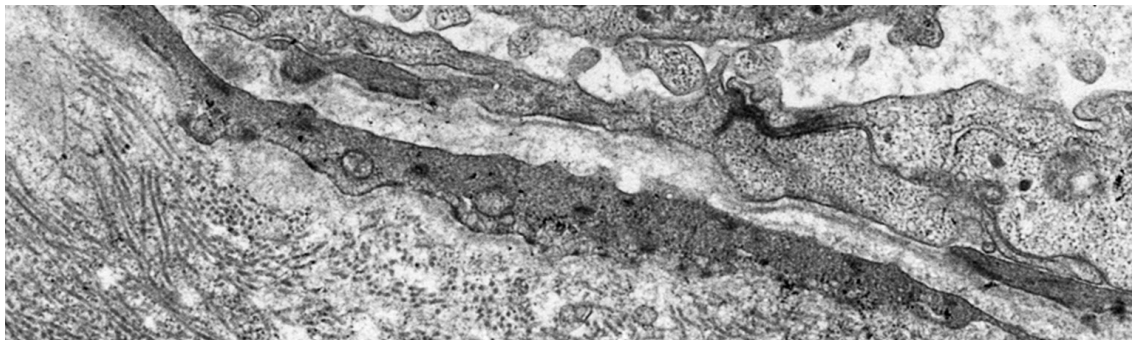

ISMB NEWSLETTER

August 2011

Dear ISMB members,

I trust you are making the most of your summer/winter in your respective hemispheres.

First and foremost, a big thankyou to Jamie Fitzgerald for all his sterling work in putting together the ISMB newsletter over the past several years. Communication is so important for the ISMB, and we are really grateful to Jamie for helping to keep the matrix biology community informed in this way. Jamie would like to pass on the baton, and we are delighted that Barbara Brodsky has stepped up to the plate for future editions. Barbara has recently become a new member of ISMB Council, along with Sylvie Ricard-Blum and John Whitelock, and Johanna Myllyharju has been re-elected. We also have a new vice-president, Shireen Lamandé, who will take over from me in autumn 2012. Welcome on board everyone ! And thanks also to members of Council whose terms finished this year – Florence Ruggiero and Dieter Rienhardt.

ISMB is particularly pleased to support young scientists. This year, six international travel grants were awarded to help students and postdocs participate in top class meetings with a focus on matrix biology. I had the privilege of attending the Collagen Gordon Conference this summer, which was marked not only by the excellent quality of the science but also by the presence of large numbers of young scientists who also took part in the Gordon-Kenan Research Seminar the preceding weekend. It was great to see so many new faces on the scene, which also goes to show that matrix biology is very much alive and kicking!

This spring there was a very special occasion for matrix biology, the symposium in Boston organized in honour of Bjorn Olsen, one of the truly outstanding contributors to the field. Again the meeting was marked by the excellent science, but also by the large number of warm tributes to Bjorn from friends and colleagues over the years. For me the lesson from this meeting was clear. With all the current domination of “impact indicators”, sometimes we lose track of what’s really important in our work. The example of Bjorn Olsen is to focus on doing great science; all the rest will follow.

At a recent meeting of ISMB Council, we discussed the idea of setting up a resource centre for matrix biologists, to include for example experimental protocols and techniques used by members. This would appear on the ISMB web site and should be particularly helpful to newcomers to the field. As for other ISMB activities, as I see it our role is to provide the global dimension to matrix biology. This means complementing the activities of national and regional societies, with a focus on supporting international exchange. Your thoughts on these matters as well as any other ideas would be most welcome. Please contact me at: d.hulmes@ibcp.fr.

Warm regards,

David Hulmes
President ISMB

From the Secretary's/treasurer's desk

Dear members of ISMB,

Many of you know me only because of my regular reminders to make your financial contribution to the society. Some members feel that most of my reminders are excessively bureaucratic, patronising, pig-headed, unfriendly, or outright rude and, therefore, counterproductive. I have been severely reprimanded for this and I humbly promise to get my act together and to behave myself. But, you know what? Other members tell me that they consider my "injections de rappel" as "friendly" and "funny" messages and as particularly enjoyable reading. One (former) member even stated that he didn't pay his duty because, otherwise, he would no longer receive these so hilarious and entertaining communications. That was the most amazing excuse for not paying I have ever heard. Nice try!

Take-home message 1: Everybody's darling is everybody's "Depp" (colloquial Bavarian for "fool"). This is a quotation of former (and very controversial) German politician Franz Josef Strauss (mind you, not Strauss-Kahn!). One of the few things I did agree with him.

