



# Poster Program

**ECM Microenvironments in Disease, Aging, and Regeneration**



American Society for Matrix Biology

**2018** | BIENNIAL  
MEETING

**OCTOBER 14-17, 2018**

**Red Rock**

CASINO RESORT SPA  
LAS VEGAS, NV

**Poster Presentations**..... Summerlin A-B-C

*All posters will be on display throughout the entire conference but will be presented in two separate sessions.*

*Box lunches are provided in the Veranda room. Please grab a lunch and enjoy the poster presentations.*

**Poster Session I: Odd Numbers Present**

Monday, October 15th.....12:30 – 2:30 PM

**Poster Session II: Even Numbers Present**

Tuesday, October 16th .....12:00 – 2:00 PM

Set-up and breakdown for ALL poster boards is as follows:

**Set-up posters starting** Monday, October 15th at 7:30 AM

**Remove posters by** Wednesday, October 17th at 2:00PM

**Guest Symposium III: Sponsored by the Alport Syndrome Foundation**

**B001** Poster Session I

**Modelling Alport syndrome using patient-derived kidney organoids**

Pinyuan Tian<sup>1</sup>, Susan J. Kimber<sup>1</sup>, Daniel P. Gale<sup>2</sup>, Rachel Lennon<sup>1</sup>, <sup>1</sup>University of Manchester, <sup>2</sup>University College London

**B002** Poster Session II

**Collagen Hybridizing Peptide: New Molecular Probe for In Vitro and In Vivo Detection of Degraded and Denatured Collagen**

Michael Yu, *University of Utah*

**Concurrent Session 1: Matricellular Proteins**

**B003** Poster Session I

**Activation of cancer-associated fibroblasts is required for metastasis in a murine model of melanoma**

Andrew Leask<sup>1</sup>, Krista Vincent<sup>2</sup>, David Holdsworth<sup>1</sup>, Lynne-Marie Postovit<sup>2</sup>, James Hutchenreuther<sup>1</sup>, <sup>1</sup>University of Western Ontario, <sup>2</sup>University of Alberta

**B004** Poster Session II

**Dysregulation of matricellular protein thrombospondin-2 in diabetes, TSP2 deficient hydrogel derived from extracellular matrix accelerates diabetic wound healing.**

Britta Kunkemoeller, Aaron H. Morris, Tara Bancroft, Hudson Lee, Danielle K. Stamer, Jason Wu, Marina Tan, Kevan Herold, Carlos Fernandez-Hernando, Themis R. Kyriakides, *Yale University*

**B005** Poster Session I

**Connective Tissue Growth Factor Is Secreted as A Preproprotein that Requires Proteolytic Activation**

Ole J. Kaasboell<sup>1</sup>, Ashish K Gadicherla<sup>1</sup>, Jian-Hua Wang<sup>2</sup>, Vivi Talstad Monsen<sup>1</sup>, Else Marie Valbjørn Hagelin<sup>1</sup>, Meng-Qiu Dong<sup>2</sup>, Håvard Attramadal<sup>1</sup>, <sup>1</sup>Oslo University Hospital, *Institute for Surgical*

*Research, Norway, <sup>2</sup>National Institute of Biological Sciences, Beijing, China*  
**B006** Poster Session II

**SPARC Produced by Bone-Marrow Derived Cells Contributes to Myocardial Fibrosis**

Hannah Riley<sup>1</sup>, Ryan Kelly<sup>1</sup>, Lindsay McDonald<sup>1</sup>, An Van Laer<sup>1</sup>, Catalin Baicu<sup>1</sup>, Amanda LaRue<sup>1,2</sup>, Michael Zile<sup>1,2</sup>, Amy Bradshaw<sup>1,2</sup>, <sup>1</sup>MUSC, <sup>2</sup>Ralph H. Johnson Veterans Affairs Medical Center

**Concurrent Session 2: Proteoglycans**

**B007** Poster Session I

**Versican is required for primary hematopoiesis and yolk sac vasculogenesis in the mouse embryo.**

Sumeda Nandadasa, Anna O'Donnell, Suneel S. Apte, *Cleveland Clinic Lerner Research Institute*

**B008** Poster Session II

**Endorepellin evokes a pro-mitophagic transcriptomic signature and regulates mitochondrial homeostasis in endothelial cells**

Thomas, Neill, Renato V. Iozzo, *Thomas Jefferson University*

**B009** Poster Session I

**ADAMTS5 is coupled with mechanical load during mandibular condylar development**

Alexandra Rogers, Sarah Cisewski, Ashton Lancaster, Alura Luck, Christine Kern, *Medical University of South Carolina*

**B010** Poster Session II

**Biofabrication of an ideal ECM mimetic to function as a small diameter artery.**

William D. Wagner, Harleigh J. Warner, *Wake Forest University School of Medicine*

**Concurrent Session 3: Collagens**

**B011** Poster Session I

**VPS33b is essential for collagen homeostasis**

Joan Chang<sup>1,2</sup>, Adam Pickard<sup>1,2</sup>, Antony Adamson<sup>1,2</sup>, Karl E Kadler<sup>1,2,3</sup>, <sup>1</sup>Wellcome Centre for Cell-Matrix Research, <sup>2</sup>University of Manchester, <sup>3</sup>Manchester Academic Health Science Centre

**B012** Poster Session II

**Zebrafish round mutations reveal a novel post-Golgi collagen secretory pathway linked to a developmental TICCA syndrome**

Gokhan Unlu<sup>1</sup>, Kinsey Qi<sup>2</sup>, Amy Rushing<sup>2</sup>, Eric Gamazon<sup>3</sup>, Nisha Patel<sup>4</sup>, Mais Hashem<sup>4</sup>, Abdullah AlFaifi<sup>5</sup>, Fowzan Alkuraya<sup>4</sup>, Nancy Cox<sup>3</sup>, Ela Knapik<sup>3</sup>, <sup>1</sup>Vanderbilt University, <sup>2</sup>Vanderbilt University Medical Center, <sup>3</sup>Vanderbilt Genetics Institute, <sup>4</sup>King Faisal Specialist Hospital and Research Center, <sup>5</sup>Security Forces Hospital in Riyadh

**B013** Poster Session I

**A fibronectin matrix-based mechanism for proteolytic processing of procollagen I**

Jared Saunders, Jean Schwarzbauer, *Princeton University*

**B014** Poster Session II

**Structural insights into collagen lysyl hydroxylases**

Hou-Fu Guo<sup>1</sup>, Chi-Lin Tsai<sup>2</sup>, Masahiko Terajima<sup>3</sup>, Xiaochao Tan<sup>1</sup>, Priyam Banerjee<sup>1</sup>, Mitchell D. Miller<sup>4</sup>, Xin Liu<sup>1</sup>, Jiang Yu<sup>1</sup>, Jovita Byemerwa<sup>1</sup>, Sarah Alvarado<sup>4</sup>, Tamer Kaoud<sup>5,6</sup>, Kevin N. Dalby<sup>5,6</sup>, Neus Bota-Rabasedas<sup>1</sup>, Yulong Chen<sup>1</sup>, Mitsuo Yamauchi<sup>3</sup>, John A. Tainer<sup>2</sup>, George N. Phillips, Jr.<sup>4</sup>, Jonathan M. Kurie<sup>1</sup>, <sup>1</sup>Department of Thoracic/Head and Neck Medical Oncology, *The University of Texas MD Anderson Cancer Center*, <sup>2</sup>Department of Molecular and Cellular Oncology, *The University of Texas MD Anderson Cancer Center*, <sup>3</sup>North Carolina Oral Health Institute, *School of Dentistry, University of North Carolina at Chapel Hill*, <sup>4</sup>Department of Biosciences,



Rice University, <sup>5</sup>Division of Medicinal Chemistry, Targeted Therapeutic Drug Discovery and Development Program, College of Pharmacy, The University of Texas at Austin, <sup>6</sup>Division of Chemical Biology & Medicinal Chemistry, College of Pharmacy, The University of Texas at Austin.

## Special Interest Session I: Extracellular Vesicles- The Next SMALL Thing

**B015** Poster Session I

### Tumor Exosomes: From Mediators of Systemic Disease to Biomarkers of Metastatic Spread

Irina Matei, Weill Cornell Medicine

**B016** Poster Session II

### Chemoexosomes secreted by myeloma cells enhance osteoclast formation and promote aggressive bone disease

Shyam Kumar Bandari, Rada Amin, Kauslendra Tripathi, Zhengi Shi, Xu Feng, Elezabeth E. Brown, Ralph D. Sanderson, University of Alabama at Birmingham

**B017** Poster Session I

### Inflaming the Masses: Glioma EVs Promote Inflammatory, Degradative, and Metabolic Responses in Normal Brain Cells

Michael Graner, Mary Wang, Anthony Fringuello, Andrew Bubak, Maria Nagel, Petr Pauckek, University of Colorado Anschutz Medical Campus

## Concurrent Session 4: Elastic Fiber Proteins

**B018** Poster Session II

### Fibulin-4 deficiency differentially affects TGF $\beta$ signaling as well as cytoskeleton structure and dynamics

Joyce Burger<sup>1</sup>, Paula van Heijningen<sup>1</sup>, Gert-Jan Kremers<sup>1</sup>, Gert van Cappellen<sup>1</sup>, Hiromi Yanagisawa<sup>2</sup>, Roland Kanaar<sup>1</sup>, Ingrid van der Pluijm<sup>1</sup>, Jeroen Essers<sup>1</sup>,

<sup>1</sup>Erasmus Medical Center, <sup>2</sup>University of Tsukuba

**B019** Poster Session I

### Molecular interaction between elastogenic proteins impacting matrix assembly and function

Heena Kumra\*, Valentin Nelea\*, Dieter P. Reinhardt, McGill University \*Co-First Authors

**B020** Poster Session II

### Smooth muscle and endothelial cell contributions to arterial elastin deposition

M. Catalin Staiculescu, Chien-Jung Lin, Robert P. Mecham, Jessica E. Wagenseil, Washington University

**B021** Poster Session I

### Aortic Smooth Muscle Cell Elastogenesis Driven by Adipose-Derived Mesenchymal Stem Cell Secreted Factors

Aneesh K. Ramaswamy, Rachel E. Sides, David A. Vorp, Justin S. Weinbaum, University of Pittsburgh

## Concurrent Session 5: Matrix in Morphogenesis

**B022** Poster Session II

### Dystroglycan regulates signaling pathways critical to postnatal brain development

Holly Colognato, Freyja McClenahan, Himanshu Sharma, Andrea Arreguin, Azeez Aranmolate, Stony Brook University

**B023** Poster Session I

### ECM omics identifies signature ECMs for the sites of inter-tissue interactions in mouse hair follicles

Ko Tsutsui<sup>1</sup>, Hiroki Machida<sup>1</sup>, Asako Nakagawa<sup>1</sup>, Chun-Chun Cheng<sup>1</sup>, Sean D. Keeley<sup>1</sup>, Chiharu Tanegashima<sup>1</sup>, Yasuko Tomono<sup>2</sup>, Kiyotoshi Sekiguchi<sup>3</sup>, Kisa Kakiguchi<sup>1</sup>, Shigenobu Yonemura<sup>1</sup>, Hironobu Fujiwara<sup>1</sup>, <sup>1</sup>Riken Center for Biosystems Dynamics Research, <sup>2</sup>Shigei MRI, <sup>3</sup>Osaka University

**B024** Poster Session II

### ADAMTS9 and ADAMTS20 have a dual function in ECM remodeling and biogenesis of the primary cilium

Sumeda Nandadasa, Lauren W. Wang, Anna O'Donnell, Caroline M. Kraft, Rushabh Patel, Heon Yung Gee, Kay Grobe, Timothy C. Cox, Friedhelm Hildebrandt, and Suneel S. Apte, Cleveland Clinic Lerner Research Institute

