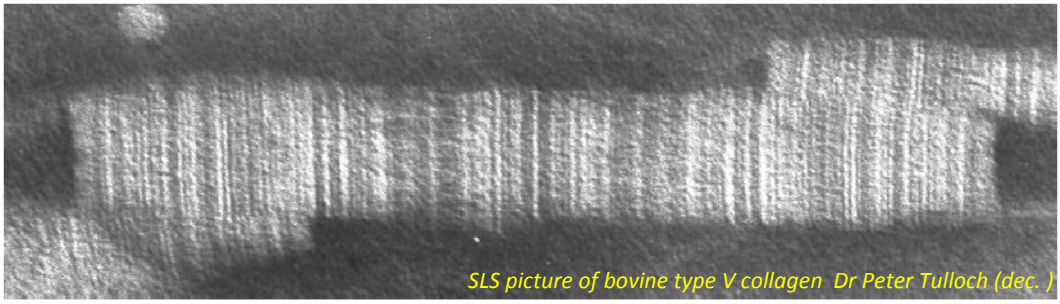


SLS picture of bovine type V collagen Dr Peter Tulloch (dec.)

ISMB NEWSLETTER 17 April 2013

Editors: Barbara Brodsky and John Ramshaw

From the President's Desk

Firstly, I'd like to thank David Hulmes for having been a great ISMB President for the last two years. David is a strong and passionate advocate for matrix biology and we are extremely fortunate that he will continue to promote matrix biology in his role as the newly elected ISMB Secretary/Treasurer. Of course, this leads me to talk about a great loss to ISMB – the retirement of Peter Bruckner as Secretary/ Treasurer. Peter has been the linchpin of ISMB for more than 17 years and we owe him enormous gratitude. I cannot thank him enough for his hard work, mostly behind the scenes, and we will certainly miss his witty and sometimes grumpy emails reminding us all to pay our memberships so we can continue to support young enthusiastic matrix biology researchers. Yes, even the President gets reminded that she hasn't paid her membership! Following the recent Council elections we welcome four new members – Jo Adams, Ruud Bank, Danny Chan and Barbara Smith – and thank the outgoing members - David Birk, Hans Peter Bachinger, Reinhard Fassler and Karl Kadler for their contributions. The hand-over of membership and financial management from Peter to David requires us to change our banking arrangements from Switzerland to France. This has not been as simple as we thought. It has also had the flow on effect that we haven't been able to launch the new web site which is ready to go. We realise the old web site is now quite out of date but please bear with us as we work towards a solution.

I would also like to thank all ISMB members. Membership dues are our only financial resource and so it is your continued support that allows us to promote matrix biology and to sponsor young matrix biologists so they can attend international meetings and present their work. Please encourage your post-docs and students to join ISMB and pass on information about our travel awards and encourage them to apply. ISMB also awards prizes for outstanding contributions to matrix biology. These are the Rupert Timpl award for young investigators who published the most outstanding paper in the field in the previous two years and the Distinguished Investigator award for lifetime achievements in the field.

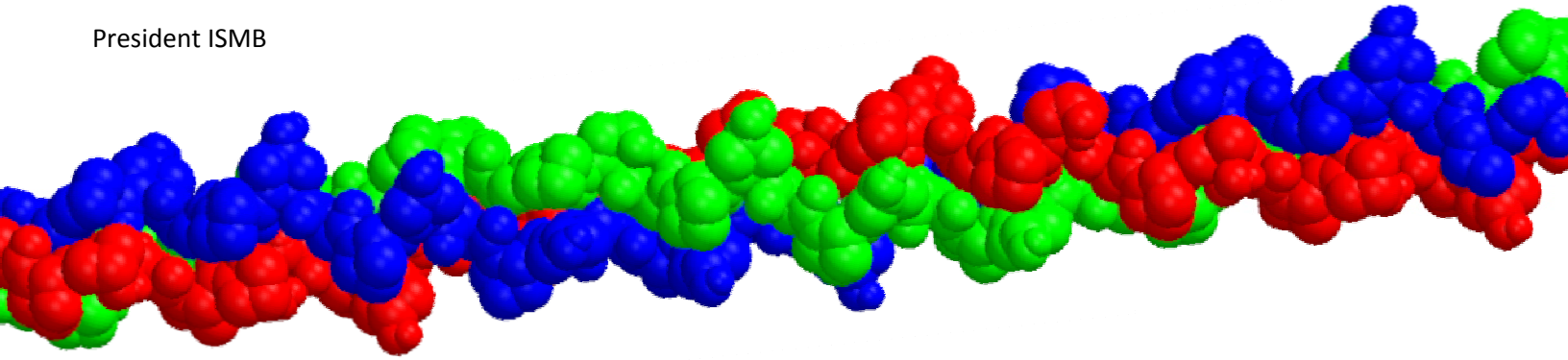
This year ISMB is supporting the attendance of young researchers at four international meetings: “Matricellular Proteins in Development, Health and Disease” taking place in Saxtons River, VT, USA from July 28-August 2; Gordon Research Seminar to be held in conjunction with the MMP Gordon Research Conference in Lucca, Italy May 19-24; the 8th International Conference on Proteoglycans, Frankfurt/Main, Germany, August 25-29; the Collagen Gordon Research Conference, New London, NH, USA, July 14-19. To promote matrix biology research in the Asia-Pacific region where there are many researchers but the only formal societies are in Australia/New Zealand, Japan, and the USA, we are also sponsoring the Pan Pacific Connective Tissue Societies Symposium being held in Hong Kong from 24-27th November.

Another major recent change has been the retirement of Bjorn Olsen as the Editor of the journal Matrix Biology published by Elsevier. Bjorn did an outstanding job as editor and I’d like to thank him for his always insightful contributions on behalf of the ISMB Council and all matrix biologists. Congratulations to Renato Iozzo, the new Editor of Matrix Biology who is bringing his enormous energy, enthusiasm and expertise to the role. We wish him every success.

Please let me know if you have any suggestions for new ISMB activities (shireen.lamande@mcri.edu.au). Best wishes for 2013 which seems to be flying by already…

Shireen Lamandé

President ISMB



A message from the Editors:

We hope that you enjoy the April, 2013 ISMB Newsletter. Abstracts of recently published papers on matrix biology are now widely available, so instead of including recent abstracts in the newsletter, we are inviting commentaries on new topics and themes within the matrix biology field. Our first “ISMB: New Directions” is on “Disease proteomics: detailed insights into posttranslational regulation of skin diseases”, and we thank Jörn Dengjel and Leena Bruckner-Tuderman for this excellent contribution. The field of matrix biology has become so diverse that short thoughtful commentaries such as this are particularly valuable in keeping colleagues aware of exciting "New Directions". Each newsletter will also include a description of a resource of interest to matrix biologists. In the last issue, the collagen peptide Toolkit from Richard Farndale’s laboratory was described, and in this issue, the MatrixDB database is presented. Matrix DB, coordinated by Sylvie Ricard-Blum, collates interactions involving extracellular proteins and glycosaminoglycans. We need your contributions to make these newsletters current and relevant. Please consider writing a commentary on a new matrix direction, or a description of an important matrix resource, or contributing a picture from your research (preferably unpublished) as a header for the next issue. Send these contributions to Barbara.Brodsky@tufts.edu.

Best wishes,

Barbara Brodsky and John Ramshaw

Editors, ISMB Newsletter

ISMB New Directions

Disease proteomics: detailed insights into posttranslational regulation of skin diseases

Jörn Dengjel, PhD, Leena Bruckner-Tuderman, MD
Freiburg Institute for Advanced Studies (FRIAS), School of Life Sciences - LifeNet, University of Freiburg, Albertstr. 19, 79104 Freiburg, Germany

Disease proteomics is an emerging field of biomedical investigation. It makes use of quantitative proteomics approaches to decipher global proteome changes in pathologically altered cells and tissues. Almost one decade after the completion of the Human Genome Project and innumerable genome/transcriptome analyses, scientists still struggle to link genetic mutations to clinical phenotypes. In the meantime, however, it has become evident that many disease mechanisms are regulated on protein level. Proteomics approaches directly target the molecular players conducting cellular actions and aim at deciphering abundance and activity states of proteins to be linked to disease phenotypes. In skin proteomics cutaneous tissue and cultured cells are employed to conduct holistic, protein-based investigations. In proof-of-concept studies, we have shown that primary skin cells and immortalized cell lines derived from normal and diseased skin have very stable proteomes[1, 2], a fact that makes them suitable models for studying molecular disease mechanisms.

