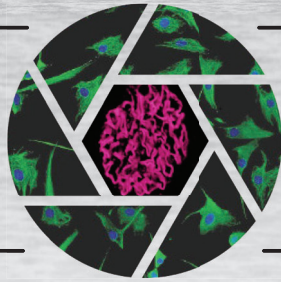


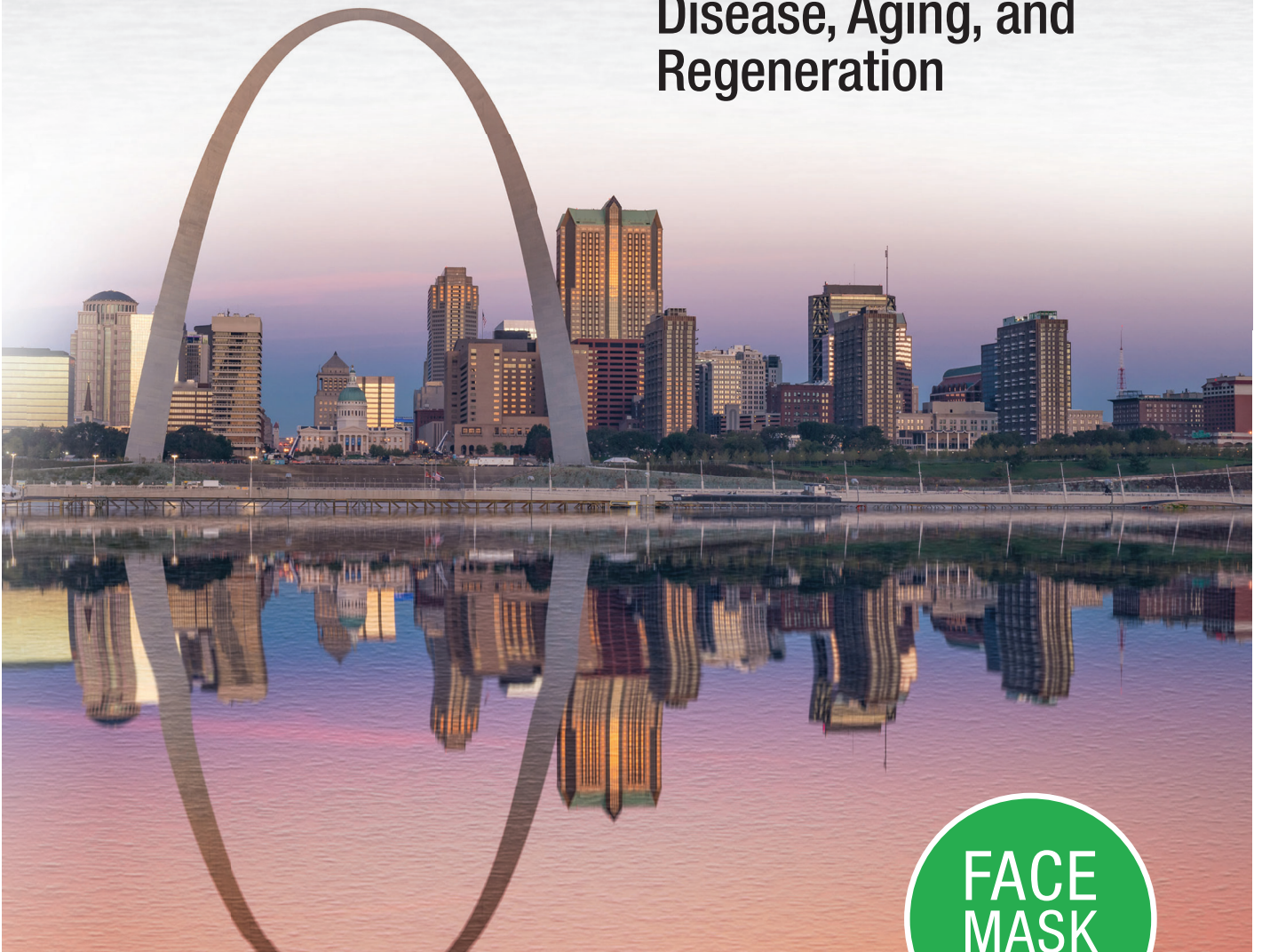
WELCOME

ASMB
2021



— THE —
MATRIX
IN FOCUS

Matrix, Cells, and
Interactions in Health,
Disease, Aging, and
Regeneration



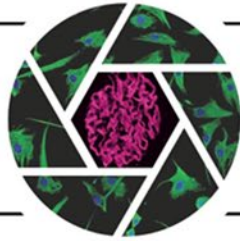
FACE
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REQUIRED



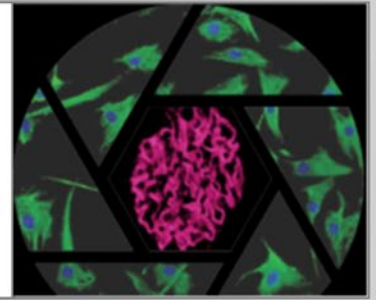
American Society for Matrix Biology

2021 | BIENNIAL
MEETING

ASMB
2021



—THE—
MATRIX
IN FOCUS



Dear Conference Attendees (both virtual and in person),

Welcome to the 9th Biennial Conference of the American Society for Matrix Biology! The theme of this Conference is, “*The Matrix in Focus*” which was intended to be well suited for the year 2020 (as in “20/20 vision”). We owe our incoming President, Jeff Miner, and our Executive Director, Kendra LaDuca, very special “thank you”s not only for organizing the Conference, but also for providing the steady leadership required to adapt to the challenges of postponing the 2020 meeting and rescheduling it for 2021.

For many of you, your friends and colleagues, and your families, 2020 was a very difficult year. We have all risen to the challenges in a variety of ways. In order to keep our scientific community going during the last many months of pandemic social and professional isolation, the ASMB’s Communications Committee (led by Alexandra Naba) initiated regular eSymposia on a variety of interesting topics. These eSymposia were organized by Ryan Petrie, Joan Chang and Davy Vanhoutte, bringing together hundreds from the broad matrix biology community using Zoom. We thank Alexandra, Ryan, Joan, and Davy for helping to keep us stimulated and interacting during the last year, and we thank Kendra and Elsevier (Matrix Biology and Matrix Biology Plus) for supporting the ASMB Zoom platform.