**B025** Poster Session I

### Mouse B3glct knockout: a model for congenital hydrocephaly and craniofacial and skeletal dysmorphology

Bernadette C. Holdener<sup>1</sup>, Richard C. Grady<sup>1</sup>, Daniel Cameron<sup>1</sup>, Christopher J. Percival<sup>1</sup>, Javier C Jimenez-Vega<sup>1</sup>, David E. Komatsu<sup>1</sup>, Sardar Uddin<sup>1</sup>, June Goto<sup>2</sup>, Natalia Peunova<sup>1</sup>, Helene Benveniste<sup>3</sup>, Hedok Lee<sup>3</sup>, Takashi Sato<sup>4</sup>, Hisashi Narimatsu<sup>4</sup>, Steven J. Bernardinelli<sup>5</sup>, Ao Zhang<sup>5</sup>, and Robert S. Haltiwanger<sup>1,5</sup>, <sup>1</sup>Stony Brook University, <sup>2</sup>Cincinnati Children's Hospital, <sup>3</sup>Yale University, <sup>4</sup>National Institute of Advanced Industrial Science and Technology in Japan, <sup>5</sup>University of Georgia

## Concurrent Session 6: Structure & Assembly of ECM

**B026** Poster Session II

### Collagen IV scaffolds are coated with agrin/perlecan: a unique organizational feature of a model basement membrane.

Elena Pokidysheva<sup>1</sup>, Chetyrkin S<sup>1</sup>, Boudko SP<sup>1</sup>, Colon S<sup>1</sup>, Bhave G<sup>1</sup>, Zientek K<sup>2</sup>, Rafi M<sup>1</sup>, Lennon R<sup>3</sup>, UK, Hudson BG<sup>1</sup>, <sup>1</sup>Vanderbilt University Medical Center, <sup>2</sup>Shriners Hospital for Children, <sup>3</sup>University of Manchester

**B027** Poster Session I

### Formation of lamellae in the corneal stroma: New insights in the underlying pathomechanism of keratoconus

Uwe Hansen<sup>1</sup>, Melanie Timmen<sup>1</sup>, Martin Götte<sup>3</sup>, Richard Stange<sup>1</sup>, Thomas Pap<sup>1</sup>,

Nicole Eter<sup>2</sup> and Maged Alhawaiseh<sup>2</sup>, <sup>1</sup>Institute for Musculoskeletal Medicine, University Hospital Muenster, <sup>2</sup>Department of Ophthalmology, University of Muenster Medical Center, <sup>3</sup>Department of Gynecology and Obstetrics, University Hospital Muenster

**B028** Poster Session II

### Hyaluronic Acid-Mediated Macromolecular Crowding to Stimulate Human Cell-Derived Matrix Deposition

Dalia Shendi<sup>1</sup>, Julia Marzi<sup>2</sup>, Will Linthicum<sup>1</sup>, David M. Dolivo<sup>1</sup>, Qi Wen<sup>1</sup>, Tanja Dominko<sup>1</sup>, Katja Schenke-Laylan<sup>2</sup>, Marsha W. Rolle<sup>1</sup>, <sup>1</sup>Worcester Polytechnic Institute, <sup>2</sup>University of Tübingen

**B029** Poster Session I

### Proteomic analysis of extracellular matrix dynamics during mouse forelimb development

Kathryn R. Jacobson, Alexander R. Ocken, Alita F. Miller, Tamara L. Kinzer-Ursem, Sarah Calve, Purdue University

## Concurrent Session 7: ECM of Inflammation, Infection and Immunity

**B030** Poster Session II

### ADAMTS7 and influenza virus immunity.

John Stambas<sup>1</sup>, Meagan McMahon<sup>1</sup>, Siying Ye<sup>1</sup>, Daniel Dlugolenski<sup>1</sup>, Ralph Tripp<sup>2</sup>, Daniel McCulloch<sup>1</sup>, <sup>1</sup>Deakin University, <sup>2</sup>University of Georgia

**B031** Poster Session I

### Thrombospondin-4 Produced by Pro-inflammatory Macrophages Promotes Inflammation

Mohammed Tanjimur Rahman, Santoshi Muppala, Irene Krukovets, Jasmine Gajeton, Dmitriy Verbovetskiy, Edward F. Plow, Olga Stenina-Adognravi, Lerner Research Institute Cleveland Clinic

**B032** Poster Session II

### Extracellular Superoxide Dismutase (EC-SOD) knockout mice have worse alveolarization, inflammation and

## cytokine elaboration after neonatal hyperoxia exposure

Rashmin C. Savani, John Ibrahim, Jie Liao, Naeun Cheong, Christopher Longoria, University of Texas Southwestern Medical Center

**B033** Poster Session I

### Distinct sorting of subsets of extracellular vesicles expressing CD63, MHC class 1, and CD47 in cell-cell communication

Sukhbir Kaur<sup>1</sup>, David D. Roberts<sup>1</sup>, Abdel G. Elkahoulou<sup>2</sup>, Weiwei Wu<sup>2</sup>, Arakelyan, Anush<sup>3</sup>, Leonid Margolis<sup>3</sup>, Satya P. Singh<sup>4</sup>, <sup>1</sup>Laboratory of Pathology, Center for Cancer Research, National Cancer Institute, National Institutes of Health, <sup>2</sup>Cancer Genetics Branch, National Human Genome Research Institute, National Institutes of Health, <sup>3</sup>Section of Intercellular Interactions, Eunice Kennedy-Shriver National Institute of Child Health and Human Development, National Institutes of Health, <sup>4</sup>Inflammation Biology Section, National Institute of Allergy and Infectious Diseases, National Institutes of Health.

## Concurrent Session 8: Mechanosensing

**B034** Poster Session II

### Non-Coding Mechanogenomic Regulation Identified In Human Cardiomyocytes

Adam J. Engler, UC San Diego

**B035** Poster Session I

### Mechanical cell communication and its influence on organization of cellular structures

Daniel Rüdiger, Angelika Vollmar, Stefan Zahler, Ludwig-Maximilians University Munich Department of Pharmacy

**B036** Poster Session II

### Mechanotransduction of the endothelial glycocalyx mediates nitric oxide production through activation of TRP channels

X. Frank Zhang<sup>1</sup>, Matthew A. Dragovich<sup>1</sup>, Daniel Chester<sup>1</sup>, Bing-mei Fu<sup>2</sup>, <sup>1</sup>Lehigh University, <sup>2</sup>The City University of New York

**B037** Poster Session I

### Myosin II Governs Intracellular Pressure and Traction Stress by Distinct Mechanisms

Kimheak Sao<sup>1</sup>, Tia Jones<sup>1</sup>, Andrew Doye<sup>2</sup>, Galina Schevzov<sup>3</sup>, Peter Gunning<sup>3</sup>, Ryan Petrie<sup>1</sup>, <sup>1</sup>Drexel University, <sup>2</sup>National Institutes of Health, <sup>3</sup>University of New South Wales

## Concurrent Session 9: Tumor Microenvironment

**B038** Poster Session II

### DDR1 regulates the construction of a dormancy-supportive niche by coordinating the assembly of a pro-quiescence ECM proteome

Julie Di Martino<sup>1</sup>, Rita Nobre<sup>1,2,3</sup>, Eduardo Farias<sup>1</sup>, Chandrani Mondal<sup>1</sup>, Robert Morabito<sup>4</sup>, Ben Martin<sup>4</sup>, David Matus<sup>4</sup>, Elana Fertig<sup>5</sup>, Alexandra Naba<sup>6</sup>, Julio Aguirre-Ghiso<sup>1,2</sup>, Jose Javier Bravo-Cordero<sup>1</sup>

<sup>1</sup>Department of Medicine, Division of Hematology and Oncology, The Tisch Cancer Institute, Icahn School of Medicine at Mount Sinai, <sup>2</sup>Department of Otolaryngology, Department of Oncological Sciences, Black Family Stem Cell Institute, Mount Sinai School of Medicine; <sup>3</sup>Abel Salazar School of Biomedicine, Porto University, PT; <sup>4</sup>Biochemistry and Cell Biology Department, Stonybrook University, <sup>5</sup>Department of Oncology, Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins University, <sup>6</sup>Department of Physiology & Biophysics, University of Illinois at Chicago

**B039** Poster Session I

### Stromal PTEN regulates extracellular matrix organization in the mammary gland

Caitlin Jones<sup>1</sup>, Anisha Hammer<sup>1</sup>, YouJin Cho<sup>1</sup>, Gina Sizemore<sup>1</sup>, Edna Cukierman<sup>2</sup>, Lisa Yee<sup>3</sup>, Samir Ghadiali<sup>1</sup>, Michael Ostrowski<sup>4</sup>, Jennifer Leight<sup>1</sup>, <sup>1</sup>The Ohio State University, <sup>2</sup>Fox Chase Cancer Center, <sup>3</sup>City of Hope, <sup>4</sup>Medical University of South Carolina



## **B040** Poster Session II

### **Targeting CD47 as a therapeutic strategy for breast cancer prevention.**

Tiffany M. Newman, Elizabeth R. Stirling, Adam Wilson, Katherine L. Cook, David R. Soto-Pantoja, *Wake Forest School of Medicine*

## **B041** Poster Session I

### **Exploiting the ECM for noninvasive imaging of tumor progression and metastases**

Noor Jailkhani<sup>1</sup>, Jessica R Ingram<sup>2</sup>, Mohammad Rashidian<sup>3</sup>, Steffen Rickelt<sup>1</sup>, Chenxi Tian<sup>1</sup>, Hidde L Ploegh<sup>3</sup> and Richard O Hynes<sup>1, 4</sup>, <sup>1</sup>*David H Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology*, <sup>2</sup>*Department of Cancer Immunology and Virology, Dana Farber Cancer Institute*, <sup>3</sup>*Program in Cellular and Molecular Medicine, Boston Children's Hospital*, <sup>4</sup>*Howard Hughes Medical Institute*

## **Concurrent Session 10: ECM of Aging**

## **B042** Poster Session II

### **Alterations in Protein Composition of Aging, Photoaging, and Anti-inflammatory Aging models of the Skin with a Focus on the Extracellular Matrix**

Ryan C Hill<sup>1</sup>, Taihao Quan<sup>2</sup>, Kelly Higa<sup>1</sup>, James DeGregori<sup>1</sup>, Gary J Fisher<sup>2</sup>, Kirk C Hansen<sup>1</sup>, <sup>1</sup>*University of Colorado-Denver*, <sup>2</sup>*University of Michigan*

## **B043** Poster Session I

### **Circulating fibrillin-1 among older US men without diabetes: associations with angina, obesity and high density lipoprotein**

Lynn M Marshall<sup>1</sup>, Eric J Carlson<sup>2</sup>, Carrie M Nielson<sup>1</sup>, Elsa S Strotmeyer<sup>3</sup>, Cherrie Z Abraham<sup>1</sup>, Amir F Azarbal<sup>1</sup>, William S Evans<sup>4</sup>, Eric S Orwoll<sup>1</sup>, Lynn Y Sakai<sup>1, 2</sup>, <sup>1</sup>*Oregon Health and Science University*, <sup>2</sup>*Shriners Hospital for Children*, <sup>3</sup>*University of Pittsburgh*, <sup>4</sup>*Duke University*