The newest paper of the Overall Lab[3] elegantly highlights the importance of posttranslational protein regulation in cellular events. Auf dem Keller et al. investigated skin inflammation and describe how protease signaling networks are altered in the process. This system-wide *in vivo* study of proteolytic signalling networks in mammalian tissue responses represents the most comprehensive analysis of the skin proteome and its perturbation in inflammation reported so far. Next to nearly 2,000 high confidence protein identifications and almost 1,000 statistically robust quantifications, extensive unbiased annotation of 1,800 protein N-termini provides deep-level insight into the N-terminal acetylation status of proteins *in vivo*.

The authors identified 208 genes encoding proteins with significantly altered expression levels in inflammation. Although *MMP2* and *MMP9* exhibited no expression changes, the proteins were identified as being regulated. These findings are congruent with our observations that the abundance and activity of ECM proteins do not correlate well with respective gene expression values (Kuettner et al, unpublished). Auf dem Keller et al. focused on MMP2 and showed by exploiting *MMP2* knockout mice that the loss of a single protease influenced expression levels of over 10% of proteases and inhibitors, thereby altering the entire protease web. To unravel interdependent proteolytic activities the authors applied their sophisticated strategy *Terminal Amine Isotopic Labeling of Substrates (TAILS)*[4]. With this proteomics platform for the system-level quantitative assessment of protein N-termini significant reductions of acute phase proteins in inflammation were identified in *MMP2* knockout mice. Whereas MMP2 cleaves and inactivates complement 1 inhibitor in wild-type mice, MMP2 removal led to reduced cleavage, dampening entire complement cascades including control of vascular permeability by bradykinin generation and complement activation. The critical importance of complement 1 inhibitor as a key control point of multiple inflammatory pathways was revealed and the role of MMP2 as a regulatory protease involved in multiple inflammatory pathways highlighted. Thus, this study demonstrates how the use of unbiased proteomics approaches for direct analysis of the perturbed compartment will deliver new exciting insights into the biology and pathology of the skin and other organs.

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1. Sprenger A. *et al.*, Comparative quantitation of proteome alterations induced by aging or immortalization in primary human fibroblasts and keratinocytes for clinical applications. Mol Biosyst 2010; 6: 1579-82.
2. Sprenger A. *et al*., Global proteome analyses of SILAC labeled skin cells. Methods Mol Biol 2013; 961:179-91.
3. Keller U. *et al*., Systems-level analysis of proteolytic events in increased vascular permeability and complement activation in skin inflammation. Sci Signal 2013; 6:rs2.
4. Prudova A. Multiplex N-terminome analysis of MMP-2 and MMP-9 substrate degradomes by iTRAQ-TAILS quantitative proteomics. Mol Cell Proteomics 2010; 9:894-911.

Report on the ASMB-SfG Joint Meeting

San Diego, CA, 11-14 Nov 2012 *(From The Matrix Letter 12(1), 2013)*

With an attendance of 652 conferees representing 37 states and 27 nations, the combined meeting of matrix and glycobiologists was a successful effort to bring together two groups with strongly overlapping interests. The Program Committee organized a balanced menu of wide-ranging topics, and thus most of the plenary sessions included speakers from both organizations. Space and time constraints did limit the typical breadth of the ASMB plenary topics; however, the speakers for the 16 concurrent sessions were screened and selected for scientific merit prior to being assigned to relevant sessions. Most of the sessions were well attended through the last day and hour of the meeting, despite the lovely weather and surroundings.

Many showed up for the Sunday pre-conference meetings: two SfG-affiliated sessions on glycomics and an excellent ASMB-TERMIS gathering on tissue engineering that melded perfectly with the main program. The opening meeting reception that evening was followed by a stimulating address from Carolyn Bertozzi (UC Berkeley) on the conceptual framework for bioorthogonal chemistry – creating reporter biomolecules that do not perturb intermolecular interactions and cell/animal physiology. After a full day of plenary, poster and concurrent sessions, the second evening of the meeting was used by each society to honor distinguished contributions from its respective field. Tom Barker (Georgia Tech) received the Junior Investigator award in recognition of his growing contributions to matrix assembly and biomechanics, while Billy Hudson (Vanderbilt) received the Senior Investigator award to acknowledge of his long-standing contributions to understanding the structure and assembly of collagen IV molecules. Billy gave a wonderful account of his continuing progress in the area with an additional glimpse into his dedication to secondary science education. Richard Hynes (MIT) was recognized by the ISMB for his outstanding work on the matrix and integrin receptors. Richard addressed the conferees on his current venture into unraveling the “matrisome” and the insights it has provided. The session concluded with three short presentations from recipients of ISMB travel awards: Vanessa López-Alpuche (Oulu, Finland), Alessandro Malara (Pavia, Italy),Wei Xin (Cologne, Germany).

During the course of the meeting, we also recognized 10 outstanding platform/poster presenters* with $500 travel awards. In addition, Vince Hascall presented the Herb Tabor Young Investigator Award to Alexandra Naba (MIT) for her innovative contributions to matrix proteomics. Two FASEB MARC awards recognized the contributions of Deborah Leon (BU) and Kristina Aguilera (UT Southwestern). Following another very full day of platform and poster sessions, the final evening of the meeting was a well-attended (395) social event with live entertainment arranged by the SfG co-chair, Hudson Freeze. Dancing continued into the night.

Career mentoring breakfasts on Monday and Tuesday mornings were fully subscribed. These sessions allowed 40 young attendees to sit down at one of five tables with one or two of our more seasoned ASMB scientists to discuss the future of the discipline as well as strategies for funding, career progress, and future employment. Wednesday morning opened with a very timely, enlightening and up to date assessment of the federal biomedical perspective from Jennifer Zeitzer, Director of Legislative Relations for FASEB.

The success of the meeting was due in no small part to the expertise of Jen Holland and Kendra LaDuca at FASEB, the dedication of our Program Committee (Elaine Davis, Tom Barker, Dave Roberts, Linda Sandell, and Ambra Pozzi), and the persuasive powers of our fundraiser-in chief, Maurizio Pacifici. Resulting from combined efforts, we were able to assemble an integrated program with our counterparts from the SfG and to get enthusiastic support from both the NIH and 32 commercial sponsors. The breakfast setup in the exhibit hall was very favorable to sponsor-attendee interaction.

Jeff Davidson - President, ASMB

Congratulations to the 2012 ASMB Award Winners

Lisa Ang, University of British Columbia
Vivek Desai, Princeton University
Alon Hendel, University of British Columbia
Marion Jeanne, University of California, San Francisco
Sandeep Khatri, University of Pittsburgh
Rooz Khosravi, Boston University
Ryan Petrie, National Institutes of Health
Purva Singh, Princeton University
Yoshito Yamishiro, UT Southwestern Medical Center
Kurt Zimmerman, University of Alabama at Birmingham

MATRIX BIOLOGY RESOURCES

MatrixDB is a freely available database focused on interactions established by extracellular proteins and glycosaminoglycans. MatrixDB takes into account the multimeric nature of the extracellular proteins (e.g. collagens, laminins, thrombospondins) and their receptors (e.g. integrins) when reporting interactions.

MatrixDB is an active member of the International Molecular Exchange (IMEx) consortium and has adopted the HUPO Proteomics Standards Inititative (PSI-MI) standards for annotating and exchanging interaction data.

MatrixDB includes interaction data extracted from the literature by manual curation, and offers access to interaction data involving extracellular proteins provided by other IMEx databases through the PSICQUIC web service, as well as data from the Human Protein Reference Database. All the papers reporting interactions and published in Matrix Biology are curated by MatrixDB since January 2009.

MatrixDB provides direct links to databases recapitulating mutations in genes encoding extracellular proteins, to UniGene and to the Human Protein Atlas that shows expression and localization of proteins in a large variety of normal human tissues and cells.