The issues of health disparities and racial injustice were brought into very sharp focus in 2020. Discussions are ongoing in the ASMB Membership Committee, headed by Joanne Murphy-Ullrich (Past President of the ASMB), about ways in which the ASMB can better serve the needs of URM (“under-represented minority”) communities. In addition to our travel awards for URM trainees, there are new proposals under discussion which include more substantive outreach to URM communities as well as development of research areas directed toward achieving a better understanding of health disparities. There will be both informal and formal times to continue these discussions. Please contact Joanne or others on the Membership Committee (Enid Neptune, Sam Senyo, David Soto-Pantoja, Rachel Lennon, Andrew Leask, and Ryan Petrie) with your ideas or if you would like to become involved in these activities.

The ASMB Biennial Conference bears witness to the growth and expansion of matrix biology. Each day includes scientific talks and sessions that represent both the breadth of matrix biology as well as innovative areas and concepts. Thanks to Jeff Miner and the Program Committee for selecting speakers and topics ranging from fundamental research to disease-targeted translational research. Ken Yamada, well known in matrix biology for innovative live-cell imaging, will give the Keynote Lecture, “Cell-Matrix Dynamics: Past and Future.” We appreciate all the speakers and the more than 120 participants who submitted abstracts of their research, some of whom were selected to present their work either in person or virtually at the meeting.