## **B044** Poster Session II

### **Hyaluronan and TSG-6 in Alzheimer's**

## **Disease Neuropathology**

May J. Reed<sup>1</sup>, Mamatha Damodarasamy<sup>1</sup>, Jasmine Pathan<sup>1</sup>, Christina K Chan<sup>2</sup>, Charles Spiekerman<sup>1</sup>, Thomas N Wight<sup>2</sup>, William A. Banks<sup>1, 3</sup>, Anthony J Day<sup>4</sup>, Robert B. Vernon<sup>2</sup>, C Dirk Keene<sup>1</sup>, <sup>1</sup>*University of Washington*, <sup>2</sup>*Benaroya Research Institute*, <sup>3</sup>*VA Puget Sound Health Care System*, <sup>4</sup>*Wellcome Trust Centre for Cell-Matrix Research, University of Manchester*

## **B045** Poster Session I

### **Senescence diminishes the responsiveness of primary human mesenchymal stem cells to substrate stiffness**

Venkatesh Mallikarjun<sup>1</sup>, Oana Dobre<sup>1</sup>, Mark R. Jackson<sup>1</sup>, Hamish T.J. Gilbert<sup>1</sup>, Stephen M. Richardson<sup>2</sup>, Joe Swift<sup>1</sup>, <sup>1</sup>*Wellcome Centre for Cell-Matrix Research, University of Manchester*, <sup>2</sup>*University of Manchester*

## **Concurrent Session 11: Cardiovascular ECM**

## **B046** Poster Session II

### **The Discoidin Domain Receptor-1 Acts as a Mechanotransducer in Vascular Smooth Muscle Cells to Promote Vascular Calcification**

David Ngai, Michelle Bendeck, *University of Toronto Department of Laboratory Medicine and Pathobiology, Translational Biology and Engineering Program (TBEP), and Ted Rogers Centre for Heart Research*

## **B047** Poster Session I

### **4-phenylbutyrate promotes vascular smooth muscle cell recruitment and reduces intracerebral hemorrhage severity in Col4a1 mutant mice**

Genki Hayashi, Cassandre Labelle-Dumais, Mao Mao, Rebekah Aldrich, Douglas B Gould, *University of California San Francisco*

## **B048** Poster Session II

### **Point mutation in the copper binding domain of lysyl oxidase causes aortic dilation modified by genetic and environmental influences**

Kit Man Tsang<sup>1</sup>, Russell H Knutsen<sup>1</sup>, Charles J. Billington<sup>1</sup>, Heiko Steenbock<sup>2</sup>, Anderson Watson<sup>1</sup>, Amanda Wardlaw<sup>1</sup>, Frederick T. Greenaway<sup>3</sup>, Juergen Brinckman<sup>3, 4</sup>, and Beth A. Kozel<sup>1</sup>, <sup>1</sup>*Laboratory of Vascular and Matrix Genetics, National Heart, Lung, and Blood Institute, National Institutes of Health*, <sup>2</sup>*Institute of Virology and Cell Biology, University of Luebeck*, <sup>3</sup>*Clark University*, <sup>4</sup>*Department of Dermatology and Institute of Virology and Cell Biology, University of Luebeck*

## **B049** Poster Session I

### **Lysyl oxidase insufficiency exacerbates the vascular disease caused by Fibulin-4 mutations**

Michelle Lin, Thomas J. Broekelmann, Robert P. Mecham, Carmen M. Halabi, *Washington University School of Medicine*

## **Concurrent Session 12: Skin BM, Wound Healing and Disease**

## **B050** Poster Session II

### **A novel disease-modifying treatment for RDEB: a pre-clinical study targeting the anti-fibrotic AT2 and MAS receptors**

Rocco Bernasconi<sup>1</sup>, Christine Gretzmeier<sup>1</sup>, Tobias Kuhl<sup>1</sup>, Thomas Walther<sup>2</sup>, Leena Bruckner-Tuderman<sup>1</sup>, Alexander Nyström<sup>1</sup>, <sup>1</sup>*Uniklinik Freiburg*, <sup>2</sup>*University College Cork*

## **B051** Poster Session I

### **The different roles of laminin-332 and -511 in keratinocyte behaviors.**

Jun Sasaki, Chisei Shimono, Yuji Atsuzawa, Shunji Hattori, Kazunori Mizuno, *Nippi Research Institute of Biomatrix*

## **B052** Poster Session II

### **The Versican G1 Fragment, Serum-Derived Hyaluronan-Associated Proteins, Hyaluronan (VG1F-SHAP-HA) Complex Acts as a Mediator between Wound Surface and Ointment Base in the Treatment of Pressure Ulcer.**

Yusuke Murasawa, Hiroyuki Nakamura,

Ken Watanabe, Zenzo Isogai, *National Center for Geriatrics and Gerontology, Obu, Aichi, Japan*

## **B053** Poster Session I

### **Matrix composition in 3-D collagenous bioscaffolds modulates the survival and angiogenic phenotype of human chronic wound dermal fibroblasts**

Pascal Morissette Martin, Aaron Grant, Douglas W. Hamilton, and Lauren E. Flynn, *University of Western Ontario*

## **Special Interest Session II: Emerging Non-Canonical Intracellular Roles of Extracellular Matrix Proteins**

## **B054** Poster Session II

### **Function of Secreted Protein Acidic and Rich in Cysteine (SPARC) as a matricellular chaperone.**

Alexandre Chlenski, Marija Dobratic, Helen R. Salwen, Mark A. Applebaum, Emma Wilkinson, Susan L. Cohn, *University of Chicago*

## **B055** Poster Session I

### **MT-COMP compromises ligaments, tendons and joint function**

Francoise Coustry<sup>1</sup>, Karen L. Posey<sup>1</sup>, Tristan Maerz<sup>2</sup>, Kevin Baker<sup>3</sup>, Alka C. Veerisetty<sup>1</sup>, Mohammad G. Hossain<sup>1</sup>, Frankie Chiu<sup>1</sup>, Jacqueline T. Hecht<sup>1, 4</sup>, <sup>1</sup>*McGovern Medical School at UTHHealth Department of Pediatrics*, <sup>2</sup>*University of Michigan Department of Orthopaedic Surgery and MedSport*, <sup>3</sup>*Beaumont Hospital - Royal Oak Department of Orthopaedic Surgery*, <sup>4</sup>*UTHHealth School of Dentistry*

## **Concurrent Session 13: Growth Factors and ECM**

## **B057** Poster Session I

### **Internal cleavage and synergy with twisted gastrulation enhance BMP inhibition by BMPER**

Clair Baldock<sup>1</sup>, Michael P Lockhart-Cairns<sup>1</sup>, Karen Tzia Wei Lim<sup>1</sup>, Alan RF Godwin<sup>1</sup>, Alexandra Zuk<sup>2</sup>, Gerhard Sengle<sup>2</sup>, <sup>1</sup>*University of Manchester*, <sup>2</sup>*University of Cologne*

## **B058** Poster Session II

### **The Structure and Regulation of latent TGFβ by LTBP1 and Fibrillin**

Clair Baldock, Michael P. Lockhart-Cairns, Jennifer Thomson, Rana Dajani, *University of Manchester*

## **B059** Poster Session I

### **LEMD3 Desensitizes Fibroblasts to Stiffness-driven TGF-beta Signaling**

Dwight M. Chambers<sup>1, 2</sup>, Leandro Moretti<sup>3</sup>, Thomas H. Barker<sup>3</sup>, <sup>1</sup>*Emory University*, <sup>2</sup>*Georgia Institute of Technology*, <sup>3</sup>*University of Virginia*

## **B060** Poster Session II

### **TGFβ and aortic disease severity in MFS**

Marjolijn Renard<sup>1</sup>, Elise C. Manalo<sup>2</sup>, Sara Tufa<sup>2</sup>, Douglas R. Keene<sup>2</sup>, Julie De Backer<sup>1</sup>, Lynn Y. Sakai<sup>2</sup>, <sup>1</sup>*Ghent University*, <sup>2</sup>*Shriners Hospital for Children Portland*

## **B061** Poster Session I

### **Individual Smad2 linker region residues regulate the genes involved in glycosaminoglycan chain initiation and elongation on proteoglycan, biglycan.**

Kamato Danielle<sup>1</sup>, Osman Narin<sup>1, 2</sup>, Little Peter<sup>1</sup>, <sup>1</sup>*University of Queensland*, <sup>2</sup>*RMIT University*

## **Concurrent Session 14: Heritable Disorders of Connective Tissue**

## **B062** Poster Session II

### **Phenotypic analysis of a mouse model for Marfanoid-Progeroid-Lipodystrophy syndrome**

Silvia Smaldone, Erika Troy, Lawrence Miloscio, Trikaladarshi Persaud, Giusy Della Gatta, Guochon Gong, Brian Zambrowicz, Aris N. Economides, Chris Schoenherr, *Regeneron Pharmaceutical Inc.*

## **B063** Poster Session I

### **Mouse and human genomic studies identify modifiers of blood pressure and supravalvar aortic stenosis in elastin insufficiency and Williams Beuren syndrome**

Phoebe Parrish, Russell Knutsen, Angela Troia, Amanda Wardlaw, Charles Billington, Delong Liu, Yi Ping Fu, and Beth Kozel, *National Institutes of Health*

## **B064** Poster Session II

### **Pain-related phenotypes in a murine model for classical Ehlers-Danlos syndrome**

Fransiska Malfait<sup>1</sup>, Delfien Syx<sup>1</sup>, Rachel E. Miller<sup>2</sup>, Alia M. Obeidat<sup>2</sup>, Phuong B. Tran<sup>2</sup>, Anne-Marie Malfait<sup>2</sup>, <sup>1</sup>*Ghent University Hospital, Ghent Belgium*, <sup>2</sup>*Rush University Medical Center*

## **B065** Poster Session I

### **Resetting Dysregulated Collagen-I Proteostasis in Osteogenesis Imperfecta**

Ngoc-Duc Doan, Andrew S. DiChiara, Agata Bikovtseva, and Matthew D. Shoulders, *Massachusetts Institute of Technology*

## **Concurrent Session 15: ECM in Musculoskeletal Biomechanics and Regeneration**

## **B066** Poster Session II

### **Discovery of potential therapeutic targets for post-traumatic osteoarthritis using a mechanical injury platform**

Farzad Yousefi, Madison Tanis, Robert L. Mauck, George R. Dodge, *Department of Orthopaedic Surgery, University of Pennsylvania Translational Musculoskeletal Research Center, Crescenzo VA Medical Center*

## **B067** Poster Session I

### **RHAMM and CD44 both mediate the influence of hyaluronic acid on embryonic myoblast behavior**

Yue Leng, Sarah Calve, *Purdue University*



## Poster Program

### **B068** Poster Session II

#### **Development of tissue-specific matrix-derived microcarriers as a platform for adipose-derived stem/stromal cell differentiation**

Anna Kornmuller, Ammi Jani, Lauren E. Flynn, *The University of Western Ontario*

### **B069** Poster Session I

#### **Nitric Oxide Releasing Composite Hydrogels for Tendon Repair via Matrix Metalloproteinase Controlled Pathways**

Kaylee Meyers, Rupak Rajachar, Carly Joseph, Bruce Lee, *Michigan Technological University*

### **Concurrent Session 16: ECM in Fibrosis**

### **B070** Poster Session II

#### **Targeting Matrix-mediated Signaling in Fibrosis**

Rigen Mo, Sarah Lucas, Rafael Depetris, Ji-In Kim, Kevin G. Liu, Ed Skucas, Xiao-Jiang Feng, Jack Gaffney, Jeegar P. Patel, Masha V. Poyurovsky, *Kadmon Corporation, LLC*

### **B071** Poster Session I

#### **Calreticulin is important for the development of renal fibrosis and dysfunction in diabetic nephropathy**

Ailing Lu, Manuel A. Pallero, Benjamin Owusu, Anton Borovjagin, Paul Sanders, Joanne E. Murphy-Ullrich, *University of Alabama at Birmingham*

### **B072** Poster Session II

#### **Fibronectin-rich ECMs store disease-relevant memories that drive altered fibroblast signaling and phenotype through integrin switching**