MatrixDB allows researchers to perform customized queries (e.g. biomolecule name, PubMed Identifier, free text) and to build tissue- and disease-specific interaction networks that can be visualized and analyzed with Cytoscape. Overall, to date, the database contains 2283 extracellular matrix interactions including 2095 protein-protein and 169 protein-glycosaminoglycan interactions. A new release will be available in July, 2013.

Contact

Prof. Sylvie RICARD-BLUM
Institut de Biologie et Chimie des Protéines, UMR 5086 CNRS - University Lyon 1,
69367 Lyon Cedex 07 - France
e-mail: matrixdb@ibcp.fr, s.ricard-blum@ibcp.fr

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Welcome to the new *Matrix biology*

Dear fellow Matrix Biologists,

I consider it a great honor and a life-time achievement for me to take on the role of *Editor-In-Chief* of our flagship journal. I follow in the footsteps of Bjorn Olsen who has dedicated ten years of his busy time to the journal. We all are very thankful to him for his vision and high scientific standards.

I am pleased to announce a number of changes to *Matrix Biology* that I hope will improve the journal's content, expand its overall scope, and broaden its impact. These changes will be implemented in the next few months.

Below I have summarized some of the new key features and the value added to the members of both affiliated matrix biology societies, the ISMB and ASMB.

Current and new key features of *Matrix Biology*

- New: Editorial board, associate editors and review editors.
- New: Science Editors covering Matrix Biology Highlights.
- New: A new cover selected from the published papers.
- Current: Fast turnaround time: first decision in 2–3 weeks.
- Current: Rapid publication after acceptance.
- Current: Accepted papers published online ahead of print.
- New: Reviews and minireviews freely accessible online.
- Current: First issue of each year freely available for 12 months post-publication.
- New: Special issues freely available for 2 months post-publication.

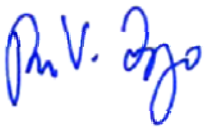
Value added for ISMB and ASMB members

- New: 50% discount on color figures for corresponding authors who are current members of either ISMB or ASMB. We will place an option to become a member of either society on the journal web site.
- New: Online abstract publication with free access for the ASMB meetings.
- New: Potential online publication of abstracts from matrix biology related meetings sponsored by ISMB.
- ISMB and ASMB members:75% discount off subscription to the printed journal.
- New: Society news and events highlighted in journal home page pods.
- New: Matrix Biology Highlights and Table of Contents distributed to all the ISMB and ASMB members for each published issues.

I hope these changes will enhance the impact and visibility of our journal. To my great surprise a recent survey has found that the two most important issues for publishing authors are: "Review Speed" and "Publication Speed", with "Impact Factor" of the journal being listed as the third most important issue. I plan to expedite the review process and publication speed after acceptance. I encourage feedback from all authors and readers. Please contact me at renato.iozzo@jefferson.edu.

Finally, and most importantly, I hope you will consider submitting your best work to the journal with the idea that *Matrix Biology* could become a preferred scientific repository and a major conduit of dissemination of our best science throughout the world.

Yours truly,



Renato V. Iozzo, M.D.
Editor-In-Chief, *Matrix Biology*

From '*Matrix Biology*':

Call for Papers Matrix Biology

Matrix Biology is now accepting submissions of Regular Research Papers, Brief Reports, Mini Reviews, Landmark Essays, and Full Length Reviews.

The journal publishes papers encompassing all the aspects of extracellular matrix biology, including structural biology, biomaterials and biomechanics, genetic diseases, mouse models of connective tissue disorders, cell-cell interactions, cell-matrix interactions, integrins and related receptors and co-receptors, tumor stroma and angiogenesis, cancer biology and signaling through the matrix.

Top 5 reasons to publish in *Matrix Biology*

1. **5-year Impact Factor: 3.429***
2. Free Access for all published reviews
3. No submission or page charges
4. 50% discount on color charges for ISMB and ASMB members
5. Rapid submission to first decision turnaround of less than 5 weeks, and acceptance to online publication in less than 4 weeks

We look forward to receiving your paper.

With kind regards,

Renato V. Iozzo, Editor-in-Chief

Kaia Motter, Publisher

RETHINK THE WAY YOU PUBLISH

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From '*Matrix Biology*':

MATRIX BIOLOGY Highlights

Matrix Biology 32 (2013) iii-v

Edited by Tom Neill and Jason Zoeller

(1) The "real" spin class: electrospun heparan sulfate meshes support stem cell differentiation

Reference | Meade, K.A., White, K.J., Pickford, C.E., Holley, R.J., Marson, A., Tillotson, D., van Kuppevelt, T.H., Whittle, J.D., Day, A.J., Merry, C.L.R., 2013. Immobilization of Heparan Sulfate on Electrospun Meshes to Support Embryonic Stem Cell Culture and Differentiation. J Biol Chem 288, 5530-5538. http://www.ncbi.nlm.nih.gov/pubmed/23235146

For the first time, as demonstrated by Meade and colleagues and published in *J Biol Chem*, it has been thoroughly established that functional three-dimensional (3D) scaffolds can be immobilized with heparan sulfate while retaining full biological activity (Meade et al, 2013). In this study, heparan sulfate binds, via ionic interactions, to allylamine coated fibers during cold plasma polymerization (Figure 1.1). This process allows electrospun meshes to be easily and rapidly utilized for immobilization with presumably any GAG of choice. Importantly, the sulfation status of heparan sulfate did not influence mesh synthesis. Evidence provided by the authors demonstrate that coated heparan sulfate is able to fully potentiate growth factor signaling via retention and proper presentation of the ligand within the synthesized mesh (Figure 1.2). This aspect is critical for the ECM-imitated mesh to exert biological influence on target cells, such as mediating embryonic stem cell differentiation. Indeed, heparan sulfate has been implicated in controlling stem cell fate, where appropriate presentation of the bound ligand is vital. Moreover, modulating the spinning parameters to generate varied fiber diameters provides additional mechanisms to command stem cell fate (Figure 1.3). Altering GAG-coated fiber alignment (Figure 1.4) or introducing mechanical forces (i.e. strain) onto the mesh (Figure 1.5) can further be manipulated to culminate in the desired stem cell phenotype. The authors therefore provide highly novel avenues for the generation of electrospun meshes with the ability to be coated with potentially innumerable combinations of GAGs (or other biomaterials) to actively drive stem cell differentiation.

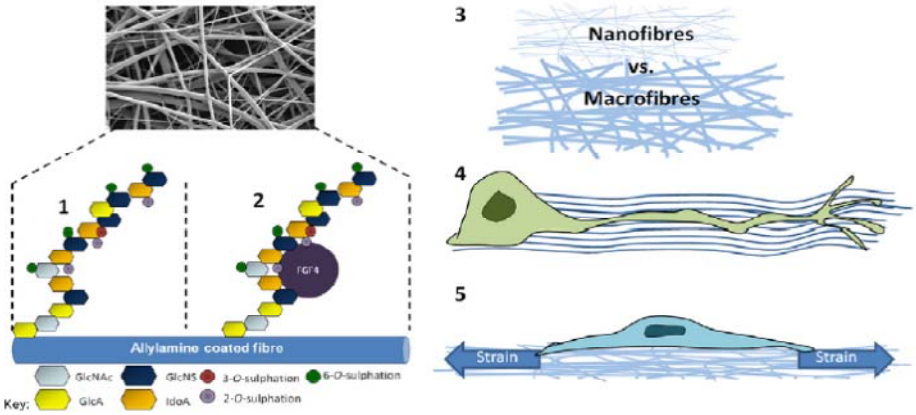


Fig. 1. Electrospun mesh immobilized with heparan sulfate binds allylamine-coated fibers via ionic interactions capable of binding and retaining vital growth factors. Many parameters of the coated mesh, as discussed above, can be altered to drive embryonic stem cell differentiation to a specific or desired pathway. Thereby opening the possibility of decorating fibers with specific GAGs in order to manipulate and finely tune a desired stem cell behavior or phenotype. We would like to thank Meade, K.A. for kindly providing the figure.

