

FEBS Advanced Lecture Course

Matrix Pathobiology, Signaling and Molecular Targets

Kos, 26 September - 1 October, 2013

Program: Lectures (L), Selected Talks (ST), Posters (P)

Thursday, 26 September

14:30-16:00 Registration

Chairpersons: Vince Hascall and Nikos Karamanos

LECTURES / TUTORIALS - PROTEOGLYCANS (L1-L4)

16:00-16:20 **J. Phillips** (University of California, San Francisco, USA)

Proteoglycans in the brain tumor microenvironment

16:20-16:40 **A. Theocharis** (University of Patras, Greece)

Roles of serglycin in inflammation and cancer

16:40-17:10 **S. Pals** (Academic Medical Center, Amsterdam, Netherlands)

Syndecan-1 is crucial for multiple myeloma growth and controls Bortezomib sensitivity and side-population size

17:10-17:30 **S. Wilcox-Adelman** (University of Massachusetts Medical School, USA)

Syndesmos-a partner in syndecan-4 mediated cell migration

17:30-18:00 Coffee break

SELECTED TALKS (ST1-ST6)

18:00-18:10 **T. Szatmári** (Karolinska Institute, Sweden)

Syndecan-1 overexpression inhibits SULF1 and modulates heparan sulfate chain composition in malignant mesothelioma cells

18:10-18:20 **K. Pietraszek** (Université de Reims, France)

Effect of Lumcorin, a lumican-derived peptide, on the melanoma cell growth and invasion

18:20-18:30 **K. Herum** (Institute for Experimental Medical Research, Norway)

Syndecan-4 promotes myocardial stiffness by regulating myofibroblast differentiation and extracellular matrix structure in response to pressure overload

18:30-18:40 **G. Heidari-Hamedani** (Karolinska Institutet, Stockholm, Sweden)

Syndecan-1 overexpression on mesothelioma cells affects angiogenesis-related factors

18:40-18:50 **A. Friedl** (University of Wisconsin School of Medicine and Public Health)

Stromal syndecan-1, matrix alignment and breast cancer invasion

18:50-19:00 **F. Mundt** (Karolinska Institutet, Stockholm, Sweden)

Syndecan-1 as a soluble biomarker for human malignancies

19:00-19:15 Welcome Addresses by the Chairman and members of the Organizing Committee

FEBS activities

OPENING LECTURE (L5)

19:15-20:00 **J. Couchman** (University of Copenhagen, Denmark)

Syndecan proteoglycans: specificity and redundancy in signaling to the cytoskeleton

20:30 Welcome Reception

Friday, 27 September

Chairperson/discussion leader: Evi Heldin

LECTURES / TUTORIALS - GLYCOBIOLOGY (L6-L8)

- 9:00-9:30 **P. Heldin** (Ludwig Institute for Cancer research, Uppsala, Sweden)
HAS2 and CD44 signaling in breast cancer tumorigenesis
- 9:30-09:50 **J. Turnbull** (University of Liverpool, UK)
Exploiting the heparan sulphate interactome: from biology to synthetic chemistry to therapeutic applications
- 09:50-10:20 **K. Sugahara** (University of Hokkaido, Japan)
Mechanism of glycosaminoglycan-mediated tumor metastasis-Novel role for RAGE
- 10:20-10:30 SELECTED TALK (ST7)
K. Basu (Ludwig Institute for Cancer research, Uppsala, Sweden)
Hyaluronan affects CD44-iASPP cooperation in mammary epithelial cells
- 10:30-11:00 Coffee break

Chairperson/discussion leader: Liliana Schaefer

LECTURES/TUTORIALS - ECM IN IMMUNE REGULATION (L9-L11)

- 11:00-11:20 **A. Day** (The University of Manchester, UK)
The role of ECM in immune regulation: new insights for Age-related Macular Degeneration
- 11:20-11:50 **L. Schaefer** (Goethe-Universität, Frankfurt, Germany)
Small leucine-rich proteoglycans orchestrate receptor crosstalk during inflammation
- 11:50-12:10 **S. Chakravarti** (Johns Hopkins School of Medicine, USA)
Functions of lumican in immune response
SELECTED TALKS (ST8)
- 12:10-12:20 **M-V. Nastase** (Frankfurt, Germany)
The matrix component biglycan triggers the crosstalk between macrophages and podocytes during renal inflammation
- 12:20-14:00 Lunch
- 14:00-16:30 **Poster session (I) (P1-P24)/ Discussion groups (I)**