Take-home message 2: If you have not already done so, you better pay your membership (https://ismb.uni-muenster.de/PayMembFee.php) if you don't want to receive another "howler" from the ISMB treasurer!

That is, if you are not one of these privileged and pampered individuals who enjoy a complimentary membership 2011/2012. This was recently created at a meeting of the ISMB-Council and made available for all attendees of this year's Gordon Conferences on Collagen and Elastin, as well as the MBSANZ meeting in Sydney in October.

And, maybe, also everybody who comes to the Final Symposium of the SFB 492 "Extracellular Matrix". If you don't know what this is about you should look up: http://sfb492.uni-muenster.de/index_en.html. If you click on the coloured poster you will eventually know everything about why you need to join us in Münster in October. I can promise that it will be worthwhile.

Take-home message 3: Imagination is endless and needed for good science (and also for excuses for any form of misbehaviour). With a healthy dose of it, matrix biology (with or without capitals) also will thrive and have a glamorous future. ISMB will do its best to help this cause. Having said this: Barbara Brodsky, our new Newsletter editor, will be looking forward to imaginative contributions by you all.

And I may add my thanks to you, Jamie, for your great and successful efforts as our past Newsletter editor.

Peter Bruckner
ISMB Treasurer/Secretary

Meeting Announcements

Extracellular Matrix: Biogenesis, Assembly and Cellular Interactions
SFB 492 Final Symposium, Münster, Germany
October 6-8, 2011

The Collaborative Research Center 492 "Extracellular Matrix: Biogenesis, Assembly und Cellular Interactions" headed by Peter Bruckner (Coordinator), Lydia Sorokin (Deputy Coordinator) and Christian Klämbt (Deputy Coordinator) will hold its final symposium "Extracellular Matrix and Cellular Interactions in Tissue Development, Function and Pathology" in October 2011.

Confirmed speakers
■ADAMS, Ralf (Münster)
■AEBI, Ueli (Basel)
■BRUCKNER-TUDERMAN, Leena (Freiburg)
■HOHENESTER, Erhard (London)
■HYNES, Richard (Boston)
■KARSENTY, Gerard (New York)
■OLSEN, Björn (Boston)
■OVERALL, Chris (Vancouver)

■PAULSSON, Mats (Köln)
■RÜEGG, Markus (Basel)
■VESTWEBER, Dietmar (Münster)
■WERNER, Sabine (Zürich)

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The Freiburg Institute of Advanced Studies (FRIAS), School of Life Sciences - LifeNet, will organize the following conference to which all matrix biologists are cordially invited.

“Integrative ‘Omics’ Approaches to Disease Mechanisms - from emerging technologies to new perspectives”

Date: October 9-11, 2011
Location: Schloss Reinach, Freiburg-Munzingen, Germany

For more information, please see: www.frias.uni-freiburg.de/omicsdisease

A meeting will be held in 2012 (March 29-30) in Paris (France) to celebrate the **50th anniversary of the French Society for Extracellular Matrix Biology.**

The preliminary programme is available on the Web site of the Society (http://www.sfbmec.fr/).
Contact: s.ricard-blum@ibcp.fr

August 25th to 29th 2012 the XXIIIrd FECTS meeting will take place in Katowice, Poland.
Chaired by Aleksander Sieroń (alsieron@sum.edu.pl).

Matrix Research Update

Monitoring human mesenchymal stromal cell differentiation by electrochemical impedance sensing
Michael Angstmann, Irena Brinkmann, Karen Bieback, Dirk Breitkreutz, and Christian Maercker
Cytotherapy, posted online on May 30, 2011

Background aims. For their wide mesodermal differentiation potential, mesenchymal stromal/stem cells (MSC) are attractive candidates for tissue engineering. However, standardized quality control assays monitoring differentiation that are non-invasive and continuous over time are lacking. Methods. We employed a non-invasive assay, using two different systems, to discriminate osteogenic and adipogenic differentiation of MSC by monitoring impedance. Fibroblasts and keratinocytes served as non-specific controls. Impedance profiles were recorded comparing MSC from bone marrow and adipose tissue, either non-induced or induced for osteogenesis or adipogenesis, for 5-14 days, and correlated with differentiation markers assessed by reverse transcription-quantitative polymerase chain reaction and Western blot. Additionally, differentiation modulating effects of extracellular matrix components were analyzed. Results. Adhesion and

growth-related impedance profiles of non–induced MSC roughly resembled those of fibroblasts, whereas keratinocytes differed significantly. Distinct from that, osteogenic induction of MSC revealed initially rapid and continuously rising impedance, corresponding to mineralized calcium matrix formation. Conversely, adipogenic induction caused shallower initial slopes and eventually declining profiles, corresponding to more compact, adipocyte-like cells with numerous lipid vacuoles. Pre-coating with either collagen type I or IV apparently favored osteogenesis and fibronectin adipogenesis. Impedance recordings correlated well with the extent of differentiation evaluated by histochemical staining and protein and gene expression. Conclusions. Overall, our data demonstrate that impedance profiling offers a basis for standardized real-time, non-invasive high-throughput screening of MSC properties. It enables further testing of the influence of diffusible factors or extracellular matrix composites on MSC differentiation or maintenance of stemness, thus substantiating therapeutic application.