(2) Crawling along: the stiffness of the matrix polarizes the cytoskeleton, phosphoregulates myosin

Reference |Raab, M., Swift, J., Dingal, P.C.D.P., Shah, P., Shin, J.W., Discher, D.E., 2012. Crawling from soft to stiff matrix polarizes the cytoskeleton and phosphoregulates myosin-II heavy chain. J Cell Biol 199, 669-683. http://www.ncbi.nlm.nih.gov/pubmed/23128239

In a recent report published in *J Cell Biol*, the authors have shown that nonmuscle MIIA (myosin-IIA) plays a critical role in matrix-dependent polarization as primary mesenchymal stem cells (MSCs) crawl, during durotaxis, from soft to stiff matrix (Raab et al, 2012). Migrating cells from soft to stiff matrix triggers MIIA re-organization and assembly from a diffusely mobile pool into oriented stress fibers that partly depends on a narrow percentage of phosphorylated MIIA at S1943. This concept is critically important, as there exists a strictly optimal phosphoregulatory range for MIIA at S1943 in order to form the actomyosin skeleton as an MSC crawls onto a more rigid matrix (Figure 2). Moreover, this process is sensitive to a small amount (< 12%) of total myosin to be comprised of MIIB. This study lays the groundwork for exploiting the regenerative potential of MSCs (or other stem cell types) by regulating the phosphorylation of MIIA in response to matrix rigidity. Identification of the upstream effectors (i.e. kinases, phosphatases, regulatory factors) of MIIA will be useful for eventual therapeutic targeting. This will be especially important for the engineering of synthetic matrices for utilization in chronic wound, scar and tissue repair as well as for a multitude of surgical applications.

From '*Matrix Biology*': Matrix Biology 32 (2013) iii-v

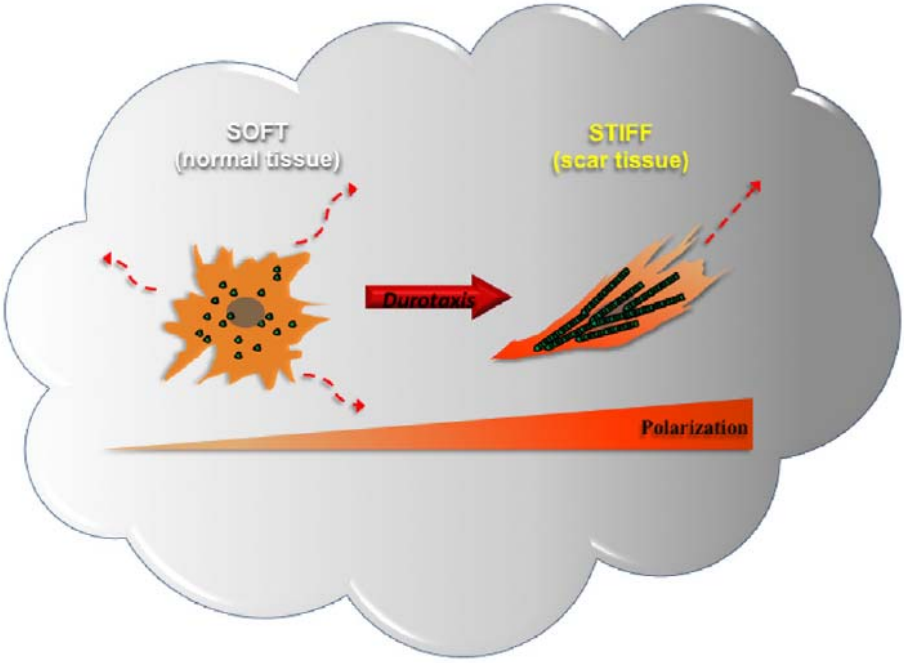


Fig. 2. The above schematic depicts matrix-induced cell polarization. Stiff tissue, (i.e. scar tissue), promotes actomyosin assembly (green), as opposed to normal tissue (soft). As a cell traverses a rigidity gradient (gray) via durotaxis, its trajectory becomes more persistent (broken red arrows) and less randomized concomitant to increased polarization of various cytoskeletal components (orange), such as nonmuscle myosin II. We would like to assign credit to Dingal, D., and Discher, D. for providing the above figure.

(3) Integrin α9β1 and epithelial-mesenchymal transition

Reference |Gupta, S.K., Oommen, S., Aubry, M.C., Williams, B.P., Vlahakis, N.E., 2013. Integrin α9β1 promotes malignant tumor growth and metastasis by potentiating epithelial-mesenchymal transition. Oncogene 32, 141-150. http://www.ncbi.nlm.nih.gov/pubmed/22370635

A recent report by Gupta and colleagues published in *Oncogene* correlates α9β1 expression with an EMT phenotype (Gupta et al, 2013). Overexpression of α9 in vitro confers a mesenchymal morphology associated with loss of E-cadherin and cortical F-actin as well as gain of α-SMA and vimentin (Figure 3A). The functional consequences of such cellular changes enhanced cell migration, invasion and anchorage independent growth in vitro. Endogenous or exogenous expression of α9 in vivo enhanced tumor growth, angiogenesis, lymphangiogenesis and metastasis whereas suppression of α9 reversed these effects. The translational relevance of α9 was further evaluated in a small cohort of patient tumor samples. The authors found high α9 expression was associated with poor survival in small cell lung cancer. These clinical results represent the first link between integrin α9 and outcome in human cancer. The mechanism of α9-mediated EMT was linked to a cell surface complex composed of α9 integrin, E-cadherin and β-catenin. The complex dissociates upon matrix-mediated specific activation of α9 and leads to src phosphorylation, β-catenin phosphorylation and ultimately upregulation of EMT associated components (Figure 3B). The exact matrix ligand that leads to α9 activation remains to be determined.

(4) The lack of SPARC ignites bladder cancer

Reference |Said, N., Frierson, H.F., Sanchez-Carbayo, M., Brekken, R.A., Theodorescu, D., 2013. Loss of SPARC in bladder cancer enhances carcinogenesis and progression. J Clin Invest. 123, 751-766. http://www.ncbi.nlm.nih.gov/pubmed/23321672

A recent report by Said and colleagues published in *JNCI* helps clarify the role of SPARC (secreted protein acidic and rich in cysteine, BM-40 or osteonectin) during bladder carcinogenesis, tumor progression and metastasis. SPARC function in the context of bladder was defined through application of a carcinogen-induced mouse model alongside genetic manipulation of *Sparc*. *Sparc* wild-type mice lost SPARC throughout the carcinogenesis cascade whereas *Sparc* null mice exhibit accelerated tumor progression to invasive disease, increased metastasis and decreased overall survival. The tumor suppressive function of SPARC was linked to a multifactor program that involved ROS, inflammation and proliferation. These results highlight the potential for SPARC replacement or restoration therapy as a means to control bladder cancer. The clinical

From '*Matrix Biology*': Matrix Biology 32 (2013) iii-v

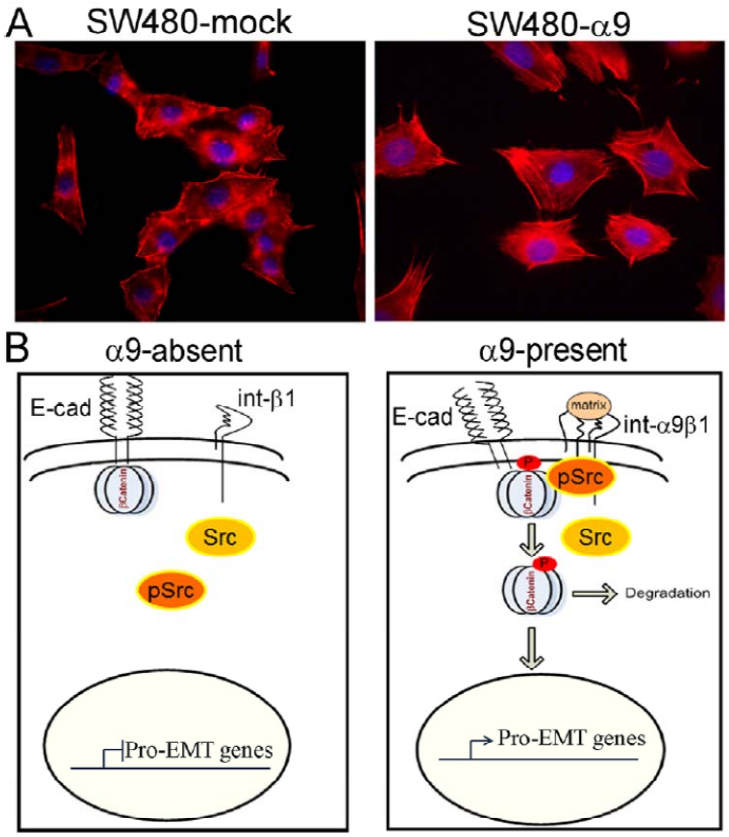


Fig. 3. Integrin α9β1 expression induced epithelial-mesenchymal transition. (**A**) Immunofluorescent photomicrographs of SW480-Mock and α9 cells stained red for cytoskeletal F-actin and cell nuclei stained blue with DAPI. (**B**) Proposed signaling mechanisms for integrin α9β1-induced epithelial-mesenchymal transition. Figure kindly provided by Gupta, S.K. and Vlahakis, N.E.