We want to salute the achievements of our award winners: Ashley Brown (Junior Investigator Awardee), Jessica Wagenseil (Iozzo Award Winner), Bill Parks (Senior Investigator Awardee), Heena Kumra (Founders Award Winner), and Bob Mecham (ISMB Distinguished Investigator Awardee). Special thanks to the International Society for Matrix Biology for presenting their Distinguished Investigator Award and for supporting the ASMB. Many of our international colleagues were unable to attend the ASMB

Conference this year in person due to the global pandemic, but were able to attend virtually and were assisted by the ISMB to do this.

The Conference includes participation by Guest Societies such as TERMIS (Tissue Engineering and Regenerative Medicine International Society North America) and the Histochemical Society as well as new groups (this year we welcome a new group focused on eye research). We welcome representatives of the American Society for Investigative Pathology, with whom we have partnered at previous FASEB meetings, who will join us to observe our biennial meeting and to discuss future collaborative partnerships.

A major focus of the ASMB is to provide opportunities to advance the careers of our junior members. Career Mentoring and Women Mentoring Women Breakfasts are sponsored by the ASMB to facilitate informal interactions between junior and senior researchers. Special Interest Sessions, which were initiated in 2014, were organized by trainees, and their SIS proposals were selected for presentation at the Conference. In addition, the ASMB provides travel awards to junior researchers, and this year the ASMB will also present Iozzo Trainee awards for selected abstracts.

Many groups and companies deserve our gratitude, including the NIH (for supporting our R13 meeting grant through NIAMS and signed onto by several other institutes), the ASIP, the ISMB, Elsevier, the Company of Biologists, the Marfan Foundation Nippi/MATRIXOME, 3Helix, Alport Syndrome Foundation, The Histochemical Society, Bright Focus Foundation, Glaucoma Foundation, Glaucoma Research Foundation, and 10xGeneomics, for providing funds to support this Conference. We sincerely appreciate their generosity.

It takes a village to keep the ASMB growing and doing good things. In addition to the Biennial Conference, the ASMB sponsors Workshops in the off years. Two previous Workshops, one on Basement Membranes and the other on Fibroblasts: the Arbiters of Extracellular Matrix Remodeling, have been very successful. Please look forward to attending these Workshops in 2022. Also, please consider organizing a new Workshop in the future and becoming involved in new initiatives. There are many opportunities to grow the matrix biology community, and the ASMB can help make these opportunities a reality. Bring your ideas and willingness to volunteer!

We especially thank Kendra LaDuca for her guidance, expertise, and hard work on our behalf and the ASMB leadership team including the Council and Executive Committee. I am deeply personally grateful to Joanne Murphy-Ullrich for her wisdom and attention to detail and also to Ambra Pozzi for always reminding us of the financial status of the ASMB. Ambra's term as Treasurer, Joanne as Past-President, as well as terms of Council members (Merry Lindsay, Alexandra Naba, will be completed at the end of this year. I urge members to consider running for President-elect, Treasurer, and Council to fill the very large shoes left by these individuals. Jeff Miner will become President of the ASMB in 2022, and we will do our best to support him and the new ASMB leadership team.

Welcome! Enjoy the Conference!

Lynn Sakai
ASMB President



Our Sponsors

Thank you to our 2021 Sponsors

Funding for this conference was made possible (in part) by **(1R13AR078062-01)** from the **National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)** and all co-funding support provided by **National Institute On Aging (NIA), National Heart, Blood and Lung Institute (NHLBI), and the National Eye Institute (NEI)**. 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 by trade names, commercial practices, or organizations imply endorsement by the U.S. Government.