Chairperson/discussion leader: Donald Gullberg

LECTURES/TUTORIALS - CELL SURFACE RECEPTORS (L12-L14)

- 16:30-17:00 **D. Gullberg** (University of Bergen, Norway)
Novel aspects of collagen-binding integrins
- 17:00-17:20 **J. Ivaska** (Turku Centre for Biotechnology, University of Turku, Finland)
Integrin activity and filopodia regulate invasion and matrix remodeling in cancer
- 17:20-17:40 **P. Bonaldo** (University of Padova, Italy)
Collagen VI regulates muscle stem cell homeostasis and regeneration
SELECTED TALKS (ST9-ST10)
- 17:40-17:50 **KV. Engebretsen** (Oslo University Hospital & University of Oslo, Norway)

Inhibition of TGF- β signaling in left ventricular pressure overload leads to eccentric remodeling and reduced signs of heart failure, possibly due to reduced collagen content and LOX activity

17:50-18:00 **I. Kaur** (University of Oulu, Oulu, Finland)

A possible role for Collagen XVIII N-terminal domain in the control of myeloid leukemia cells growth

18:00-18:20 Coffee Break

Chairperson/discussion leader: David Birk

LECTURES/TUTORIALS - MATRIX ORGANIZATION (L15-L16)

18:20-18:50 **D. Birk** (University of South Florida, USA)

Regulatory roles of small leucine-rich proteoglycans in matrix assembly

18:50-19:10 **D. Vynios** (University of Patras, Greece)

ADAMTSs in cancer

19:10-20:30 **Session devoted to the memory Dick Heinegård (L17-L18)**

19:10-19:40 **V. Hascall** (Cleveland Clinic Foundation): Remembering Dick

19:40-20:30 **K. Rubin & C. Ryden** (Lund, Sweden): The Matrisome its integration into pathologies

20:30 Dinner

Saturday, 28 September

Chairperson/discussion leader: Alberto Passi

INTERACTIONS AND FUNCTIONS OF MATRIX MACROMOLECULES (L19-L20)

9:00-9:30 **V. Hascall** (Cleveland Clinic, USA)

Hyaluronan, Chondroitin Sulfate and Heparin: Dueling GAGs in hyperglycemic proliferating cells

9:30-10:00 **A. Passi** (University of Insubria, Italy)

Hyaluronan synthesis and monocyte adhesion in human endothelial cells
SELECTED TALKS (ST11-ST13)

10:00-10:10 **A. Ahamed** (University of Eastern Finland, Kuopio, Finland)

Rab10 mediated early endocytosis of HAS3 regulates hyaluronan synthesis and cell adhesion

10:10-10:20 **D. Vigetti** (University of Insubria, Italy)

Role of natural antisense HAS2-AS1 RNA in the regulation of hyaluronan synthesis

10:20-10:30 **R. Dawadi** (University of Tromsø, Norway)

Matrix Metalloprotease-9/Chondroitin Sulphate Proteoglycan Complexes

10:30-11:00 Coffee break

Chairperson/discussion leader: Mauro Pavao

CELL RECEPTORS SIGNALING AND ECM BASED NANOTECHNOLOGY (L21-L23)

11:00-11:30 **P. Friedl** (Radboud Univ, Netherlands – Anderson Cancer Center, USA)

Tissue guidance of cancer invasion: mechanisms, limits and implications

11:30-12:00 **A. Grodzinsky** (MIT Center for Biomedical Engineering, USA)

Nanomechanics of the Extracellular Matrix in Health and Disease

12:00-12:30 **M. Pavao** (Universtiy of Rio de Janeiro, Brazil)

Effect of Heparin Analogs from Marine Invertebrates on Metastasis,
Thrombus Formation and Inflammatory Bowel Disease