relevance of SPARC was further evaluated across human bladder cancer samples. Non-muscle invasive cases were found to predominantly express tumor cell SPARC while muscle invasive cases display reduced tumor cell expression (Figure 4). The authors defined a clear relationship between tumor cell SPARC-positive cases and increased disease specific survival. These results support the tumor suppressive role of SPARC, but also highlight the need to define and clearly understand tumor cell versus stromal SPARC expression patterns.

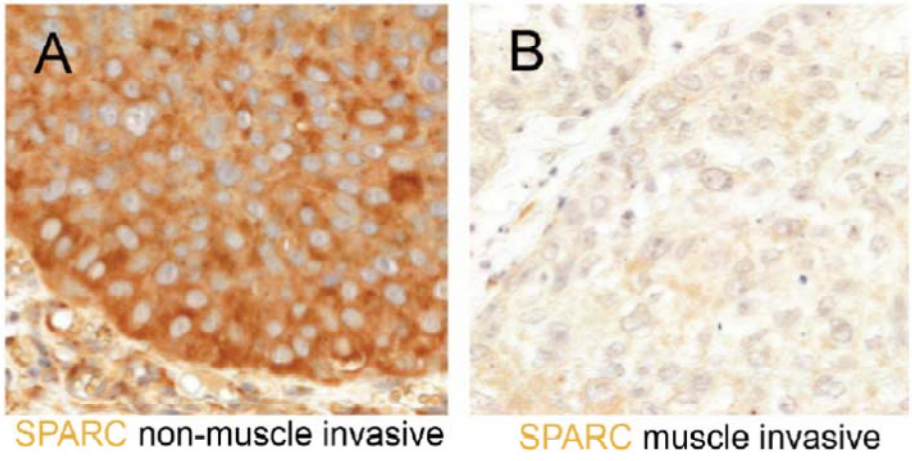


Fig. 4. SPARC and patient bladder tumor samples. Representative images of SPARC immunohistochemistry (IHC) depict variable levels of SPARC between non-muscle invasive (**A**) and muscle invasive (**B**) disease. Note, brown DAB+ SPARC IHC signal plus blue hematoxylin nuclear counterstain. Figure kindly provided by Said, N., and Theodorescu, D.

POSITIONS AVAILABLE

2 Postdoctoral Positions Available in Bone Research/Wound Healing and Genetics

2 postdoctoral positions are available in a NIH funded laboratory working in molecular genetics and functional analysis of rare bone disorders, 2) keloid formation and other fibrotic disorders. We are identifying genes for several genetic disorders affecting bone and skin, and we study their function and molecular mechanisms leading to those disorders.

Candidates must have PhD, MD/PhD, or MD, must be highly motivated and have **strong interest in bone research and/or wound healing**.

Bone Research: The successful applicant will have strong background in protein biochemistry to evaluate results from recent yeast-2 hybrid studies. Other projects include investigation of downstream effects of mutations in the transmembrane protein ANK and the adapter protein SH3BP2 (Reichenberger et al. 2001, Am J Hum Genet 68(6):1321-1326; Ueki et al. 2001, Nature Genetics 28(2):125-126; Ueki et al. 2007, Cell 128(1):71-83); Chen et al., 2011, Hum Mol Genet 20(5):948-61). We investigate effects of the mutations in mouse models, on a cellular level, by cell signaling and mineral matrix analysis. Our lab is part of a strong bone group within the musculoskeletal signature program at UCHC.
Genetics: The successful candidate will participate in ongoing analyses of linkage and exome sequencing projects and design functional studies to test effects of identified variants.

Candidates must have **strong skills** in protein biochemistry or genetics and experience in molecular biology and cell culture techniques. Experience in the field of bone biology or wound healing, respectively, is highly desirable. Experience with mouse models, signal transduction techniques or mineralized tissue analysis is of advantage. Please send CV, statement of research interests and research accomplishments, and contact information for 3 references to:

Ernst Reichenberger, PhD (Associate Professor)
University of Connecticut Health Center (UCHC), Center for Regenerative Medicine and Skeletal Development
Department of Reconstructive Sciences, 263 Farmington Avenue, Farmington, CT 06030-3705
Tel: 860-679-2062 Fax: 860-679-2910
email: reichenberger@uchc.edu and visit us at: http://reichenbergerlab.uchc.edu

Trainees from underrepresented racial/ethnic groups are specifically encouraged. UCHC is an equal opportunity employer M/F/V/PwD.

Call for Junior Group Leader positions in the Wellcome Trust Centre for Cell-Matrix Research

The Cell-Matrix Centre at the University of Manchester, UK is actively recruiting new Group Leaders now. We are looking for scientists working in any area of cell-matrix research, and our priorities lie within the Research Directions of the Centre<http://www.wellcome-matrix.org/home/mission.html> (http://www.wellcome-matrix.org/home/mission.html). Successful candidates will be highly talented and visionary individuals who have a strong publication record and clear future research ambitions.

The positions are available to individuals who are able to obtain their own direct long-term research fellowships offered by major UK funding agencies. Successful applicants will be fully supported with lab space and facilities whilst direct funding is being sought, dependent on interview and approval by the Wellcome Trust.

If you would like to discuss openings for a Group Leader position within the Centre, please send a CV, a concise 2-page summary of your research proposal, and contact details of 3 referees to Anna Fildes<mailto:anna.fildes-2@manchester.ac.uk> (Anna.Fildes-2@manchester.ac.uk<mailto:Anna.Fildes-2@manchester.ac.uk>).

The deadline for Junior Group Leader applications for 2014 is 30 September 2012. However, we would be interested to have applications anytime after that if you are interested in setting up a lab in late 2014 or 2015. Further information is available on the Cell-Matrix Centre website<http://www.wellcome-matrix.org/vacancies/vacs-jgl.html> (http://www.wellcome-matrix.org/).

MATRIX MEETING ANNOUNCEMENTS

World Congress on Osteoarthritis

April 18-21, 2013
Marriott Hotel Philadelphia PA
Link to program and registration information: http://2013.oarsi.org/
See flyer at end

2013 Gordon Research Conference on Matrix Metalloproteinases

May 19-24, 2013

2013 Gordon Research Seminar on Matrix Metalloproteinases

May 18-19, 2013, for students, post-doctoral researchers and clinical trainees
Matrix Metalloproteinases: Crucial Components of Molecular Networks and Disease Pathways
Il Ciocco Tuscany Resort, Barga, Tuscany, Italy
Gordon Research Conference: Chair , Suneel S. Apte; Vice Chair, M. Sharon Stack
Gordon Research Seminar: Chair, Sean Gill ; Assoc. Chair, Alisha Mendonsa
Website: http://www.grc.org/programs.aspx?year=2013&program=matrix

2013 Gordon Research Conference on Collagen

July 14-19, 2013

2013 Collagen Gordon Research Seminar (GRS)

July 13-14, 2013, for students and post-docs
Colby-Sawyer College, New London, NH, USA.
Gordon Research Conference: Chair, Karl Kadler (U. of Manchester); Vice Chair, Collin Stultz (MIT)
Gordon Research Seminar: Chair, Lydia Murray (U. of Glasgow) ; Assoc. Chair, Jorge Fallas (Rice U.)
There are reserved slots in the program for short talks selected from the Abstracts and GRS.
Up to date information is available on the websites:
http://www.grc.org/programs.aspx?year=2013&program=collagen
http://www.grc.org/programs.aspx?year=2013&program=grs_coll
See flyer at end for information on sessions.