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



2021 Award Winners



Senior Investigator

William Parks,
Cedars-Sinai
Medical Center



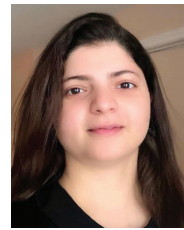
Junior Investigator

Ashley Brown, *North Carolina State University and University of North Carolina at Chapel Hill*



Iozzo Award

Jessica Wagenseil,
Washington University in St. Louis



Founders Award

Heena Kumra,
McGill University



ISMB Distinguished Investigator

Robert Mecham,
Washington University School of Medicine

ASMB Travel Awards

Grace Bingham, *University of Virginia*
Steve Bronson, *Wake Forest School of Medicine*
Selene Colon, *Vanderbilt University Medical Center*
Athenia Jones, *Worcester Polytechnic Institute*
Fred Lee, *University of Illinois at Chicago College of Medicine*
Dawiyat Massoudi, *University of California, San Francisco*
Anne Nichols, *University of Rochester Medical Center*
Nandaraj Taye, *Icahn School of Medicine at Mount Sinai at New York*

Eye Focused Research Travel Awards

Emily Hwang, *University of Utah*
Colleen McDowell, *University of Wisconsin – Madison*
Lucas Mennetti, *University of Delaware*

HCS Sponsored Travel Awards

Kimberly Denman, *Ohio State University*
Hashmi Fiza, *Upstate Medical University*
Milos Marinkovic, *University of Texas Health San Antonio*
Timothy Mead, *Cleveland Clinic*
Mandy Schofield, *University of Delaware*

Marfan Foundation

Keiichi Asano, *Icahn School of Medicine at Mount Sinai*

Alport Syndrome Foundation

Aubrie Stricker, *Vanderbilt University*

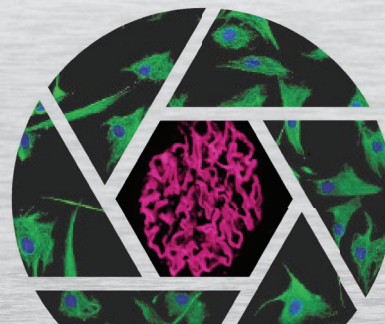
Iozzo Trainee Award Finalists

Student Category

Upendra Chalise, *University of Nebraska Medical Center*
Sarah Lipp, *Purdue University*
Kendra Marr, *University of Arizona*

Post-Doc Category

Kelsey Collins, *Washington University St Louis*
Kohei Omachi, *Washington University School of Medicine*
Nandaraj Taye, *Icahn School of Medicine at Mount Sinai at New York*



Registration Hours

The meeting registration desk is located in the Grand Ballroom Foyer of the Hyatt Regency St. Louis at The Arch. Name badges can be picked up at the ASMB Registration Desk. The desk will be staffed during the following hours.

Sunday, September 12 th	10:00 AM – 6:00 PM
Monday, September 13 th	7:30 AM – 5:30 PM
Tuesday, September 14 th	7:30 AM – 5:30 PM
Wednesday, September 15 th	8:00 AM – 12:00 PM

Registration

Registration fees include the main conference scientific sessions, access to the meeting app, online poster sessions, and the meals included below. Registration fees exclude hotel costs. On-site registration will be accepted through the website only.

ASMB Social Distancing Policy

ASMB and the Hyatt Regency are following all local and national best practices for large group meetings during this unique time. We ask that attendees respect the posted guidelines, wear a mask (except when eating or drinking), and maintain at least 6 feet distance when interacting with other meeting attendees and hotel guests. Meeting attendees who need an extra mask may request one at the ASMB registration area or hotel front desk.

Catering

Included in registration fees are the following catered events:

- Sunday Night Opening Reception
- Monday, Tuesday, and Wednesday Continental Breakfast
- Monday and Tuesday Poster Session Boxed Lunch
- AM and PM Coffee Breaks
- Tuesday Night Social at the Ballpark Village Crown Room

Internet Access

Internet access is provided in the guest rooms for those staying onsite at the Hyatt Regency St. Louis at The Arch within the meeting block. Complimentary access is also provided by ASMB in the meeting spaces.