A Fibronectin-Independent Mechanism of Collagen Fibrillogenesis in Adult Liver Remodeling
KEI MORIYA, EUNNYUNG BAE, KAZUHISA HONDA, KEIKO SAKAI, TAKEHISA SAKAGUCHI, IKUKO TSUJIMOTO, HIROSHI KAMISOYAMA, DOUGLAS R. KEENE, TAKAKO SASAKI, and TAKAO SAKAI¶
GASTROENTEROLOGY 2011;140:1653–1663

BACKGROUND & AIMS: Fibrosis is an abnormal extension of the wound healing process that follows tissue damage; it is involved in pathogenesis in a variety of chronic diseases. The formation of extracellular matrix is an essential response in wound healing. Although it has been proposed that collagen organization and assembly depend on the fibronectin matrix in culture, the contribution of fibronectin to these processes remains to be defined in vivo.
METHODS: We generated a conditional, fibronectin-deficient mouse model of liver injury and explored whether fibronectin would be a suitable target for preventing extensive collagen deposits and scar formation that could lead to liver fibrosis.
RESULTS: The lack of fibronectin did not interfere with reconstruction of collagen fibril organization in response to liver injury. Signaling by transforming growth factor- and type V collagen were required for collagen fibrillogenesis during remodeling of adult liver tissue.
CONCLUSIONS: Transforming growth factor- and type V collagen are targets for regulating the initial fibrogenic response to liver damage.

Conversion of Mechanical Force into TGF-b-Mediated Biochemical Signals
Toru Maeda, Tomoya Sakabe, Ataru Sunaga, Keiko Sakai, Alexander L. Rivera, Douglas R. Keene, Takako Sasaki, Edward Stavnezer, Joseph Iannotti, Ronen Schweitzer, Dusko Ilic, Harihara Baskaran, and Takao Sakai
Current Biology (2011) 21, 933–941

Mechanical forces influence homeostasis in virtually every tissue [1, 2]. Tendon, constantly exposed to variable mechanical force, is an excellent model in which to study the conversion of mechanical stimuli into a biochemical response [3–5]. Here we showin amousemodel of acute tendon injury and invitro that physical forces regulate the release of active transforming growth factor (TGF)-b from the extracellular matrix (ECM). The quantity of active TGF-b detected in tissue exposedto various levels of tensile loadingcorrelates directly with the extent of physical forces. At physiological levels, mechanical forces maintain, through TGF-b/Smad2/3-mediated signaling, the expression of Scleraxis (Scx), a transcription factor specific for tenocytes and their progenitors. The gradual and temporary loss of tensile loading causes reversible loss of Scx expression, whereas sudden interruption, such as in transection tendon injury, destabilizes the structural organization of the ECM and leads to excessive release of active TGF-b and massive tenocyte death, which can be prevented by the TGF-b type I receptor inhibitor SD208. Our findings demonstrate a critical role for mechanical force in adult tendon homeostasis. Furthermore, this mechanism could translate physical force into biochemical signals in a much broader variety of tissues or systems in the body.

2010 Matrix Biology Society of Australia and New Zealand Annual Meeting: Session Reports

1) MBSANZ / ANZBMS Free Communications.
Session Chair: Julian Quinn

The session included several presentations I found of particular interest, including two that investigated factors that have recently emerged as significant regulators of bone cell interactions, namely purinergic receptors (Melissa Barron) and the ephrin family of membrane bound ligands (Miraleza Takyar). Erik Thompson also provided evidence on the role tumour stromal cells may play in breast cancer metastasis and invasion of bone through their production of MMP13. However, to me the most surprising data was presented by Liliana Endo-Muñoz, who studied the influence of osteoclasts in metastatic osteosarcoma. Osteoclasts are macrophage-like cells specialised to break down bone and in most bone pathologies they are the villain, therapies usually focussing on stopping or killing them. Cancer invasion of bone in articular requires osteoclast recruitment and activation. This study showed that in a model of osteosarcoma (an aggressive bone- derived cancer), reducing osteoclast numbers increased osteosarcoma metastasis to lung, while increasing osteoclasts decreased metastasis. This provides some justification for exploring pro-osteoclastic treatments in osteosarcoma patients. As osteosarcoma cells are osteoblast-like it may also throw light on possible osteoclast-derived stimuli that influence osteoblasts, which are much sought.