Victoria Stefanelli<sup>1</sup>, Wei Li<sup>3</sup>, Shilpa Choudhury<sup>1</sup>, Ping Hu<sup>3</sup>, Vincent Yeh<sup>3</sup>, Leandro Moretti<sup>3</sup>, Dwight M. Chambers<sup>1,2</sup>, Kelly Pesson<sup>1</sup>, Matthew Torres<sup>1</sup>, Thomas H. Barker<sup>3</sup>, <sup>1</sup>Georgia Institute of Technology, <sup>2</sup>Emory University, <sup>3</sup>University of Virginia

### **B073** Poster Session I

#### **A Serological Biomarker Measuring True Formation of Collagen Type III (PRO-C3) is Related to Histological Parameters of Non-alcoholic Steatohepatitis**

Signe Holm Nielsen<sup>1,2</sup>, Diana J. Leeming<sup>1</sup>, Jane I Grove<sup>3,4,5</sup>, Philip Kaye<sup>3,4</sup>, Stuart Astbury<sup>3,4,5</sup>, Mette Juul Nielsen<sup>1</sup>, Morten A. Karsdal<sup>1</sup>, Indra Neil Guha<sup>3</sup>, Guruprasad P. Aithal<sup>3,4,5</sup>, <sup>1</sup>Nordic Bioscience, Fibrosis Biology and Biomarkers, Herlev, DK, <sup>2</sup>Department of Biotechnology and Bioengineering, Technical University of Denmark, Lyngby, DK, <sup>3</sup>NIHR Nottingham Biomedical Research Centre, Nottingham University Hospitals NHS trust and University of Nottingham, UK, <sup>4</sup>MRC/EPSCRC Nottingham Molecular Pathology Node, University of Nottingham, UK, <sup>5</sup>Nottingham Digestive Diseases Centre, School of Medicine, University of Nottingham, UK

### **Concurrent Session 17: Proteases and EMC Remodeling**

### **B074** Poster Session II

#### **Fibrillin-2 proteolysis by Adamts6 is essential for cardiac and limb development**

Timothy Mead<sup>1</sup>, Cagri Gulec<sup>2</sup>, Dieter Reinhardt<sup>3</sup>, Cecilia W. Lo<sup>2</sup>, Suneel S. Apte<sup>1</sup>, <sup>1</sup>Cleveland Clinic Lerner Research Institute, <sup>2</sup>University of Pittsburgh School of Medicine, <sup>3</sup>McGill University

### **B075** Poster Session I

#### **In situ detection of degraded and denatured collagen via triple helical hybridization: new tool in histopathology**

Yang Li<sup>1</sup>, Jeongmin Hwang<sup>1</sup>, Yufeng Huang<sup>1</sup>, Timothy Burwell<sup>2</sup>, Norman Peterson<sup>2</sup>, Jane Connor<sup>2</sup>, Stephen Weiss<sup>3</sup>, Michael Yu<sup>1</sup>, <sup>1</sup>University of Utah, <sup>2</sup>MedImmune, <sup>3</sup>University of Michigan

### **B076** Poster Session II

#### **Intracellular MMP12 Increases Breast Cancer Metastasis**

Pirjo Astrom<sup>1,2</sup>, Antoine Dufour<sup>1</sup>, Maria Villalba Esparza<sup>3</sup>, Yuanmei Lou<sup>2,4</sup>, Reinhild Kappelhoff<sup>1</sup>, Nikolaus Fortelny<sup>1</sup>, Paul MacDonald<sup>1,4</sup>, Vincent Dive<sup>5</sup>, Enrique Lerma<sup>6</sup>, Shoukat Dedhar<sup>1,4</sup>, Alfonso Calvo<sup>3</sup>, Christopher M. Overall<sup>1</sup>, <sup>1</sup>University of British Columbia, <sup>2</sup>University of Oulu, Finland, <sup>3</sup>CIMA of the University of Navarra, Pamplona, Spain, <sup>4</sup>Integrative Oncology BC Cancer Research Centre Vancouver, British Columbia, Canada, <sup>5</sup>Atomic Energy and Alternative Energies Commission, Gif/Yvette, France, <sup>6</sup>Hospital de la Santa Creu I Sant Pau, Barcelona, Spain

### **B077** Poster Session I

#### **Cigarette smoking induces overexpression of elastolytic cathepsin S**

Pierre-Marie Andrault<sup>1</sup>, Andrea C. Schamberger<sup>2</sup>, Thibault Chazeirat<sup>1</sup>, Damien Sizaret<sup>1,3</sup>, Justine Renault<sup>1</sup>, Agnès Petit<sup>1</sup>, Mylène Wartenberg<sup>1</sup>, Ahlame Saidi<sup>1</sup>, Thomas Baranek<sup>1</sup>, Serge Guyetant<sup>1,3</sup>, Yves Courty<sup>1</sup>, Oliver Eickelberg<sup>2,4</sup>, Gilles Lalmanach<sup>1</sup>, Fabien Lecaille<sup>1</sup>, <sup>1</sup>INSERM, UMR 1100, Centre d'Etude des Pathologies Respiratoires, University of Tours, <sup>2</sup>Comprehensive Pneumology Center, Ludwig-Maximilians-University and Helmholtz Zentrum München, <sup>3</sup>Service d'Anatomie et Cytologie Pathologique, <sup>4</sup>Division of Pulmonary and Critical Care Medicine, University of Colorado

### **Special Interest Session III, The Development and Use of 3D Systems to Investigate Biological Function**

### **B078** Poster Session II

#### **Periosteal Cells Derived from Long Bone are Unique from those Derived from Calvaria**

Reut Shainer<sup>1</sup>, Vardit Kram<sup>1</sup>, Tina M. Kilts<sup>1</sup>, Li Li<sup>1</sup>, Carl G. Simon Jr<sup>2</sup>, Marian F. Young<sup>1</sup>, <sup>1</sup>Molecular Biology of Bones and Teeth Section, NIDCR, NIH, <sup>2</sup>Biosystems and Biomaterials Division, National Institute of Standards and Technology

### **B079** Poster Session I

#### **A systems biology approach to studying melanoma invasion in a 3D tumor microenvironment**

Amanpreet Kaur, Benjamin Emert, Ian Mellis, Arjun Raj

### **B080** Poster Session II

#### **Extracellular matrix components isolated from diabetic mice alters cardiac fibroblast function through the AGE/RAGE signaling cascade**

Stephanie Burr, James A. Stewart, *The University of Mississippi*

### **Matricellular Proteins**

### **B081** Poster Session I

#### **The Role of Peroxidases in Renal Injury**

Selene Colon<sup>1</sup>, Haiyan Luan<sup>2</sup>, Yan Liu<sup>1</sup>, Cameron Meyer<sup>1</sup>, Leslie Gewin<sup>1</sup>, Gautam Bhave<sup>1</sup>, <sup>1</sup>Vanderbilt University Medical Center, <sup>2</sup>Jiamusi University

### **B082** Poster Session II

#### **Determining the Roles of a Novel Cysteine-Rich Secretory Protein (CRISP) LON-1 in BMP Signaling in C. elegans**

Anthony Nzessi, Zhiyu Liu, Herong Shi, Frances Clark, Ines Muravin, Jun (Kelly) Liu, *Department of Molecular Biology and Genetics, Cornell University*

### **B083** Poster Session I

#### **ADAMTSL2 Secretion Requires O-Fucosylation and Is Affected by Geleophysic Dysplasia-causing Mutations in the TSRs**

Ao Zhang<sup>1</sup>, Steven J. Berardinelli<sup>1</sup>, Christina Leonhard-Melief<sup>2,3</sup>, Deepika Vasudevan<sup>2,4</sup>, Andrew Taibi<sup>2,5</sup>, Sharee Giannone<sup>2</sup>, Suneel S. Apte<sup>6</sup>, Bernadette C. Holdener<sup>2</sup>, Robert S. Haltiwanger<sup>7,2</sup>, <sup>1</sup>University of Georgia, <sup>2</sup>Stony Brook University, <sup>3</sup>Center To CureTM, <sup>4</sup>NYU Langone Medical Center, <sup>5</sup>University of Utah, <sup>6</sup>Lerner Research Institute, <sup>7</sup>University of Georgia

## Poster Program

### **B084** Poster Session II

#### **Role of the CCN1-Hippo-YAP regulatory axis in sprouting angiogenesis**

Sangmi Lee, Afruja Ahad, Michele Luu, Brahim Chaqour, *SUNY Downstate Medical Center*

### **B085** Poster Session I

#### **Thrombospondin-1-mediated TGFβ signaling in myofibers causes muscle atrophy via the PERK-eIF2α-ATF4 ER-stress pathway and regulates body adiposity by inducing FGF21.**

Davy Vanhoutte, Tobias Schips, Matthew J. Brody, Jeffery D. Molkentin, *Cincinnati Children's Hospital Medical Center, Department of Pediatrics, University of Cincinnati and Howard Hughes Medical Institute, Cincinnati Children's Hospital Medical Center*

### **B086** Poster Session II

#### **The laminin-binding integrins regulate cell-cell interactions and the inflammatory status of the kidney collecting duct epithelium**

Eugenia M. Yazlovitskaya, Erin Plosa, Olga Viquez, Ambra Pozzi, Roy Zent, *Vanderbilt University Medical Center*

### **B087** Poster Session I

#### **Identifying Growth Factors Associated with the ECM in the Tumor Microenvironment**

Genevieve Abbruzzese<sup>1</sup>, Eric Kuhn<sup>2</sup>, Steven A. Carr<sup>2</sup>, Richard O. Hynes<sup>1</sup>, <sup>1</sup>MIT, <sup>2</sup>Broad Institute

### **B088** Poster Session II

#### **CD47 is positively correlated with intraflagellar transport protein 57 in papillary thyroid cancer**

Kun Dong, Sukhbir Kaur, David Roberts, *National Cancer Institute, National Institute of Health*

### **B089** Poster Session I

#### **The secreted modular calcium binding protein SMOC-1 positively regulates BMP signaling in a dose-dependent manner**

Melisa DeGroot, Herong Shi, Alice Eastman, Alexandra McKillop, Jun Kelly Liu, *Cornell University*

### **B090** Poster Session II

#### **A novel mutation in the NPXY motif of integrin reveals unique phenotypes linked to him-4/hementin in males of Caenorhabditis elegans**

Myeongwoo Lee, Zhongqiang Qiu, Peter Sheesley, *Baylor University*

### **B091** Poster Session I

#### **Analyzing the stabilizing effects of glycan modifications in ADAMTS13**

Rajashri Manjunath, Steven J. Berardinelli, Robert S. Haltiwanger, *University of Georgia*

### **B092** Poster Session II

#### **Thrombospondin-4 mediates TGF-beta1-induced cancer growth**

Santoshi Muppala, Irene Krukovets, Dmitriy Verbovetskiy, Edward F Plow, Olga Stenina-Adognravi\*, *Cleveland Clinic Foundation*

### **B093** Poster Session I

#### **Glycosylation of ADAMTS/TSL Proteins is Essential for TSR Stabilization and Proper Secretion**

Steven J. Berardinelli, Robert S. Haltiwanger, *Complex Carbohydrate Research Center, University of Georgia*

### **B094** Poster Session II

#### **Elevated CCN1 promotes extracellular matrix degeneration and skin cancer in aged human skin**

Taihao Quan, Yaping Xiang, Zhaoping Qin, Andrzej A. Dlugosz, George Bou-Gharios, John J. Voorhees, Gary J. Fisher, <sup>1</sup>Department of Dermatology, University of Michigan, <sup>2</sup>Department of Dermatology, Third Xiangya Hospital, Central South University, Changsha, China, <sup>3</sup>Institute of Ageing and Chronic Disease, University of Liverpool