Username: "@Hyatt

Meetings Password: ASMB2021

Business Meeting

All ASMB members are encouraged and invited to attend the Member Business Meeting on Tuesday, September 14^h from 12:00 – 12:30 PM. The advice and guidance of the membership on current society issues is welcome in these "open forum" meetings. If you are not currently a member, applications are available at the Registration Desk.

Poster Set-up/Poster Sessions

All posters are available for preview on the ASMB meeting app for registered meeting participants. Posters that are available for in-person view at the Hyatt will be noted in the on-line poster preview as well as in the directory in scientific program. In-person poster boards will be set-up in the Grand Ballroom F-G-H and the corresponding corridor. In-person poster presentations will take place in two separate sessions.

Odd number board numbers will formally present on Monday, September 13th from 12:30 – 2:30PM, while even numbers boards will formally present on Tuesday, September 14th from 12:00 – 2:00PM. Set-up and breakdown for poster boards is as follows:

ODD Number Posters

Set-up posters starting Monday, September 13th at 7:30 AM

Remove posters by Monday, September 13th at 7:00 PM

EVEN Number Posters

Set-up posters starting Tuesday, September 14th at 7:30 AM

Remove posters by Tuesday, September 14th at 7:00 PM

Poster Session I:

Monday, September 13th12:30 – 2:30 PM

Poster Session II:

Tuesday, September 14th12:30 – 2:30 PM

The organizers are not responsible for any materials posted. Push pins will be provided.

Exhibits

Please take time to visit the exhibit displays in the Grand Ballroom Foyer area during the breaks and poster sessions. See the exhibitor listing for detailed information regarding our sponsoring companies.

Exhibits Schedule:

Sunday, September 12th 12:00 PM – 6:00 PM

Monday, September 13th 7:30 AM – 5:30 PM

Tuesday, September 14th 7:30 AM – 5:30 PM

Wednesday, September 15th 8:00 AM – 1:00 PM

Accompanying Persons

Guests are welcome to enjoy the city during the conference hours. There are many sites and attractions within walking distance. For the most complete information about the local area and things to do while in St. Louis, check out the [“All About St. Louis”](#) or contact the hotel concierge at (314) 655-1234.

Special Needs

Registrants with special needs are invited to contact the Registration Desk or hotel concierge for assistance.

Liability

Neither the host venue nor the organizers can be held responsible for any personal injury, loss, damage to private property or additional expense incurred as a result of delays or changes in air, rail, sea, road or other services. All participants are encouraged to make their own arrangements for health and travel insurance.

ASMB Commitment to Safety

We look forward to welcoming attendees to St. Louis for the ASMB in-person Biennial Meeting September 12-15, 2021. The health and safety of attendees, presenters, exhibitors, staff, and the local community is a priority for the society. ASMB will encourage socially distanced seating during the meeting sessions and at group events. Vaccination and mask wearing are required as detailed below.

ASMB 2021 Vaccination Requirement

With rising Covid-19 Delta variant transmission rates and to ensure the safest possible in-person ASMB 2021 gathering, full COVID-19 vaccination will be required to attend the ASMB Meeting. No documentation will be requested; attendees are expected to adhere to a vaccination status honor code.

Unvaccinated individuals should participate by attending the virtual version of the meeting, which includes all plenary sessions, award talks, and poster presentations.

ASMB 2021 Mask Requirement

With rising Covid-19 Delta variant transmission rates and to ensure the safest possible in-person gathering, masks will be required for the in-person events in St. Louis, except in the following limited circumstances:

1. When actively eating or drinking
2. When presenting at a lecture or on a panel
3. When seated in a meeting of 20 or fewer people and socially distanced.

Masks will be required at all times in the poster lobby areas. Any person who does not adhere to the mask policy will be asked to leave. ASMB and the Hyatt registration area both offer complimentary masks, if you should need one.

St. Louis and Hyatt Policy

St. Louis currently requires masks to be worn in indoor public spaces. Read more about the local policy [here](#). All Hyatt staff are required to wear masks. Unvaccinated guests are also required to wear masks.