2013 Gordon Research Conference on Elastin, Elastic Fibers, and Microfibrils

July 21-26, 2013

Gordon Research Seminar on Elastin, Elastic Fibers, and Microfibrils

July 20-21, 2013, for students and post-doctoral researchers
University of New England, Biddeford, Maine
GRC: Chair: Dieter Reinhardt; Vice-Chair: Zsolt Urban
GRS: Chair: Katja Schenke-Layland; Assoc. Chair: Sandeep Khatri
Website: http://www.grc.org/programs.aspx?year=2013&program=elastin
http://www.grc.org/programs.aspx?year=2013&program=grs_elast
See flyer at end for information on sessions.

2013 FASEB Summer Meeting: Matricellular Proteins in Development, Health and Disease

July 28-August 3, 2013
Vermont Academy, Saxons River, VT.
Co-Chairs: Joanne Murphy-Ullrich, UAB and Amy Bradshaw, MUSC
Website of full program: https://secure.faseb.org/FASEB/meetings/summrconf/Programs/11636.pdf
See flyer at end

8th International Conference on Proteoglycans

August 25-29, 2013, Frankfurt/Main, Germany
Organizers: Liliana Schaefer and John Couchman
Registration will be open from February 01, 2013.
Website: www.proteoglycans2013.com
See flyer at end.

The Sixth Alpbach Workshop on Coiled-Coils, Collagen & Fibrous Proteins

September 8-14, 2013
Alpbach, Austria
Organizers: Andrei Lupas (Tuebingen); Dek Woolfson (Bristol), Carlo Knupp (Cardiff)
For further details, contact knuppc@cardiff.ac.uk

The 9th Pan Pacific Connective Tissue Societies Symposium - The Extracellular Matrix Niche

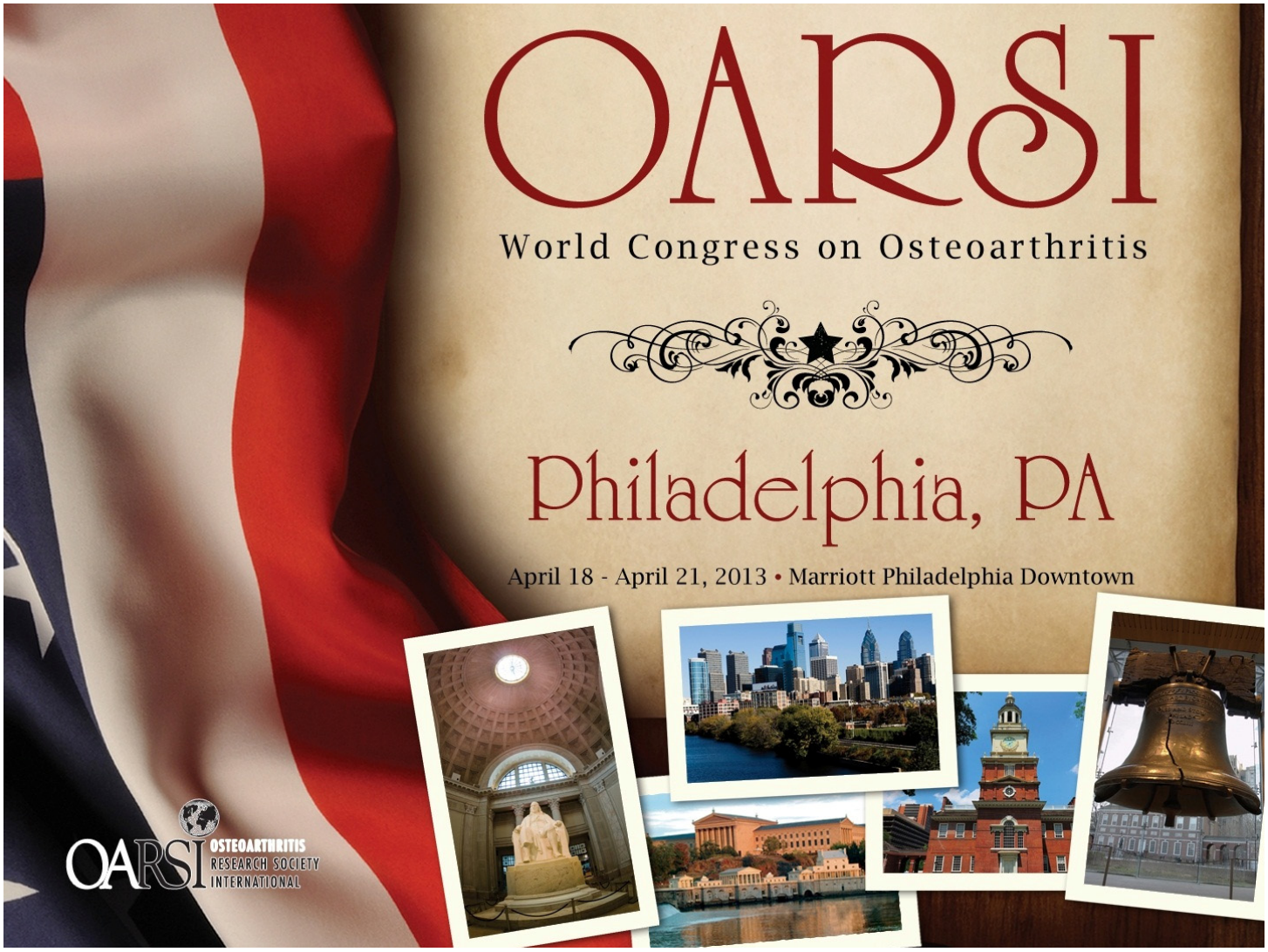
November 24-27, 2013.
Hong Kong Academy of Medicine
Website: www.ppctss2013.org
See poster at end.

1st meeting of Matrix Biology Europe (formerly known as Federation of Connective Tissue Societies, FECTS), July 5-8th, 2014

Conference center The Doelen, Rotterdam, The Netherlands
Meeting Chair: Ruud Bank
Check http://www.eumb.eu/ for regular updates
Yvonne Bastiaansen, Secretary Organizing committee

MEMBERSHIP

ISMB is dedicated to promoting matrix biology research on a global scale and to facilitating communication among matrix-related organizations and researchers from different countries. Members of the Society receive twice yearly newsletters highlighting recent research advances, open positions, descriptions of matrix biology resources, and announcements of relevant meetings, together with messages from the ISMB President. Every two years, the Society presents the Rupert Timpl Award to a young scientist (<40 years old) for the best paper related to matrix biology published in the last two years and gives the Distinguished Investigator Award for lifetime achievement in the field of matrix biology. ISMB sponsors travel grants for young scientists to attend international matrix meetings in Europe, America and Asia. If you work in the matrix biology area, consider becoming a member of ISMB to support the international matrix community and give your input on ways to improve interactions and communication. For further information, please see www.ismb.org .


OARSI
World Congress on Osteoarthritis
Philadelphia, PA
April 18 - April 21, 2013 • Marriott Philadelphia Downtown
OARSI
OSTEOARTHRITIS
RESEARCH SOCIETY
INTERNATIONAL

2013 COLLAGEN GORDON RESEARCH CONFERENCE July 14-19, 2013
Colby-Sawyer College, New London, NH, USA

Register at http://www.grc.org/programs.aspx?year=2013&program=collagen

Sessions

Emerging Technologies in Cell-Matrix Research
Collagen Biosynthesis, Structure and Assembly
Collagen-Protein Interactions and Signaling
Developmental Biology of the Matrix
Genetic Mechanisms of Disease
Collagen Regulation and Dysregulation
Stem Cells, Repair and Regenerative Medicine
Matrix Mechanobiology
Future directions of collagen matrix research

Discussion Leads

John Bateman (Melbourne, Australia)
David Hulmes (Lyon, France)
Hilary Ashe (Manchester, UK)
Ronen Schweitzer (Shriners Portland USA)
Leena Bruckner-Tuderman (Freiburg, Germany)
Sergey Leikin (NIH)
Pam Robey (NIH)
Boris Hinz (Toronto, Canada)
Collin Stultz (MIT-Harvard)

Speakers

Martin Humphries (University of Manchester, UK)
"What's in an adhesion complex, and how does it work?"