### **B095** Poster Session I

#### **Mural cell-derived laminin α5 plays a detrimental role in ischemic stroke**

Abhijit Nirwane<sup>1</sup>, Benjamin Nguyen<sup>1</sup>, Jeffrey Miner<sup>2</sup>, Yao Yao<sup>1</sup>, <sup>1</sup>University of Georgia, <sup>2</sup>Washington University

## Poster Program

**LB01** Poster Session I

### Proteomic Analysis of Detergent Soluble Proteins Suggests Cooperative, Non-redundant Functions For TSP1 and TSP2 in Cortical Bone

Andrea I. Alford, Venkatesha Basur, Anita B. Reddy, *University of Michigan*

## Proteoglycans

**B096** Poster Session II

### Nascent laminin- $\gamma$ 1 synthesis regulates the steady-state adult bone marrow hematopoietic niche

Karen Carlson<sup>1,2</sup>, Sreemanti Basu<sup>2</sup>, Pouneh Kermani<sup>3</sup>, Irene Hernandez<sup>2</sup>, Mark Zogg<sup>2</sup>, Jennifer May<sup>2</sup>, British Fields<sup>2</sup>, Hartmut Weiler<sup>2</sup>, <sup>1</sup>Medical College of Wisconsin, <sup>2</sup>Blood Research Institute part of Versiti, <sup>3</sup>Weill Cornell College of Medicine

**B097** Poster Session I

### Chemotherapy induces secretion of exosomes loaded with heparanase that degrades extracellular matrix and impacts tumor and host cell behavior

Shyam Kumar Bandari<sup>1</sup>, Anurag Purushothaman<sup>1</sup>, Vishnu C. Ramani<sup>1</sup>, Garrett J. Brinkley<sup>1</sup>, Darshan S. Chandrashekar<sup>1</sup>, Sooryanarayana Varambally<sup>1</sup>, James A. Mobley<sup>1</sup>, Yi Zhang<sup>2</sup>, Elizabeth E. Brown<sup>1</sup>, Israel Vlodavsky<sup>3</sup>, Ralph D. Sanderson<sup>1</sup>, <sup>1</sup>University of Alabama at Birmingham, <sup>2</sup>Eli Lilly and Company, <sup>3</sup>Cancer and Vascular Biology Research Center, The Bruce Rappaport Faculty of Medicine, Technion, Haifa, Israel

## Collagens

**B098** Poster Session II

### Evolutionary origin of collagen IV in a unicellular relative of animals

Aaron Fidler, Sergei Chetyrkin, Sergei Boudko, Favour Akabogu, Justin Cartailier, Ly Hoang, Julie Hudson, Billy Hudson, *Vanderbilt University Medical Center*

**B099** Poster Session I

### Inhibition of Transglutaminase Activity in a Murine Model of Periodontal Disease Induces Altered Collagen Fiber Morphology

Emilie A. Rosset<sup>1</sup>, Jessica Trombetta-eSilva<sup>1</sup>, Dylan Brown<sup>1</sup>, Glenn Hepfer<sup>2</sup>, Peng Chen<sup>2</sup>, Hai Yao<sup>1,2</sup>, Amy D. Bradshaw<sup>1,3</sup>, <sup>1</sup>Medical University of South Carolina, <sup>2</sup>Clemson University, <sup>3</sup>Ralph H. Johnson Veterans Affairs Medical Center

**B100** Poster Session II

### Acetyltransferase p300 inhibitor, L002 reverses hypertension-induced cardiac hypertrophy and fibrosis.

Tianjiao Sun, Rahul Rai, Veronica Ramirez, Elizabeth Lux, Mesut Eren, Douglas Vaughan, Asish Ghosh, *Feinberg Cardiovascular and Renal Research Institute, Feinberg School of Medicine, Northwestern University*

**B101** Poster Session I

### 3D Printing Networks of Type I Collagen with Tunable Fiber Alignment and Geometry

Bryan Nerger, Pierre-Thomas Brun, Celeste Nelson, *Princeton University*

**B102** Poster Session II

### Abnormal collagen post-translational chemistry and cross-linking causing bone fragility in Bruck Syndrome caused by compound heterozygous PLOD2 mutations

Charlotte Gistelincq, MaryAnn Weis, Jyoti Rai, Peter H. Byers, David R. Eyre, *University of Washington*

**B103** Poster Session I

### Glycation targets the same type I collagen helical domain sites as lysyl oxidase-mediated cross-linking

David Hudson<sup>1</sup>, Marilyn Archer<sup>1</sup>, Karen B. King<sup>2</sup>, David R. Eyre, <sup>1</sup>University of Washington, <sup>2</sup>University of Colorado School of Medicine

**B104** Poster Session II

### Visible Light Crosslinking of Type I Collagen 3D Bioprinted Tissues

David Bagley, Bowman Bagley, Joshua Valdez, *Advanced BioMatrix*

**B105** Poster Session I

### Identification of major collagen producing cells in adult mouse heart during disease

Hadi, Khalil., Bryan D Maliken, Onur Kanisicak, Robert N. Correll, Jeffery D Molkentin, *Cincinnati Children's Hospital Medical Center*

**B106** Poster Session II

### Type I Collagen binding to Fibronectin, Defining the high affinity interactive sites.

Jonathan Picker, Wen Liu, Xiaowen Liang, Magnus Hook, *Texas A&M Health Science Center - Institute of Bioscience and Technology, Department of Biochemistry and Biophysics, Texas A&M University*

**B107** Poster Session I

### The first crystal structure of native collagen: A multiplexin-like domain present in prokaryotic hyaluronidase

Joo Hyoun Lee<sup>1</sup>, Kanagalaghatta R. Rajashankar<sup>2</sup>, Norbert Shormann<sup>1</sup>, Selvarangan Ponnazhagan<sup>1</sup>, Champion Deivanayagam<sup>1</sup>, <sup>1</sup>The University of Alabama at Birmingham, <sup>2</sup>Cornell University and NE-CAT Advanced Photon Source

**B108** Poster Session II

### The role of COL27A1 in skeletal development: mouse modeling of the Steel syndrome Puerto Rican founder allele and additional pathogenic variants from Turkish kindreds

Harikiran Nistala<sup>1</sup>, Claudia Gonzaga-Jauregui<sup>1</sup>, Kalyan Nannuru<sup>1</sup>, Johanna Jimenez<sup>1</sup>, John Dronzek<sup>1</sup>, Saathyaki Rajamani<sup>1</sup>, Silvia Smaldone<sup>1</sup>, Richard A. Gibbs<sup>2</sup>, James R. Lupski<sup>2</sup>, Aris N. Economides, <sup>1</sup>Regeneron Genetics Center, *Regeneron Pharmaceuticals Inc.*, <sup>2</sup>Baylor College of Medicine

**B109** Poster Session I

### Coordinate roles for collagen VI and Bgn in regulating tendon collagen fibril structure

Hai Pham<sup>1</sup>, Marian Young<sup>1</sup>, Sheila M. Adams<sup>2</sup>, David E. Birk<sup>3</sup>, <sup>1</sup>NIH, <sup>2</sup>University of South Florida, <sup>3</sup>Morsani College of Medicine, Tampa, FL

**B110** Poster Session II

### 7S Dodecamer of Collagen IV as Substrate of Lysyl Oxidase like-2 for the Screening of Anti-fibrotic Compounds

Mark G. Athanason, Alberto López Jiménez, Rafi Mohamed, Roberto M. Vanacore, *Vanderbilt University Medical Center*

**B111** Poster Session I

### Collagen XI Is a Critical Regulator in Tendon Fibrillogenesis

Mei Sun<sup>1,2</sup>, Eric Y. Luo<sup>1</sup>, Sheila M. Adams<sup>1</sup>, Thomas Adams<sup>1</sup>, Louis J. Soslowsky<sup>3</sup>, David E. Birk<sup>1</sup>, <sup>1</sup>University of South Florida, <sup>2</sup>Morsani College of Medicine, <sup>3</sup>University of Pennsylvania

**B112** Poster Session II

### Regulation of the Sar1 GTPase cycle is necessary for collagen secretion from the endoplasmic reticulum.

Miharu Maeda, Kota Saito, *Akita University, Graduate School of Medicine*

**B113** Poster Session I

### Scar-in-a-Jar, a novel in vitro screening tool for antifibrotics

Natasja S. Gudmann<sup>1</sup>, Sarah R. Rønnow<sup>1</sup>, Sarah Brockbank<sup>2</sup>, Simon Cruwys<sup>2</sup>, Morten A. Karsal<sup>1</sup>, Diana J. Leeming<sup>1</sup>, Jannie M. B. Sand<sup>1</sup>, <sup>1</sup>Nordic Bioscience, <sup>2</sup>Innovative Medicines Unit, *Grünenthal Group*

**B114** Poster Session II

### A Cysteine-Based Molecular Code Guides Collagen C-Propeptide Assembly

Rasia Li<sup>1</sup>, Andrew DiChiara<sup>1</sup>, Azade Hosseini<sup>1</sup>, Darrell McCaslin<sup>2</sup>, Matthew Shoulders, <sup>1</sup>MIT, <sup>2</sup>UW-Madison

**B115** Poster Session I

### Species-specific collagen deposition in a xenograft model of the human digit

Russell Fernandes<sup>1</sup>, Mary Ann Weis<sup>1</sup>, David Hudson<sup>1</sup>, David Eyre<sup>1</sup>, William Landis<sup>2</sup>, <sup>1</sup>University of Washington, *Seattle*, <sup>2</sup>University of California, *San Francisco*

## Poster Program

**B116** Poster Session II

### Chloride ions play both a signaling and a structural role in the assembly of collagen IV scaffolds

Ryan Bauer<sup>1,2</sup>, Billy Hudson<sup>1,2,3,4,5,6,7,8</sup>, Sergey Budko<sup>1,2</sup>, <sup>1</sup>Center for Matrix Biology, <sup>2</sup>Department of Medicine, *Division of Nephrology and Hypertension, Vanderbilt University Medical Center*, <sup>3</sup>Department of Pathology, Microbiology, and Immunology, <sup>4</sup>Department of Medical Education and Administration, <sup>5</sup>Department of Cell and Developmental Biology, <sup>6</sup>Department of Biochemistry, <sup>7</sup>Vanderbilt-Ingram Cancer Center, <sup>8</sup>Vanderbilt Institute of Chemical Biology, *Vanderbilt University Medical Center*

**B117** Poster Session I

### Heterogeneity of posttranslational modification in type I collagen from different tissues

Shinomi Yagi<sup>1</sup>, Keisuke Tanaka<sup>1</sup>, Yuki Taga<sup>1</sup>, Shugo Tohyama<sup>2</sup>, Eiji Kobayashi<sup>2</sup>, Kazunori Mizuno<sup>1</sup>, Shunji Hattori<sup>1</sup>, <sup>1</sup>Nippi Research Institute of Biomatrix, <sup>2</sup>Keio University School of Medicine

**B118** Poster Session II

### Bacterial modulation of ECM and contribution to tumor growth – a novel mechanism

Ritesh Kumar, John Taylor, Juan Xu, Yi Xu, *Texas A&M University*

**LB02** Poster Session II

### Determining the fates of misfolded type-I collagen C-propeptide variants associated with osteogenesis imperfecta (OI)

Michelle Huang, Azade S. Hosseini, Andrew S. DiChiara, Ngoc-Duc Doan, Amanda Del Rosario, Matthew D. Shoulders, *MIT*

**LB03** Poster Session I

### The Zebrafish crusher Mutation Disrupts Collagen Secretion and Cartilage Growth

Amy R. Rushing, Gokhan Unlu, and Ela W. Knapik, *Vanderbilt University Medical Center*