12:30-14:00 Lunch

14:00-17:00 **Poster session (II) P25-P50/ Discussion groups (II)**

16:30-17:00 Coffee

Chairperson/discussion leader: Ralph Sanderson

ECM AND TUMOR MICROENVIRONMENT - CANCER (L24-L28)

17:00-17:30 **R. Sanderson** (University of Alabama at Birmingham, USA)

Role of heparanase in regulating the tumor microenvironment

17:30-17:50 **I. Vlodaysky** (Cancer and Vascular Biology Research Center, Haifa, Israel)

Rational design of heparanase inhibitors for cancer therapy

17:50-18:10 **I. Kovalsky** (Semmelweis University, Hungary)

Cancer associated fibroblast, the key player in matrix remodeling

18:10-18:30 **M. Götte** (University of Münster, Germany)

Modulation of matrix- and cytokine-dependent signaling by Syndecan-1 affects breast cancer metastasis, stemness, and resistance to radiotherapy

18:30-18:50 **D. Ferning** (University of Liverpool, UK)

The structure and functions of the cell microenvironment: from systems biology to single molecule imaging

SELECTED TALKS (ST14-ST17)

18:50-19:00 **M. Gross-Cohen** (Cancer and Vascular Biology Research Center, Israel)

Heparanase 2 expression is decreased in human cancer and attenuates lymphangiogenesis

19:00-19:10 **Ch. Gialeli** (University of Patras, Greece)

Dynamic interplay between normal endothelium and breast cancer cells via altered expression of matrix molecules

19:10-19:20 **E. Lombardi** (The National Cancer Institute, Aviano, Italy)

NG2/CSPG4 control of cellular interactions under flow mimicking extravasation conditions

19:20-19:30 **M. Pinto** (INEB- Institute for Biomedical Engineering, UPorto)

Decellularizing colorectal tumours: dissecting the role of macrophages and extracellular matrix for tumour progression

Extra talk

19:30-19:50 **T. Loukeris** (Institute of Molecular Biology and Biotechnology, Crete, Greece)

Evidence for a protective role of the mosquito Matrix Metallo-Protease 1 (AgMMP1) during Plasmodium oocyst development

21:00 Dinner (Kipriotis Panorama Hotel & Suites, Main Restaurant)

Sunday 29, September

Chairperson/discussion leader: Renato Iozzo

MATRIX PATHOBIOLOGY (L29-L32)

9:00-9:30 **R. Iozzo** (Thomas Jefferson University, USA)

Proteoglycan regulation of cancer growth and angiogenesis

9:30-10:00 **J. Esko** (University of California, San Diego, USA)

Proteoglycan-associated receptors

10:00-10:30 **J. Filmus** (Sunnybrook Research Institute, Toronto, Canada)

The role of Glypicans in the regulation of Hedgehog signaling

- 10:30-11:00 **C.-H. Heldin** (Ludwig Vancer Institute, Sweden)
 Signaling via receptors for PDGF and TGF β – possible targets in tumor treatment
 SELECTED TALKS (ST18-ST20)
- 11:00-11:10 **E. Åhrman** (Lund University, Sweden)
 Novel COMP neoepitopes identified from patients with joint diseases by immune-affinity chromatography and mass spectrometry
- 11:10-11:20 **U. Lindert** (University Children's Hospital Zurich, Zurich, Switzerland)
 Molecular consequences of defective SERPINH1 in Osteogenesis Imperfecta
- 11:20-11:30 **A. Fullár** (Hepatocarcinogenesis in matrilin-2 knock out mice)
 Hepatocarcinogenesis in matrilin-2 knock out mice
- 11:30-13:30 **Speakers corner (I)**
- 13:30-21:30 Lunch box - Excursion tour

Monday, 30 September

Chairperson/discussion leader: Lena Kjellen

GLYCOBIOLOGY AND METABOLIC REGULATION OF ECM MOLECULES (L33-L35)