ASMB PHOTOGRAPHY AND SOCIAL MEDIA POLICIES

Photography. Conference attendees may take photographs during oral or poster presentations provided that the photographs are strictly for personal, noncommercial use and are not to be published in any form. Attendees are prohibited from using flash photography or otherwise distracting the presenters or members of the audience.

Social Media. Conference attendees may share information from presentations on social media provided that they respect the wishes of presenters. Oral presenters may label any or all slides in their presentations with “DO NOT POST.”

Similarly, poster presenters may label their posters with “DO NOT POST.” Attendees must respect the presenters’ requests in these instances and refrain from posting any images from these designated slides or posters on social media.

ASMB Officers and Council

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Oregon Health & Science University

Past President

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Merry L. Lindsey

University of Nebraska Medical Center

Douglas Gould

University of California San Francisco

Alexandra Naba

University of Illinois at Chicago

Andrea Page-McCaw

Vanderbilt University

Thank You to ASMB Outgoing Council Members

2019

Tom Barker and Karen Posey

2021

Merry Lindsey and Alexandra Naba

Thank You

ASMB and the Meeting Chair extend a heartfelt thank you to those who helped to make this meeting possible.

ASMB Scientific Program Planning Committee

Suneel Apte	Merry Lindsey
Thomas Barker	Joanne Murphy-Ullrich
Amy Bradshaw	Alexandra Naba
Holly Colognato	Karen Posey
Doug Gould	Ambra Pozzi
Farshid Guilak	Lynn Sakai
Dirk Hubmacher	Rashmin Savani
Sarah Knox	Yu Yamaguchi
Rachel Lennon	Roy Zent

Special Interest Session Leaders

Kate E. Keller, PhD, *Oregon Health & Science University* and Donna M. Peters, PhD *University of Wisconsin- Madison*

Matthew Scott, *LSU Shreveport*

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

Guest Symposia Organizers

Stephen Hewitt, *Editor-in-Chief, The Journal of Histochemistry and Cytochemistry*, and Liliana Schaefer, *President, The Histochemical Society*.

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

Social Media, Virtual Audio-Visual and More! Volunteers

Joan Chang, Ande Marini, Ryan Petrie, Davy Vanhoutte, Justin Weinbaum

A special thank you as well to those unnamed who participated in reviewing abstracts and mentoring at breakfasts. Your contributions are invaluable!

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 DiMartino, *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 β 2 (TGF β 2)-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](#))

induced cardiac injury, Steven Bronson, *Wake Forest School of Medicine*; Poster: 42

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

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

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

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

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-**

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-Matrix 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, University 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 Jaikhani, *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 Clinic*; 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

Behavior, Leandro Moretti, *University of Virginia*

11:30am -1:00pm

Concurrent Sessions

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

Concurrent 16: Cardiovascular Biology & ECM Remodeling

Location: Grand ABC

Chair: Zamaneh Kassiri, University of Alberta

Co-Chair: Upendra Chalise, University of Nebraska Medical Center

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)*

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

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

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

Concurrent 17: Collagens & Friends

Location: Grand E

Chair: Kimani Toussaint, Brown University

Co-Chair: Sergei Boudko, Vanderbilt University Medical Center

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

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

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

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

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

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

Special Interest Session 3: ECM Characterization Modalities

Location: Grand D

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

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

Conformation of Integrin Binding Domain of Fibronectin Affects Fibroblasts

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 $\alpha 5\beta 1$ 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 TGF β 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 hemizygoty 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 Peroxidase 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 TGF β 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 TGF β 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 Abeyayehu, *University of Virginia*, Poster 137



Agenda at a Glance

Sunday, September 12th

10:00am - 12:00pm

Special Interest Session 1: Functional Roles of the Extracellular Matrix in Glaucoma