## Elastic Fiber Proteins

**B119** Poster Session I

### Cutis Laxa Mutations in Fibulin-5 Decrease Elastin Deposition, GPCR and TGF- $\beta$ Signaling

Erika Dreikorn, Zsolt Urban, *University of Pittsburgh Graduate School of Public Health*

**B120** Poster Session II

### Gene targeting of ADAMTSL3, a novel participant in the musculoskeletal system

Deborah Hoelting, Suneel Apte, *Cleveland Clinic Lerner Research Institute*

**B121** Poster Session I

### Upregulation of Fibulin-3 in human ovarian cancer: understanding the role of Fibulin-3 in normal oviductal biology in young and aged mice

Yazmin Brown<sup>1</sup>, M Fairuz B Jamaluddin<sup>1</sup>, Arnab Ghosh<sup>1</sup>, Manish Kumar<sup>1</sup>, Aysha Ali<sup>1</sup>, Albert S. Mellick<sup>2</sup>, Lucy Murtha<sup>3</sup>, Andrew Boyle<sup>3</sup>, Pradeep S. Tanwar<sup>1</sup>, <sup>1</sup>University of Newcastle (Australia), <sup>2</sup>Ingham Institute, *University of New South Wales, Sydney, Australia*, <sup>3</sup>Hunter Medical Research Institute, *Newcastle, Australia*

**LB04** Poster Session II

### Zebrafish Elastin is Required for Cardiac Valve Development and Function

Michelle Zorrilla<sup>1</sup>, Jerome P. Givi<sup>1</sup>, Simon C. Watkins<sup>2</sup>, Beth L. Roman<sup>1</sup>, Kang Kim<sup>3</sup>, Zsolt Urban<sup>1</sup>, <sup>1</sup>University of Pittsburgh Department of Human Genetics, <sup>2</sup>Center for Biologic Imaging, <sup>3</sup>Center for Ultrasound Molecular Imaging and Therapeutics



## Poster Program

### Matrix in Morphogenesis

**B122** Poster Session II

#### **Sned1 knockout causes neonatal lethality and craniofacial defects in mice**

Anna Barque<sup>1</sup>, Martin N. Davis<sup>1</sup>, Kyleen Jan<sup>1</sup>, Christina L. Nicholas<sup>1</sup>, Richard O. Hynes<sup>2</sup>, Alexandra Naba<sup>1</sup>, <sup>1</sup>University of Illinois at Chicago, <sup>2</sup>David H Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology

**B123** Poster Session I

#### **Laminin- $\gamma$ 1 cecessary for Adult Murine Intestinal Epithelial-Mesenchymal Homeostasis**

Karen Carlson<sup>1,2</sup>, British Fields<sup>2</sup>, Jennifer May<sup>2</sup>, Irene Hernandez<sup>2</sup>, Mark Zogg<sup>2</sup>, Anne DeLaForest<sup>1</sup>, Hartmut Weiler<sup>2</sup>, Michelle Battle<sup>1</sup>, <sup>1</sup>Medical College of Wisconsin, <sup>2</sup>Blood Research Institute part of Versiti

**B124** Poster Session II

#### **ECM remodeling and focal adhesion activation direct airway epithelial branching morphogenesis**

James Spurlin, Michael J. Siedlik, Mei Fong Pang, Sahana Jayaraman Celeste M. Nelson, Princeton University

**LB05** Session I

#### **Palate Development: Review of ECM Properties, Genes, Cell Movement. What's Next?**

Kathy K. H. Svoboda, L. Bruno Ruest, Shaun Logan, M. Douglas Benson, Texas A&M College of Dentistry

### Structure and Assembly of ECM

**B125** Poster Session I

#### **Unraveling the role of the extracellular matrix during kidney organoid maturation.**

Thomas Geuens<sup>1</sup>, Anika Schumacher<sup>1</sup>, Timo Rademakers<sup>1</sup>, Cathelijne van den Berg<sup>2</sup>, Loes Wiersma<sup>2</sup>, Ton

Rabelink<sup>2</sup>, Clemens van Blitterswijk<sup>1</sup>, Vanessa LaPointe<sup>1</sup>, <sup>1</sup>MERLN Institute for Technology - Inspired Regenerative Medicine, Maastricht University, Maastricht, The Netherlands, <sup>2</sup>Leiden University Medical Center, Leiden, The Netherlands

**B126** Poster Session II

#### **IDENTIFICATION OF TWO NOVEL PROTEIN O-GLUCOSYLTRANSFERASES THAT MODIFY FIBRILLIN-1 EGF REPEATS**

Daniel Williamson<sup>1</sup>, Hideyuki Takeuchi<sup>1</sup>, Robert S. Haltiwanger<sup>1,2</sup>, <sup>1</sup>University of Georgia, <sup>2</sup>Stony Brook University

**B127** Poster Session I

#### **The Role of Matrix Assembly Site Distribution in Aligned Fibronectin Fibril Formation**

Carly Garrison, Jean Schwarzbauer, Princeton University

**B128** Poster Session II

#### **Perlecan knockdown significantly alters ECM composition during cartilage development**

Alexander R. Ocken, Madeline Ku, Sarah Calve, Purdue University

**B129** Poster Session I

#### **Abnormal collagen fibril ultrastructure in abdominal aortic aneurysms**

Blain Jones<sup>1</sup>, Anna Debski<sup>1</sup>, Jeff R. Tonniges<sup>1</sup>, Ben Albert<sup>1</sup>, David Yeung<sup>1</sup>, Ed P. Calomeni<sup>1</sup>, Michael Go<sup>1</sup>, A. Mahajan<sup>2</sup>, Chetan Hans<sup>2</sup>, Gunjan Agarwal<sup>1</sup>, <sup>1</sup>The Ohio State University, <sup>2</sup>University of Missouri

**B130** Poster Session II

#### **Label-free Raman imaging of elastic fibers in disease and healthy mouse aortic tissues**

Kaori Sugiyama<sup>1</sup>, Julia Marzi<sup>2</sup>, Eva Brauchlec<sup>2,3</sup>, Yoshito Yamashiro<sup>1</sup>, Katja Schenke-Layland<sup>2,3,4</sup>, Hiromi Yanagisawa<sup>1</sup>, <sup>1</sup>University of Tsukuba, Japan, <sup>2</sup>Eberhard Karls University, Tübingen, Germany, <sup>3</sup>NMI Natural and Medical Sciences Institute at the University of Tübingen, Reutlingen,

Germany, <sup>4</sup>Cardiovascular Research Laboratories, University of California

**B131** Poster Session I

#### **Investigation of fibronectin-heparan sulfate interactions during extracellular matrix assembly**

Katherine Hill, Irene Raitman, Jean Schwarzbauer, Princeton University

**B132** Poster Session II

#### **Unicellular ancestry and role of the Goodpasture Antigen Binding Protein in the transition to animal multicellularity**

Carl Darris<sup>1</sup>, Francisco Revert<sup>2</sup>, Roberto Gozalbo-Rovira<sup>2</sup>, Andrew Fiegley<sup>1</sup>, Juan Saus<sup>2</sup>, Billy Hudson<sup>1</sup>, <sup>1</sup>Vanderbilt University and Vanderbilt University Medical Center, <sup>2</sup>FibroStatin S.L., Parc Científic Universitat de València

**B133** Poster Session I

#### **Neonatal Fibrin Polymerization Dynamics**

Kimberly Nellenbach<sup>1</sup>, A. Kyu<sup>1</sup>, N. Guzzetta<sup>2</sup>, A.C. Brown<sup>1</sup>, <sup>1</sup>Joint Department of Biomedical Engineering, North Carolina State University and The University of North Carolina at Chapel Hill, <sup>2</sup>Emory University School of Medicine and Children's Healthcare of Atlanta

**B134** Poster Session II

#### **In-silico definition of the matrisomes of three model organisms: Danio rerio, Caenorhabditis elegans, and Drosophila melanogaster**

Martin N. Davis<sup>1</sup>, Alina Teuscher<sup>2</sup>, Elisabeth Jongasma<sup>2</sup>, Jan Gebauer<sup>3</sup>, Collin Y. Ewald<sup>2</sup>, Sally Horne-Badovinac<sup>1</sup>, Alexandra Naba<sup>1</sup>, <sup>1</sup>University of Illinois at Chicago, <sup>2</sup>Eidgenössische Technische Hochschule (ETH) Zürich, <sup>3</sup>University of Cologne

**B135** Poster Session I

#### **Classification of the collagen ECM in normal human tissue as a biomarker for future breast cancer incidence**

Ryan Gigstad, Tianjie Wang, Yifei Liu, Menggang Yu, Yuming Liu, Adib Keikhosravi, Kevin W. Eliceiri, Patricia J. Keely, Matthew W. Conklin, University of Wisconsin

## Poster Program

**B141** Poster Session I

#### **Kidney cell response to decellularized extracellular matrix with modified mechanical properties**

Snehal Sant, Nicholas Ferrell, Vanderbilt University Medical Center

**B142** Poster Session II

#### **Mechanical stress attenuated inflammatory cytokines induced matrix degradative enzymes expression in chondrocyte by inhibition of NF- $\kappa$ B translocation**

Takashi Ohtsuki<sup>1</sup>, Omer Faruk Hatipoglu<sup>1</sup>, Guole Liu<sup>1</sup>, Akira Shinaoka<sup>2</sup> Keiichi Asano<sup>3</sup>, Takuto Nishimura<sup>1</sup>, Junko Inagaki<sup>4</sup>, Keiichiro Nishida<sup>2</sup>, Toshitaka Oohashi<sup>3</sup>, Satoshi Hirohata<sup>1</sup>, <sup>1</sup>Department of Medical Technology, Okayama University Graduate School of Health Sciences, <sup>2</sup>Department of Human Morphology, <sup>3</sup>Molecular Biology and Biochemistry, <sup>4</sup>Cell Chemistry, Graduate School of Medicine

### Tumor Microenvironment

**B143** Poster Session I

#### **Dietary-regulated microbiota impact breast tumorigenesis and regulates the tumor stroma**

Akiko Chiba, David R. Soto-Pantoja, Adam S. Wilson, Kenysya Y.J. Clear, Katherine L. Cook, Wake Forest University School of Medicine

**B144** Poster Session II

#### **Defining the Perlecan/HSPG2-Semaphorin Receptor Complex to Understand Cohesive Behavior of Metastatic Prostate Cancer**

Tristen V. Tellman<sup>1</sup>, Brian J. Grindel<sup>2</sup>, Mary C. Farach-Carson<sup>1</sup>, <sup>1</sup>University of Texas Health Science Center at Houston, School of Dentistry, <sup>2</sup>The University of Texas MD Anderson Cancer Center

**B145** Poster Session I

#### **Dynamically Stiffening Niche Promote Malignant Transformation via Collective Mechanical Signaling**

Adam J. Engler, University of California San Diego

**B146** Poster Session II

#### **Examining the biochemical properties of the novel ECM glycoprotein SNED1 to decipher its role in breast cancer metastasis**

Alexandra M. Socovich, Martin N. Davis, Morgan C. Win, Alexandra Naba, University of Illinois at Chicago

**B147** Poster Session I

#### **Proteomic profiling of the extracellular matrix in pancreatic ductal adenocarcinoma reveals promoters of PDAC progression and metastasis**

Chenxi Tian<sup>1</sup>, Karl Clauser<sup>2</sup>, Daniel Öhlund<sup>3</sup>, Steffen Rickelt<sup>1</sup>, Ying Huang<sup>1</sup>, Tommy Lidström<sup>3</sup>, Mala Gupta<sup>4</sup>, Steven A. Carr<sup>2</sup>, David A. Tuveson<sup>5</sup>, Richard O. Hynes<sup>1</sup>, <sup>1</sup>MIT, <sup>2</sup>Broad Institute, <sup>3</sup>Umeå University, <sup>4</sup>New York University Winthrop Hospital, <sup>5</sup>CSHL