2) Matrix Remodelling in Development & Disease.
Session Chair: Chris Little

This session brought together a nice mix of international experts and young scientists, whose talks all presented a slightly different look at matrix remodelling. Rather than the simple view of enzymes cleaving structural matrix proteins with resultant tissue turnover, in all of the presentations the enzymes or enzymatic events discussed regulated the metabolism/activity of the cells in the tissue. Suneel Apte, who despite his international acclaim described himself as simply a “citizen scientist”, revealed how ADAMTS and ADAMTSL proteins regulate microfibril formation through their interaction with fibrillin- 1 and LTBP1, with resultant changes in active TGFb and cellular activity. Interestingly these effects were largely independent of enzymatic activity. In contrast, Dan McCulloch described how versican proteolysis by ADAMTS produced a pro-apoptotic G1-metabolite. This versican fragment plays a significant role in limb morphogenesis, skeletal muscle development and muscle regeneration. Charlie Pagel then told us about the extracellular effects of granzyme B, where its ability to cleave osteopontin altered myogenic cell attachment, potentially regulating muscle repair at sites of inflammation. Continuing the theme of inflammation-induced proteolysis regulating cellular metabolism, Miriam Jackson described the role of PAR-2 and APC in chondrocyte and bone changes in arthritis, while Moonsung Jung showed that mast cell proteases generate pro-angiogenic fragments of perlecan.

3) ECM Proteins & the Musculoskeletal System.
Session Chair: Charles Pagel

The last session of the meeting had two main themes, muscular dystrophies and the functional effects of perlecan. Eric Hoffman from the Children’s National Medical Centre in Washington DC began the session by describing a model for the disease mechanism of Duchenne muscular dystrophy, based on a loss of synchronisation of tissue regeneration. He also described experiments using glucocorticoid derivatives, which lack the ability to bind gluccocorticoid receptors, to improve tissue remodelling without inducing cytokine expression. Peter Currie from Monash University described the use of zebra fish models of Duchenne and congenital muscular dystrophies (CMD). In particular Peter emphasised the role of ECM failure in the pathology of laminin-deficient CMD, and the possibility of ECM augmentation to improve muscle fibre survival in these conditions. Leona Tooley from the MCRI continued the muscular dystrophy theme by describing the deleterious effects of a mutation in the VWA domain of collagen VI from a patient with Ullrich CMD on the structure and folding of this domain and hence the inability of mutant collagen tetramers to form microfibrils. The second theme of the session was introduced by Cindy Shu from the Raymond Purves Research Laboratory who described the effect of deletion of exon 3 of the perlecan gene on collagen fibril formation in the tail tendons of mice. The decreased diameter of collagen fibrils at 12 weeks of age in null mice was interpreted as resulting from a loss of integration or stabilization of the fibrils by perlecan HS chains. The session and the meeting was brought to a close by a presentation on endothelialisation of and platelet adhesion to perlecan coated surfaces by Megan Lord of the University of NSW. The findings of this study were interpreted as showing differential roles for the HS and protein core domains of perlecan in these processes and suggesting that perlecan coating of synthetic vascular grafts may have a positive effect on the long term success of these grafts.

Jobs

CALL for GROUP LEADERS, LYON, FRANCE
The Institut de Génomique Fonctionnelle de Lyon (IGFL) currently hosts 10 groups and is hiring 8 additional groups in line with its scientific expansion. See flyer at the end of the Newsletter for more details.

A Post-doctoral position (E13) is available immediately in the department of Pathobiochemistry at the Westfälisches Wilhelm's University in Münster, Germany,

The successful candidate will investigate the structure and function of the neurovascular unit. Focus will be on cell-extracellular matrix interactions in the NVU and their contribution to the specialized properties of the blood-brain barrier, as well as their role in immune cell infiltration in neuroinflammatory situations and in stroke. Familiarity with immunofluorescence microscopy and imaging technologies, immunology, vascular biology, and/or handling of mice are advantages. The position is available for 2 years and is financed through a EU co-operative project; the successful candidate is expected to participate in network activities, which include conferences, workshops and collaborative work with other network partners. The work will be carried out in the laboratory of Prof. Lydia Sorokin, for more information please see www.sorokinlab.uni-muenster.de.

Please send CV, list of publications, and the names of two referees to holtkel@uni-muenster.de.