Melinda Duer (University of Cambridge, UK)
"Heavy mice and lighter things: using NMR spectroscopy to elucidate molecular structures in tissues"

David Eyre (University of Washington, Seattle)
"Prolyl 3-hydroxylation, molecular assembly and cross-linking"

Michael Rape (University of California, Berkeley)
"Ubiquitin-dependent regulation of collagen secretion"

Tak Mak (University of Toronto, Canada)
"Regulation of collagen synthesis by onco-metabolite 2-hydroxyglutarate"

Maria Antonietta De Matteis (Telethon Institute of Genetics and Medicine, Napes, Italy)
"Role of TRAPP complex in procollagen trafficking"

Amy Bradshaw (Medical University of South Carolina)
"Procollagen processing in hearts and periodontal ligament - collagen-binding proteins that affect fibril assembly and deposition"

Johanna Myllyharju (University of Oulu, Finland)
"Collagen prolyl 4-hydroxylases in skeletogenesis"

Elazar Zelzer (Weizmann Institute of Science, Israel)
"Building the bone-tendon attachment unit"

David Birk (University of South Florida)
"Regulation of extracellular matrix assembly during development"

Delphine Duprez (Université Pierre et Marie Curie, Paris)
"Transcription and growth factors during tendon formation and repair"

Audrey McAlinden (Washington University, St. Louis)
"Mis-expression of embryonic *Col2a1* isoforms affects cartilage matrix assembly and post-natal bone development"

Cristina Has (University of Freiburg, Germany)
"Focal adhesions and skin fragility disorders

Qing Jun Meng (University of Manchester, UK)
"Circadian rhythms of matrix-secreting cells"

Peter Byers (University of Washington, Seattle)
"Lessons learned: cis- and trans-acting effects on collagen production and structure identified from heritable disorders"

Kazuhiro Nagata (Kyoto Sangyo University, Japan)
"Regulation of collagen synthesis by Hsp47 and P4H in combination with specific inhibitors"

Giorgio Galli (Boston Children's Hospital)
"Prdm5-dependent regulation of collagen genes transcription"

Fiona Watt (King's College London, UK)
"Dermal remodelling mediated by epidermal signals"

Matthias Lutolf (Swiss Federal Institute of Technology Lausanne (EPFL))
"Deciphering stem cell-ECM interactions using artificial niches"

Janine Erler (BRIC, University of Copenhagen)
"Lysyl oxidases in cancer progression"

Michael Kjaer (Bispebjerg Hospital, Copenhagen)
"Mechanical loading and collagen turnover in tendon and skeletal muscle - how dynamic is it?"

Dennis Discher (University of Pennsylvania)
"From matrix to nucleus - Scaling results in polymer biophysics"

Valerie Weaver (UC Berkeley/UCSF)
"Title of talk to be confirmed"

Natalia Nieto (Mount Sinai School of Medicine, NYC)
"Osteopontin, collagen and liver fibrosis"

Markus Buehler (Massachusetts Institute of Technology)
"*In silico* mechanobiology of collagen: mutations, defects and mechanics"

+17 additional speakers will be selected from the submitted abstracts

Chair: Karl Kadler (University of Manchester)
Vice Chair: Collin Stultz (Harvard-MIT Division of Health Sciences and Technology)

Gordon Research Conference and Gordon Research Seminar

Elastin, Elastic Fibers & Microfibrils

- From Basic Concepts to Translational Applications –

University of New England, Biddeford, Maine (USA)

Gordon Research Seminar

July 20-21, 2013

Chair:

Katja Schenke-Layland

Associate Chair:

Sandeep M. Khatri

Sessions:

- Elastic Fibers - Past and Future
- Elastin
- Panel Discussion: "*Where to find a job and how to be successful in it*"
- Elastin Associated Proteins and Microfibrils
- Elastin, Elastic Fibers and Microfibrils in Regenerative Medicine

Gordon Research Conference

July 21-26, 2013

Chair:

Dieter P. Reinhardt

Vice Chair:

Zsolt Urban

Sessions:

- Molecular Properties and Assembly of Elastin
- Microfibrils, Fibrillins and Associated Proteins
- Novel Approaches for Elastic System Analysis
- Elastic Fiber-Related Cell Signaling in Health and Disease
- Functionalization of the Elastic Fiber/Microfibril System
- Elastic Fibers in Vascular and Lung Physiology and Remodeling
- Elastic Fiber Diseases and Translational Aspects
- Biomedical Engineering and Stem Cells of Elastic Systems
- Hot Topics Related to Elastic Fiber Research

2013 FASEB Summer Meeting

"MATRICELLULAR PROTEINS IN DEVELOPMENT, HEALTH, AND DISEASE"

July 28-August 2, 2013
Vermont Academy, Saxons River, VT
http://www.faseb.org/src/

Co-Chairs: Joanne Murphy-Ullrich, UAB
Amy Bradshaw, MUSC

The aim of the meeting is to bring together researchers with active interests in the structures, functions, and clinical applications of matricellular proteins. These proteins include the thrombospondins and other thrombospondin repeat (TSR) proteins, the tenascins, osteopontin, the SPARC family, the CCN family, and other newly recognized matricellular proteins such as periostin and fibulins. Matricellular proteins are spatially and temporally regulated components of extracellular matrix that have short-range and context-specific functions in cell-matrix and cell-cell interactions and in the regulation of cellular phenotype. On the basis of these distinctive functional attributes, these proteins have been termed modulatory adhesion proteins, or matricellular proteins. This meeting will discuss the latest findings regarding matricellular protein regulation, structure, and functions in development and disease, incorporating the latest technologies and model systems. Commonalities and differences between matricellular proteins will be considered in integrating this knowledge.

Preliminary Program:

Session 1 (Sunday pm): Matricellular proteins: local and global actions
(Chair: Themis Kyriakides, Yale University)

Session 2: (Monday am) Matricellular protein regulation (microRNAs epigenetics, SNPs)
(Chair: Olga Stenina, Cleveland Clinic)

Session 3 (Monday pm): Matricellular proteins in non-mammalian model systems and development
(Chair: Josephine Adams, University of Bristol)

Session 4 (Tuesday am): Matricellular protein regulation of growth factor activity
(Chair: Andrew Leask, University of Western Ontario)

Session 5 (Tuesday pm): Matricellular proteins in inflammation and immunity
(Chair: Kim Midwood, Kennedy Institute, University of Oxford)

Session 6: (Wednesday am): Matricellular proteins in diabetes and obesity
(Chair: Joanne Murphy-Ullrich, UAB)

Session 7: (Wed pm): Matricellular proteins in musculoskeletal disease
(Chair: Kurt Hankenson, University of Pennsylvania)

Session 8: (Thursday am): Matricellular proteins in carcinogenesis and angiogenesis
(Chair: Gertraud Orend, University of Strasbourg)

Session 9: (Thursday pm): Matriceullar proteins in neuronal systems
(Chair: Cagla Eroglu, Duke University)

Session 10 (Friday am): Matricellular proteins in cardiovascular disease
(Chair: Jeff Isenberg, University of Pittsburgh)