**B148** Poster Session II

#### **Targeting Thrombospondin-1/CD47 signaling axis regulates hypoxia & metabolism in the tumor microenvironment to enhance anti-tumor immune responses.**

Elizabeth R. Stirling, Adam Wilson, Tiffany M. Newman, Liliya Yamaleyeva, Pierre L. Triozzi, David R. Soto-Pantoja, Wake Forest School of Medicine

**B149** Poster Session I

#### **Extracellular Vesicle Heterogeneity Profiling using High Resolution Flow Cytometry and Imaging**

Hyun-ji Kim, Samuel Yunga, Fehmi Civitci, Matthew Rames, Justin Plaut, Dennis Duran, Xiaolin Nan, \*Thuy Ngo, Oregon Health and Science University, \*corresponding author

**B150** Poster Session II

#### **ECM Atlas 2.0: Integrating 50+ Proteomic ECM Profiles of Normal, Fibrotic, and Tumor Tissues**

Karl Clauser<sup>1,2</sup>, Huiming Ding<sup>3</sup>, Charles A. Whittaker<sup>3</sup>, Steven A. Carr<sup>1,2</sup>, Richard O. Hynes<sup>3</sup>, Alexandra Naba<sup>4</sup>, <sup>1</sup>Broad Institute of MIT, <sup>2</sup>Harvard, <sup>3</sup>Massachusetts Institute of Technology, <sup>4</sup>University of Illinois at Chicago



## Poster Program

**B151** Poster Session I

### Potential Association of Expression of CD133 and CD44 with Distant Metastatic Relapse and Tumor Growth in Advanced Prostate Cancer

Meenakshi A. Chellaiah, Sunipa Majumdar, Renty B. Franklin, *University of Maryland School of Dentistry*

**B152** Poster Session II

### Non-neoplastic extracellular matrix components abrogate primary human glioma cell malignancy

Mark Murdock<sup>1</sup>, Jordan Chang<sup>1</sup>, George Hussey<sup>1</sup>, Nduka Amankolor<sup>2</sup>, Johnathan Engh<sup>2</sup>, Stephen Badylak<sup>1</sup>, *1McGowan Institute for Regenerative Medicine, <sup>2</sup>UPMC Hillman Cancer Center*

**B153** Poster Session I

### Internalization of CD239, a laminin $\alpha 5$ receptor, in human breast cancer: a novel antigen for antibody-drug conjugates

Yamato Kikkawa<sup>1</sup>, Yurie Enomoto-Okawa<sup>2</sup>, Aiko Fujiyama<sup>2</sup>, Takeshi Fukuhara<sup>1</sup>, Nozomi Harashima<sup>1</sup>, Yumika Sugawara<sup>1</sup>, Kazuki Ikari<sup>1</sup>, Yoichi Negishi<sup>1</sup>, Fumihiko Katagiri<sup>1</sup>, Kentaro Hozumi<sup>1</sup>, Motoyoshi Nomizu<sup>1</sup>, Yuji Ito<sup>2</sup>, *1Tokyo University of Pharmacy and Life Science, <sup>2</sup>Kagoshima University*

## ECM of Aging

**B154** Poster Session II

### Protective effects of neohesperidin dihydrochalcone against epidermal basement membrane damage through the inhibition of cathepsin S

Justine Renault<sup>1</sup>, Juliette Sage<sup>2</sup>, Ahlame Saidi<sup>1</sup>, Emmanuelle Leblanc<sup>2</sup>, Sylvianne Schnebert<sup>2</sup>, Carine Nizard<sup>2</sup>, Robin Kurfurst<sup>2</sup>, Gilles Lalmanach<sup>1</sup>, Fabien Lecaille<sup>1</sup>, *1INSERM, UMR 1100, Centre d'Etude des Pathologies Respiratoires, University of Tours, <sup>2</sup>LVMH-Recherche, Hélios Centre, St Jean de Braye, France*

**B155** Poster Session I

### Laminin-511 is a key component of epidermal basement membrane to maintain epidermal homeostasis

Shunsuke Iriyama, Saori Nishikawa, Eisuke Takai, Junichi Hosoi and Satoshi Amano, *Shiseido Global Innovation Center*

## Cardiovascular ECM

**B156** Poster Session II

### Homeostatic-like Cardiac Fibroblasts Turn off Angiogenesis Following Myocardial Infarction Wound Healing

Alan Mouton<sup>1</sup>, Elizabeth R. Flynn<sup>1</sup>, Yonggang Ma<sup>1</sup>, Kristine Y. DeLeon-Pennell<sup>1</sup>, Michael R. Garret<sup>1</sup>, Tom C. Freeman<sup>2</sup>, Merry L. Lindsey<sup>1</sup>, *1University of Mississippi Medical Center, <sup>2</sup>The Roslin Institute, University of Edinburgh*

**B157** Poster Session I

### Investigating the Effects of Type VIII Collagen Deficiency in Advanced Atherosclerosis

Cameron Harper<sup>1,2</sup>, Joshua Lopes<sup>1</sup>, Guangpei Hou<sup>1,2</sup>, Michelle Bendeck<sup>1,2</sup>, *1University of Toronto, <sup>2</sup>Ted Rogers Centre For Heart Research*

**B158** Poster Session II

### The role of type VIII collagen in arterial vessel stiffening

Amanda Mohabeer<sup>1,2</sup>, Guangpei Hou<sup>1,2</sup>, Hangjun Zhang<sup>1,2</sup>, Jeffery Kroetsch<sup>1,2</sup>, Steffen Sebastian Bolz<sup>1,2</sup>, Scott Heximer<sup>1,2</sup>, Richard Assoian<sup>3</sup>, Michelle Bendeck<sup>1,2</sup>, *1University of Toronto, <sup>2</sup>Ted Rogers Centre For Heart Research, <sup>3</sup>University of Pennsylvania*

**B159** Poster Session I

### Vascular Aggrecan and Versican Assays for the Evaluation of Aortic Tissue and Serum in Thoracic Aortic Aneurysm and Dissection.

Christopher Koch<sup>1,2</sup>, Ling Li<sup>1</sup>, Belinda Willard<sup>1</sup>, Suneel Apte<sup>1</sup>, *1Cleveland Clinic Lerner Research Institute, <sup>2</sup>Cleveland State University*

**B160** Poster Session II

### Periodontal derived lipopolysaccharide stimulates glycosaminoglycan chain elongation in vascular smooth muscle cells.

Kamato Danielle, Afroz Rizwana, Little Peter, *School of Pharmacy, University of Queensland, Woolloongabba, Australia*

**B161** Poster Session I

### Fibrillin-1-mediated regulation of microRNA signaling and cell function

Rongmo Zhang, Karina A. Zeyer, Heena Kumra, Dieter P. Reinhardt, *McGill University*

**B162** Poster Session II

### Mechanoreponse to Periodic Hydrostatic Pressure Enables Fabrication of Human Arterial Graft

Junichi Saito<sup>1</sup>, Utako Yokoyama<sup>1</sup>, Toshio Takayama<sup>2</sup>, Mitsuhiko Horade<sup>2</sup>, Hiroaki Ito<sup>2</sup>, Yoshinobu Sugo<sup>3</sup>, Kentaro Kurasawa<sup>3</sup>, Miyuki Ogawa<sup>3</sup>, Etsuko Miyagi<sup>3</sup>, Makoto Kaneko<sup>2</sup>, Yoshihiro Ishikawa<sup>1</sup>, *1 Cardiovascular Research Institute, Yokohama City University, Yokohama, Japan, <sup>2</sup> Department of Mechanical Engineering, Osaka University, Suita, Japan, <sup>3</sup> Department of Obstetrics and Gynecology, Yokohama City University, Yokohama, Japan*

**B163** Poster Session I

### Role of Fibronectin's extra domains EIIIA and EIIIB in early vascular development

Thao Nguyen, Amanda Del Rosario, Richard Hynes, *Massachusetts Institute of Technology*

**B164** Poster Session II

### Effects of sulforaphane, a plant-derived isothiocyanate, on cardiac fibroblast activation and extracellular matrix expression

Charity Fix, Amanda Carver, Mrinmay Chakrabarti, Mohamad Azhar, Wayne Carver, *University of South Carolina School of Medicine*

## Skin BM-Wound Healing and Disease

**B165** Poster Session I

### Calreticulin Exploits TGF- $\beta$ for Extracellular Matrix Induction Engineering A Tissue Regenerative

**Process**

Unnati M Pandya, Ana Tellechea, Miguel A. Manzanares, Chinaza Egbuta, Julien Daubriac, Cougar Jaramillo, Marek Michalak, Feres Samra, and Leslie I Gold, *New York University School of Medicine*

**LB06** Poster Session II

### Recombinant elastonectin accelerates epidermal neogenesis and reinstates epidermal integrity in skin wound healing

Won Bae Jeon, Jin-Kyu Park, *KNU*; Seong-Kyoon Choi, *DGIST*; Kyeong-Min Lee, *DGIST*; Bo Hyung Park, *DGIST*; Kyu-Shik Jeong, *KNU*

## Growth Factors and ECM

**B166** Poster Session II

### A versatile salt-based method to immobilize glycosaminoglycans and create gradients of glycosaminoglycans and growth factors

Danique Hof, Ely Versteeg, Willeke Daamen, Toin Van Kuppevelt, *Radboud University Medical Center, RIMLS, Dept. of Biochemistry, Nijmegen, The Netherlands*

**B167** Poster Session I

### Conformational change of fibronectin during stretch influences growth factor binding domain availability

Emily Sevcik, Adam Feinberg, *Carnegie Mellon University*

**B168** Poster Session II

### Gastric hormone regulation of osteoblast lysyl oxidase is dysregulated in diabetes, leads to osteopenia, and is a potential therapeutic target

Philip Trackman<sup>1</sup>, Eileen Daley<sup>1</sup>, Sayon Roy<sup>2</sup>, Neha Shrestha<sup>1</sup>, *1Boston University Henry M Goldman School of Dental Medicine, <sup>2</sup>Boston University School of Medicine*

**B169** Poster Session I

### Assessment of the effect of a pro-growth extracellular matrix protein,

## Poster Program

### matrilin-2, on axonal sprouting in the post-stroke brain

Samuel Bridges, Michal Machnicki, S. Thomas Carmichael, *UCLA*

## Heritable Disorders of Connective Tissue

**B170** Poster Session II

### A mutation in the fibronectin assembly domain impacts both fibronectin and collagen matrix assembly by fibroblast cells

Eli B. Cadoff<sup>1</sup>, Ashley Drengler<sup>1</sup>, Ruth Sheffer<sup>2</sup>, Vardiella Meiner<sup>2</sup>, Jean E. Schwarzbauer<sup>1</sup>, *1Princeton University, <sup>2</sup>Hadassah-Hebrew University Medical Center*

**B171** Poster Session I

### Zebrafish type I collagen mutants faithfully recapitulate human type I collagenopathies

Charlotte Gistelink<sup>1</sup>, Ronald Y Kwon<sup>1</sup>, Fransiska Malfait<sup>2</sup>, Sofie Symoens<sup>2</sup>, Matthew P. Harris<sup>3</sup>, Katrin Henke<sup>3</sup>, Michael B. Hawkins<sup>3</sup>, Shannon Fisher<sup>4</sup>, Patrick Sips<sup>2</sup>, Brecht Guillemin<sup>2</sup>, Jan Willem Bek<sup>2</sup>, Petra Vermassen<sup>2</sup>, Hanna De Saffel<sup>2</sup>, Paul Eckhard Witten<sup>2</sup>, MaryAnn Weis<sup>1</sup>, Anne De Paepe<sup>2</sup>, David R Eyre<sup>1</sup>, Andy Willaert<sup>2</sup>, Paul J Coucke<sup>2</sup>, *1Univeristy of Washington, <sup>2</sup>Ghent Univeristy, <sup>3</sup>Harvard Medical School, <sup>4</sup>Boston University*