Location: Grand ABC

Poster Flash Talks

Location: Grand D

Guest Symposium I: The Histochemical Society: ECM in the time of COVID

Location: Grand E

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

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

Concurrent 1: Fibroblasts & ECM Remodeling

Location: Grand ABC

Concurrent 2: Game of Bones: ECM & Skeletal Biology

Location: Grand D

Concurrent 3: Basement Membranes and Disease

Location: Grand E

2:30-2:45pm Break

2:45-4:15pm **Concurrent Sessions**

SIS 2: Not Just Tissue Inhibitors of Metalloproteinases (TIMPs)

Location: Grand ABC

Concurrent 4: Elastic Fibers

Location: Grand D

Concurrent 5: Mechanisms of Fibrosis

Location: Grand E

4:15-4:30pm Break

4:30-6:00pm **President's Welcome & Award Talks**

Location: Grand D-E

6:00-7:00pm **Welcome Reception**

Location: Grand Foyer

7:00-7:15pm **Founders Award Talk**

Location: Grand D-E

7:15-8:00pm **Keynote Lecture**

Location: Grand D-E

Monday, September 13th

Monday, September 13th

7:15-8:30am Career Mentoring Breakfast

7:30-8:30am Breakfast

Location: Grand Foyer

8:30-10:00am **Plenary I: Stem Cells, Organogenesis, and Regeneration**

Location: Grand D-E

10:00-10:30am Coffee Break

Location: Grand Foyer

10:30am-12:00pm **Plenary II: Let's Not Forget the Microenvironment**

Location: Grand D-E

12:00-12:30pm ASMB Special Presentation

Location: Grand D-E

12:30-2:30pm **Poster Session I**

Location: Grand FGH

Odd Number Boards Present

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

Concurrent 6: Matricellular Proteins

Location: Grand ABC

Concurrent 7: Mechanobiology

Location: Grand D

Concurrent 8: Genetics of Connective Tissue Disorders

Location: Grand E

4:00-4:30pm Coffee Break

Location: Grand Foyer

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

Concurrent 9: Therapeutic Targeting of Matrix

Location: Grand ABC

Special Interest Session 2: Novel Regulators of Vascular Remodeling and Matrix Assembly

Location: Grand D

Concurrent 10: Matrix Proteases: Chop 'til They Drop

Location: Grand E

Tuesday, September 14th

7:15-8:30am Career Mentoring Breakfast

7:30-8:30am Breakfast

Location: Grand Foyer

8:30-9:30am **Plenary III:**

Matrix, Infection, & Metabolism

Location: Grand D-E

9:30-10:15am ISMB Distinguished

Investigator Award Presentation

Location: Grand D-E

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

12:00-12:30pm ASMB Business Meeting

Location: Grand D-E

12:30-2:30pm **Poster Session II**

Location: Grand FGH and Park View

Even Number Boards Present

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

Concurrent 11: ECM Changes with Aging

Location: Grand ABC

2:30-4:00pm **Concurrent Sessions (cont'd)**

Concurrent 12: Cell Migration through ECM

Location: Grand D

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

Location: Grand E

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

Concurrent 14: Structural Aspects of ECM, Receptors, & Adhesion

Location: Grand D

Concurrent 15: Proteoglycans & Glycobiology

Location: Grand E

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

Wednesday, September 15th

7:30-8:30am Breakfast

Location: Grand Foyer

8:30-9:30am **Iozzo Trainee Award Finalists' Presentations**

Location: Grand D-E

9:30-9:45am Break

9:45-11:15am **Plenary V:**

Mechanotransduction: Biology Meets Engineering

Location: Grand D-E

Announcement of Iozzo Trainee Awards

11:15-11:30am **Coffee Break**

Location: Grand Foyer

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

Concurrent 16: Cardiovascular Biology & ECM Remodeling

Location: Grand ABC

Special Interest Session 3:

ECM Characterization Modalities

Location: Grand D

Concurrent 17: Collagens & Friends

Location: Grand E