- 9:00-9:30 **L. Kjellen** (University of Uppsala, Sweden)
 Heparin and heparan sulfate biosynthesis - Heparan sulfate and embryonic development
- 9:30-10:00 **M. Maccarana** (University of Lund, Sweden)
 Biosynthesis and functions of dermatan sulfate
- 10:00-10:30 **N. Karamanos** (University of Patras, Greece)
 Intracellular cross-talk in breast cancer and bone metastasis: pharmacological targeting at the level of matrix molecules
 SELECTED TALKS (ST21)
- 10:30-10:40 **E. Karousou** (University of Insubria, Italy)
 Oxidized LDL affects hyaluronan synthesis in human aortic smooth muscle cells
- 10:40-11:00 Coffee break

Chairperson/discussion leader: John Couchman

SIGNALING AND DISEASE MOLECULAR TARGETING I (L36-L37)

- 11:00-11:30 **K. Dobra** (Karolinska Institute, Medical School, Sweden)
 Signaling pathways regulated by syndecan-1 in malignant mesothelioma
- 11:30-12:00 **D. Nikitovic** (University of Crete, Greece)
 Hormonal regulation of bone cell ECM organization-effects on cell functions
 SELECTED TALKS (ST22-ST24)
- 12:00-12:10 **A. Kumar** (Münster, Germany)
 Differential role for HS3ST2 in modulating breast cancer cell invasiveness: A molecular mechanism mediated by protease expression via MAP kinase and WNT pathways
- 12:10-12:20 **M. Baghy** (Semmelweis University, Hungary)
 Decorin interferes with platelet-derived growth factor receptor signaling in experimental hepatocarcinogenesis
- 12:20-12:30 **M. Farshchian** (University of Turku, Finland)

EphB2 receptor modulates gene expression signature involved in migration and invasion of cutaneous squamous cell carcinoma

12:30-14:00 Lunch

14:30-15:00 Coffee break

14:00-16:00 **Poster Session (III) P51-P73 / Discussion groups (III)**

16:00-17:00 **Speakers corner (II)**

Chairperson/discussion leader: Themis Kyriakides

SIGNALING AND DISEASE MOLECULAR TARGETING II (L38-L40)

17:00-17:30 **T. Kyriakides** (Yale University, USA)

Thrombospondin-2 and the eNOS/Akt axis in vascular remodeling

17:30-17:50 **E. Papadimitriou** (University of Patras, Greece)

Receptor protein tyrosine phosphatase beta/zeta is a regulator of VEGF induced endothelial cell migration

17:50-18:20 **D. Kletsas** (NCSR "Demokritos", Greece)

Cellular senescence, DNA damage and role in tissue homeostasis

IUBMB LECTURE (L41)

18:20-19:00 **IUBMB Metal Award to be presented to Professor Thomas Wight by the IUBMB congress officer Dr. S. Gonos**

19:00-19:45 **T.N. Wight** (University of Washington, USA)

Versican and the Control of Cell Phenotype in Disease

21:00 Dinner (Traditional restaurant at the center Kos town)

Tuesday, 1 October

Chairperson/discussion leader: Jan-Olof Winberg

MATRIX REGULATION IN HEALTH AND DISEASE (L42 – L47)

9:00-9:30 **V.-M. Kähäri** (University of Turku, Finland)

Proteolytic control of cutaneous wound repair and cancer progression

9:30-10:00 **J.-O. Winberg** (University of Tromsø, Norway)

Nature and properties of matrix metalloprotease-9/chondroitin sulphate proteoglycan complexes

10:00-10:30 **B.Turk** (J. Stefan Institute, Ljubljana, Slovenia)

Extracellular cysteine cathepsins: more than extracellular matrix degradation

10:30-10:50 **N. Shworak** (Geisel School of Medicine at Dartmouth, USA)

What can a mouse teach us about cardiovascular disease risk

10:50-11:20 **S. Gonos** (NHRF, Athens, Greece)

Proteasome activation as a novel anti-aging strategy

11:20-11:40 **J.-P. Li** (University of Uppsala, Sweden)

Implications of heparan sulfate in amyloidosis

11:40-12:00 **Closing remarks / Young Scientist Awards**

12:00-13:00 Farewell / Departure