**B172** Poster Session II

### Angiotensin II Type 2 Receptor Partially Mediates Hypertension in Elastin Insufficiency

Michelle Lin<sup>1</sup>, Beth A. Kozel<sup>2</sup>, Robert P. Mecham<sup>1</sup>, Carmen M. Halabi<sup>1</sup>, *1Washington University School of Medicine, <sup>2</sup>National Institutes of Health*

**B173** Poster Session I

### COL4A1 mutations cause neuromuscular disease with tissue-specific mechanistic heterogeneity.

Cassandra Labelle-Dumais, Vera Schuitema, Genki Hayashi, Kendall Hoff, Wenhui Gong, Dang Q Dao, Peter Oishi, Marta Margeta, Douglas B. Gould, *Univeristy of California, San Francisco*

**B174** Poster Session II

### Circulating fibrillin-1 fragments in children and young adults with Marfan syndrome

Lynn M. Marshall<sup>1</sup>, Eric J Carlson<sup>2</sup>, Kathryn W. Holmes<sup>1</sup>, Luciana T. Young<sup>3,4</sup>, Shaine A. Morris<sup>5,6</sup> Jacqueline T. Hecht<sup>5</sup>, Mary J. Roman<sup>7</sup>, Angela T. Yetman<sup>8</sup>, Lynn Y Sakai<sup>1,2</sup>, *1Oregon Health and Science University, <sup>2</sup>Shriners Hospital for Children, <sup>3</sup>University of Washington, <sup>4</sup>Seattle Children's Hospital, <sup>5</sup>University of Texas, <sup>6</sup>Texas Children's Hospital Houston, <sup>7</sup>Weill Cornell Medical Center, <sup>8</sup>University of Nebraska and Children's Hospital & Medical Center*

**B175** Poster Session I

### A zebrafish platform to study new treatment options for Marfan syndrome

Patrick Sips, Petra Vermassen, Hanna De Saffel, Marjolijn Renard, Andy Willaert, Anne De Paepe, Paul Coucke, Julie De Backer, *Ghent University*

**B176** Poster Session II

### A new mouse model of chronic proteinuria due to a glomerular basement membrane laminin-521 polymerization defect

Steven Funk<sup>1</sup>, Raymond H. Bayer<sup>1</sup>, Karen K. McKee<sup>2</sup>, Kazushi Odaka<sup>3</sup>, Hiroshi Nishimune<sup>3</sup>, Peter D. Yurchenco<sup>2</sup>, Jeffrey H. Miner<sup>1</sup>, *1Washington University, <sup>2</sup>Rutgers University, <sup>3</sup>University of Kansas Medical Center*

**B177** Poster Session I

### An atomistic view of collagen degradation in alkaptonuria cartilage by solid-state NMR

Wing Ying Chow<sup>1</sup>, Brendan Norman<sup>2</sup>, University of Liverpool, Hartmut Oschkinat<sup>1</sup>, James Gallagher<sup>2</sup>, *1Leibniz-Institut für Molekulare Pharmakologie (FMP Berlin), <sup>2</sup>University of Liverpool*

**LB07** Poster Session I

### Somatic Activating Mutations in MAP2K1 Cause Melorheostosis

Heeseog Kang<sup>1</sup>, Smita Jha<sup>1</sup>, Zuoming Deng<sup>1</sup>, Nadja Fratzi-Zelman<sup>2</sup> Wayne A. Cabral<sup>1</sup>, Aleksandra Iovic<sup>1</sup>, Françoise Meylan<sup>1</sup>, Eric P. Hanson<sup>1</sup>, Eileen Lange<sup>1</sup>,



James Katz<sup>1</sup>, Paul Roschger<sup>2</sup>, Klaus Klaushofer<sup>2</sup> Edward W. Cowen<sup>1</sup>, Richard M. Siegel<sup>1</sup>, Timothy Bhattacharyya<sup>1</sup>, Joan C. Marini<sup>1</sup>, <sup>1</sup>National Institutes of Health (NIH), <sup>2</sup>Ludwig Boltzmann Institute of Osteology

**ECM in Musculoskeletal Biomechanics and Regeneration**

**B178** Poster Session II

**Osteopontin/integrin  $\alpha\beta 3$  Signaling Regulates Membrane Localization of CD44 and Migration of Osteoclasts by ERM-Actin Interaction with CD44**

Meenakshi A. Chellaiah, *University of Maryland*

**B179** Poster Session I

**Pegvorhyaluronidase Alfa-mediated degradation of hyaluronan in skeletal muscle results in changes consistent with metabolic stress**

Li Ma, Kevin Kwok, Curtis B. Thompson, Daniel Maneval, Rudolph D. Paladini., *Halozyyme Therapeutics Inc.*

**B180** Poster Session II

**Molecular level detection of mechanical damage in collagen enabled by collagen hybridizing peptides**

Yang Li<sup>1</sup>, Jared Zitnay<sup>1</sup>, Matthew Converse<sup>1</sup>, Zhao Qin<sup>2</sup>, Julian Kessler<sup>1</sup>, Markus Buehler<sup>2</sup>, Kenneth Monson<sup>1</sup>, S. Michael Yu<sup>1</sup>, Jeffrey Weiss<sup>1</sup>, <sup>1</sup>University of Utah, <sup>2</sup>MIT

**ECM in Fibrosis**

**B181** Poster Session I

**Therapeutic peptides based on CCN3 treat systemic sclerosis in a mouse model of the disease**

Alex Peidl<sup>1</sup>, Katherine Quesnel<sup>1</sup>, Bruce Riser<sup>2,3</sup>, and Science, Andrew Leask<sup>1</sup>, <sup>1</sup>Western University, <sup>2</sup>BLR Bio LLC, <sup>3</sup>Rosalind Franklin University of Medicine

**B182** Poster Session II

**A High Content Imaging Screen For Modulators of Corticosteroid Mediated Extracellular Matrix Deposition**

Christopher Wilson, Louis Yang, Chian Yang, Martin Henault, Thomas Vollmer, Megan Jabour, Yuan Wang, Erik Meredith, Heather MacLeod, Ganesh Prasanna, Amy Chen, *Novartis Institutes for Biomedical Research*

**B183** Poster Session I

**Global alignment of extracellular matrix by keloid fibroblasts**

Fiona Kenny, Rachel Bell, Tanya Shaw, Brian Stramer, *King's College London*

**B184** Poster Session II

**A CRISPR/Cas9 in vitro human induced pluripotent stem cell (hiPSC) model to investigate the role of perlecan in cardiovascular fibrotic disease.**

James Smith<sup>1</sup>, Kate S. Dowding<sup>1</sup>, Jamie L. Thompson<sup>1</sup>, Cathy L. R. Merry<sup>1</sup>, Megan Lord<sup>2</sup>, Chris Denning<sup>1</sup>, John Whitelock<sup>1,2</sup>, <sup>1</sup>Wolfson Centre for Stem Cells, *Tissue Engineering and Modelling, University of Nottingham, Nottingham, United Kingdom*, <sup>2</sup>Graduate School of Biomedical Engineering, *University of New South Wales, Sydney, Australia*

**B185** Poster Session I

**Idiopathic Pulmonary Fibrosis: Registration of extracellular matrix components comprising the fibroblastic focus**

Jeremy Herrera<sup>1</sup>, Colleen Forster<sup>2</sup>, Thomas Pengo<sup>3</sup>, Angeles Monteres<sup>4</sup>, Joe Swift<sup>5</sup>, Martin Schwartz<sup>5</sup>, Craig A Henke<sup>6</sup>, Peter B Bitterman<sup>6</sup>, <sup>1</sup>Wellcome Centre for Cell-Matrix Research, *University of Manchester*, <sup>2</sup>University of Minnesota, *Clinical and Translational Medicine Institute*, <sup>3</sup>University of Minnesota Informatics Institute, *University of Minnesota*, <sup>4</sup>Wythenshawe University Hospital, *Department of Histopathology, Manchester, UK*, <sup>5</sup>Wellcome Centre for Cell-Matrix Research, *University of Manchester*, <sup>6</sup>University of Minnesota, *Department of Medicine*

**B186** Poster Session II

**Elevated glucose alters expression of ECM- and cell adhesion-associated genes in a diabetic nephropathy cell model**

Maria E. Vega\*, John B. Finlay\*, Jean E. Schwarzbauer, \*equal contributors, *Princeton University*

**B187** Poster Session I

**Fibronectin  $\alpha_5$ -Dityrosine Crosslinking Attenuates Adhesion Signaling and Confers Protease Resistance**

Morgan Locy<sup>1</sup>, Sunad Rangarajan, Sufen Yang, Mark Johnson, Karen Bernard, Ashish Kurundkar, Jaeman Byun<sup>2</sup>, Subramaniam Pennathur<sup>2</sup>, Yong Zhou<sup>1</sup>, Victor Thannickal<sup>1</sup>, <sup>1</sup>University of Alabama at Birmingham, <sup>2</sup>University of Michigan

**B188** Poster Session II

**Novel Tacrolimus (FK506) Analogue Inhibits FKBP10:Lysyl-Hydroxylase-2 (LH2) Collagen Processing in Idiopathic Pulmonary Fibrosis (IPF) Fibroblasts**

Sarah Bui<sup>1</sup>, Young-Ok You<sup>1</sup>, Steven D Nathan<sup>2</sup>, Geraldine Grant<sup>1</sup>, George Mason University, Mikell Paige<sup>1</sup>, <sup>1</sup>George Mason University, <sup>2</sup>Inova Fairfax Hospital

**Proteases and ECM Remodeling**

**B189** Poster Session I

**Identification of a novel collagen-binding domain from Grimontia hollisiae collagenase**

Keisuke Tanaka<sup>1</sup>, Naoko Teramura<sup>1</sup>, Osamu Hayashida<sup>1</sup>, Katsumasa Iijima<sup>1</sup>, Teru Okitsu<sup>2</sup>, Kazunori Mizuno<sup>1</sup>, Nippi Research Institute of Biomatrix, Shunji Hattori<sup>1</sup>, <sup>1</sup>Nippi Research Institute of Biomatrix, <sup>2</sup>Institute of Industrial Science, *The University of Tokyo*

**B190** Poster Session II

**Vascular dimorphism via regulated extracellular matrix dynamics ensures rapid and selective umbilical artery occlusion at birth**

Sumeda Nandadasa, Vai Pathak, Caroline M Kraft, Anna O'Donnell, Clare Hughes, Bruce Caterson, Karin Tran Lundmark, Martina Veigl, David Sedwick, Miriam S. Domowicz, Nancy B. Schwartz, Elliot Philipson and Suneel S Apte *Cleveland Clinic Lerner Research Institute*

**LB08** Poster Session II

**Role of progesterone and protease ADAMTS 1 on migration and invasion of ovarian tumor cells**

Maira de Assis Lima, Suely Viera da Silva, Vanessa Morais Freitas, *University of Sao Paulo*

**B191** Poster Session I

**A cleavage-resistant mouse knock-in mutant demonstrates that versican proteolysis is indispensable for interdigital web regression**

Sumeda Nandadasa, Jacob Knorr, Christopher Koch, Maria Dours-Zimmermann, Karin Tran-Lundmark, Dieter Zimmermann, Sophie Valleix, Suneel S. Apte, *Cleveland Clinic Lerner Research Institute*



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