8th International Conference on Proteoglycans

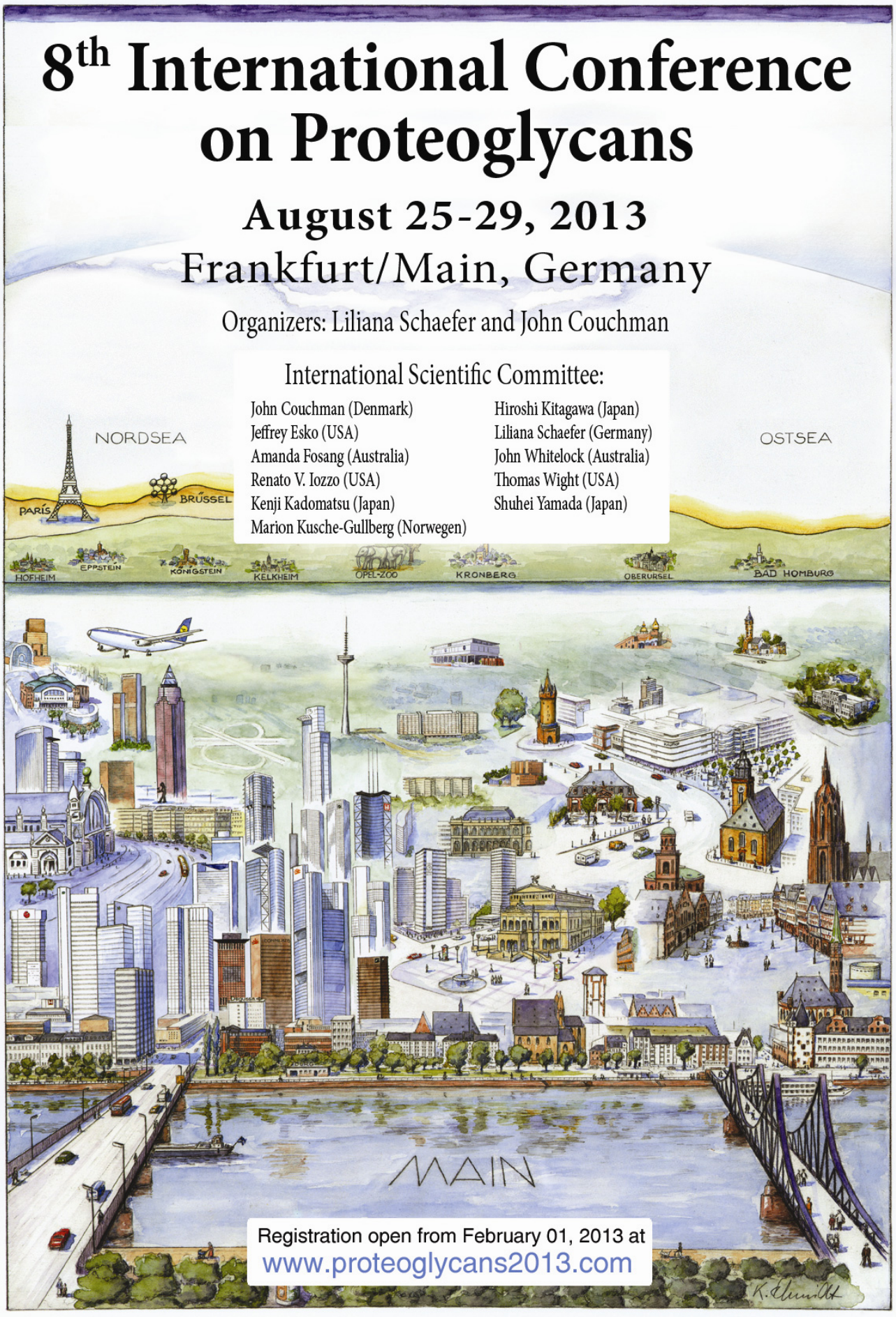
August 25-29, 2013

Frankfurt/Main, Germany

Organizers: Liliana Schaefer and John Couchman

International Scientific Committee:

John Couchman (Denmark)
Jeffrey Esko (USA)
Amanda Fosang (Australia)
Renato V. Iozzo (USA)
Kenji Kadomatsu (Japan)
Marion Kusche-Gullberg (Norwegen)
Hiroshi Kitagawa (Japan)
Liliana Schaefer (Germany)
John Whitelock (Australia)
Thomas Wight (USA)
Shuhei Yamada (Japan)

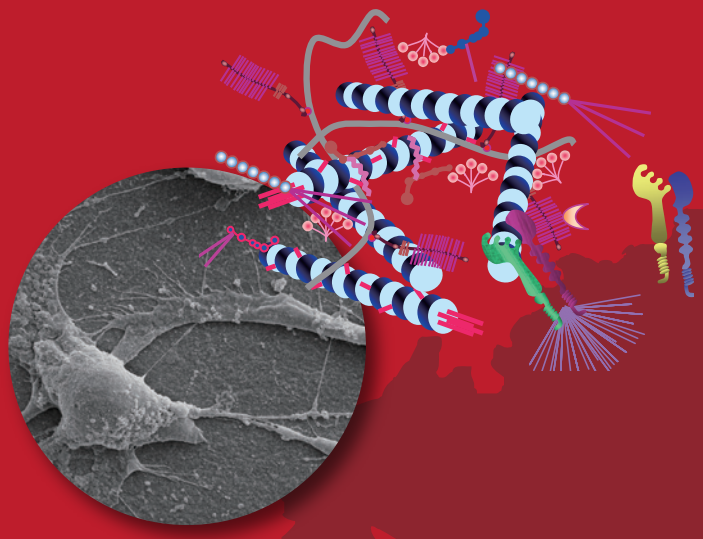


Registration open from February 01, 2013 at
www.proteoglycans2013.com

9th Pan Pacific Connective Tissue Societies Symposium

The Extracellular Matrix Niche

24th – 27th November 2013
Hong Kong Academy of Medicine, Jockey Club Building,
99 Wong Chuk Hang Road, Aberdeen, Hong Kong



Hong Kong

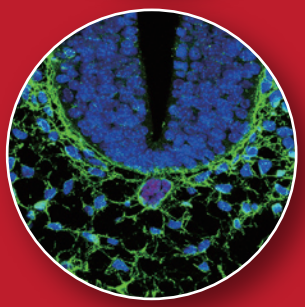
Enquiry:
Conference Secretariat
Tel: +852 2559 9973
Fax: +852 2549 9528
Email: ppctss2013@icc.com.hk

Please visit our website for programme update and registration:

www.ppctss2013.org

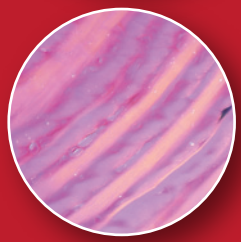
Welcome Message

It is our great pleasure to invite you to Hong Kong to attend the 9th Pan Pacific Connective Tissue Societies Symposium - The extracellular matrix niche.



This is the first time this symposium to be hosted in China, and Hong Kong being an international city provides the prefect gateway to bring the regional and international researchers in matrix biology in a setting for interaction, sharing of ideas, debating current trends and most importantly, exploring future innovations and collaborations.

The meeting is being organized by local committee member from Hong Kong and Mainland China, and an international advisory committee aiming to bring to the participants the latest hot topics in matrix biology.



Don't miss out on Hong Kong, plan your trip and prepare an abstract, and visit one of most spectacular and vibrant cities in Asia.

Join your colleagues from around the globe at this unique event!

Supported by

The Japanese Society for Connective Tissue Research (JSCTR)

International Society for Matrix Biology

Matrix Biology Society of Australia and New Zealand

American Society for Matrix Biology

Japan Matrix Club

Organizing Committee

Local and Regional Committee Members

Danny Chan, *The University of Hong Kong (Chair)*

Wei Kong, *Peking University Health Science Center (Vice Chair)*

Barbara Chan, *The University of Hong Kong*

Yun Wah Lam, *City University of Hong Kong*

Zhonjun Zhou, *The University of Hong Kong*

Hongquan Zhang, *Peking University*

Zhigang Zhang, *Shanghai Cancer Institute*

International Advisory Committee Members

Hans Peter Bachinger, *Oregon Health & Science University, USA*

Kathryn Cheah, *The University of Hong Kong, China*

David Hulmes, *Université Lyon, France*

Shireen Lamande, *Murdoch Children's Research Institute, Australia*

Kazuki Nabeshima, *Fukuoka University School of Medicine and Hospital, Japan*

Hide Watanabe, *Aichi Medical University, Japan*

John Whitelock, *University of New South Wales, Australia*

Preliminary Program

This will be a three and a half day symposium, divided into six scientific sessions with integrated themes addressing the functions of the extracellular matrix.

- Model systems for matrix biology
- Matrix in development and diseases
- Matrix degradation and the degradome
- Cell and matrix interactions
- Matrix in mechanobiology
- Matrix in regenerative medicine

A one and a half day satellite meeting (29-30 Nov 2013) is being organized in Beijing after this Symposium with a focus on extracellular matrix and disease. We welcome all to participate. Information will be available on the official PPCTSS2013 website.