Huang, *Yale University;* Poster: 107

Microfluidic device for the analysis of hemostasis and remodeling: distinctions between neonatal and adult wound healing, Halston Deal, *North Carolina State University;* Poster: 108

Proteomic characterization of the extracellular matrix protein composition of benign vs. high-

grade serous ovarian cancer tissues, Clarissa D. Gomez, *University of Illinois at Chicago*; Poster: 109 – Virtual Only

Cancer cell invasion through a complex and dynamic smooth muscle microenvironment, Kendra Marr, *University of Arizona;* Poster: 110

A Systemic Analysis of the Expression of Core Matrisome Components Across Tissue and Cell Phenotypes, Tristen Tellman, *University of Texas Health Science Center at Houston School of Dentistry;* Poster: 111 – Virtual Only

Assessment of trichrome staining and collagen structure following multiplexed tissue imaging, Aaron Chiou, *Stanford University;* Poster: 112 – Virtual Only

ECM Atlas: Uncovering ECM Composition and Its Role in Wound Healing, Maxwell McCabe, *University of Colorado;* Poster: 113

Advancing Methods to Characterize Native Collagen Cross-links, Lauren Schmitt, *Colorado University Anschutz;* Poster: 114

Mechanistic insights into the role of heparan sulfate in fibronectin matrix assembly using exostosin-1 deficient fibroblasts, Benjamin Lovett, *Princeton University;* Poster: 115

Versican binds collagen and regulates structural and mechanical behaviors of fibrous network, Dongning Chen, *University of Pennsylvania;* Poster: 116 – Virtual Only

Elastin hemizygosity leads to hypertension due to changes in large and small vessels, Bridget Hunkins, *Washington University- St. Louis;* Poster: 118

Lumican and extracellular matrix remodelling in clinical and experimental hypertrophic cardiomyopathy, Chloe Rixon, *Institute for Experimental Medical Research, University of Oslo;* Poster: 119 - Virtual Only

Serological biomarkers of type III and IV collagen remodeling predict and monitor infliximab treatment response in patients with Inflammatory Bowel Disease, Marta Sorokina Alexdóttir , *Nordic Bioscience;* Poster: 120

Methacrylated Collagen Paired with LAP for Use as a Progressively Stiffening Material Within Microfluidic Lymphangiogenesis Devices, Brian Ruliffson, *Worcester Polytechnic Institute;* Poster: 121

CD47 interactions with exportin-1 regulate targeting of m7G-modified RNAs to extracellular vesicles, Sukhbir Kaur, *NCI;* Poster: 122- Virtual Only

Using suppressor genetics to identify genes that prevent aortic dilation and death in a mouse model of Marfan syndrome, Silvia Smaldone, *Regeneron Pharmaceutical Inc;* Poster: 123

Ligand-independent integrin beta1 signaling supports lung adenocarcinoma development, Scott Haake, *Vanderbilt University Medical Center;* Poster: 124

Healthy ECM Improves Mitochondrial (Dys)Function in a Cardiac Fibroblast Model, Janny Pineiro, *University of Florida;* Poster: 125- Virtual Only

Age-related Changes of Microenvironmental Collagen Enhance Ovarian Cancer Metastasis, Elizabeth Harper, *University of Notre Dame;* Poster: 126

Defining mechanical injury criteria for the ECM of soft tissues, Callan Luetkemeyer, *University of Colorado Boulder*, Poster: 127

Healing phase-specific signatures of wound fibroblasts and extracellular matrix patterns define cancer-associated fibroblast subtypes and predict cancer outcome, Mateusz Wietecha, *ETH Zurich*, Poster: 128-Virtual Only

The Mystery of the Peroxidasin Mutant: Why Does this Catalytically Dead Drosophila mutant survive?, Katherine Peebles, *Vanderbilt University*, Poster: 129

oxLDL disturbs matrix remodeling and synthesis by human tendon cells, Rouhollah Mousavizadeh, *UBC*, Poster: 130 – Virtual Only

Intravital imaging technology guides FAK mediated anti-fibrotic priming in pancreatic cancer precision medicine according to Merlin status, David Herrmann, *Garvan Institute of Medical Research*, Poster: 131-Virtual Only

Trypanosoma cruzi dysregulates the expression of piRNAs and their targets during the early phase of infection of human cardiac fibroblasts, Kayla Rayford, *Meharry Medical College*, Poster: 132-Virtual Only

Sub-nanometre Structure of Fibrillin Microfibrils from Cryo-Electron Microscopy reveals the site of latent TGFβ binding and structural perturbations in disease-linked mutations, Clair Baldock, *University of Manchester*, Poster: 133-Virtual Only

Interaction of ADAMTSL2 with the heparin binding region of fibronectin suggests a role in cell adhesion, Clair Baldock, *University of Manchester*, Poster: 134-Virtual Only

ADAMTS proteases increase TGFβ activation by altering the mechanotension of cells, Stuart Cain, *University of Manchester*, Poster: 135-Virtual Only

SMOC2 Promotes a pro-Metastatic Phenotype in Epithelial Cells of Renal Cell Carcinoma Origin, Casimiro Gerarduzzi, *University of Montreal*, Poster: 136-Virtual Only

Myeloid-derived IL-1 signaling induces unique immuno-fibroblast subpopulations critical for pulmonary fibrosis, Daniel Abebayehu, *University of Virginia*, Poster 137