Post-doctoral positions in cell-ECM research are available in the laboratories of Professor Taina Pihlajaniemi and Dr. Lauri Eklund at the Oulu Center for Cell-Matrix Research, Institute of Biomedicine and Biocenter Oulu, University of Oulu. The groups belong to the Centre of Excellence in Cell-Extracellular Matrix Research during 2012-2017.

The Pihlajaniemi group´s interests relate to the roles of the pericellular environment in supporting cell function, growth and differentiation. The post-doctoral project will address the roles of collagens and their regulatory domains in organ development, control of cell fate and pathological processes. The work includes use of mouse models and cultured cells. The Eklund group´s interests relate to endothelial cell interactions with the extracellular matrix, normal vascular morphogenesis and vascular anomalies. We use biochemical, cell biological and tissue culturing methods accompanied by mouse models.

The positions are available for 2-4 years. The salary will be based on the job demand level 5 of the salary system for teaching and research staff in use at the University of Oulu. In addition, on the basis of personal work performance up to 46.3% of the job demands level can be paid, the overall salary range being 2714,54 - 3971,37 € per month.

We are looking for candidates with a PhD degree in life sciences or MD-PhD degree. Experience relevant to the projects is required.

Applications should be sent to University of Oulu, Kirjaamo/Office of Registrar PO Box 8000, FI-90014 University of Oulu. Applications will not be returned. Closing date for applications is September 16, 2011. The envelope shall be clearly marked with the reference "Post-Doc in Cell-ECM Research".The following documents must be attached to the application:
1) A brief curriculum vitae.
2) The list of publications in international peer-reviewed journals.
3) Names and addresses of two referees.
4) A brief description of research interests.

For further information, please contact Taina Pihlajaniemi (tel. 358-(0)8-537 6100, e-mail: taina.pihlajaniemi(at)oulu.fi) or Lauri Eklund (+358-(0)8-814 6073, lauri.eklund(at)oulu.fi

Institut de Génomique Fonctionnelle de Lyon

CALL for GROUP LEADERS, LYON, FRANCE

The *Institut de Génomique Fonctionnelle de Lyon* (IGFL) currently hosts 10 groups and is hiring 8 additional groups in line with its scientific expansion. The IGFL is run by the ENS de Lyon, CNRS, and Université Lyon 1. The Institute is relocating, early 2012, to occupy a newly commissioned 3200 m2 building, within a multidisciplinary campus. The new location will host approximately 200 scientists and staff.

Current and future research at the IGFL focuses on integrative biology, developmental biology, evolutionary sciences and bioinformatics/modeling at the genomic scale. IGFL groups will access state-of-the-art core services, including high throughput sequencing technologies, imaging, transgenic animal facilities (mouse, fish, drosophila), paleogenomics, bioinformatics, mass spectrometry, proteomics, FACS sorting, histology and electron microscopy.

The IGFL proposes three distinct calls for outstanding group leaders:

#1-2011 Non-thematic call
Open call for group leaders addressing whole-organism level research, with a special focus on animal-based research falling within the scientific mission of the Institute.

#2-2011 Developmental biology
In order to reinforce this research axis at the IGFL, this call targets group leaders investigating developmental mechanisms using established animal models (eg drosophila, zebrafish, mouse etc).

#3-2011 Systems biology / bioinformatics
The IGFL is also seeking to recruit groups performing research on whole genome data analysis, gene regulatory networks, modeling of biological processes *etc*... in order to significantly contribute to our functional understanding of genome structure and evolution. These groups are highly encouraged to collaborate with experimental (wet) labs.

Applications (in English, specifying the call reference in the subject line) should include curriculum vitae, a short description of achievements and records of self-financing, a proposed research program of *approx.* 10 pages and contact details for 3 professional references. The deadline for applications is July 17th 2011. Please send as a single PDF named LASTNAME_IGFL_2011.pdf to direction.igfl@ens-lyon.fr Enquiries should also be directed to this address.

http://igfl.ens-lyon.fr/

Westfälische
Wilhelms-Universität
Münster

SFB 492 Final Symposium

Extracellular Matrix and Cellular Interactions in Tissue Development, Function and Pathology

October 6-8 2011

Ralf Adams
Ueli Aebi
Leena Bruckner-Tuderman
Erhard Hohenester
Richard Hynes
Gerard Karsenty
Christian Klämbt
Björn Olsen
Chris Overall
Mats Paulsson
Markus Rüegg
Dietmar Vestweber
Sabine Werner

Institute for Physiological Chemistry and Pathobiochemistry
University of Münster
Waldeyerstrasse 15
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more information and registration under http://sfb492.uni-muenster.de

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