

5th FEBS Advanced Lecture Course

Matrix Pathobiology, Signaling and Molecular Targets
Rhodes, September 24–September 29, 2015

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

Thursday, 24 September

13:45-15:45 Registration

Chairperson/discussion leader: John Couchman

GENERAL LECTURES / TUTORIALS (L1 - L6)

- 15:45-16:05 **A. Theocharis** (*University of Patras, Greece*)
Overview of extracellular matrix: structure and functional properties
- 16:05-16:10 Discussion
- 16:10-16:30 **J. Couchman** (*University of Copenhagen, Denmark*)
Proteoglycans: Structure, pathobiology, and signaling
- 16:30-16:35 Discussion
- 16:35-16:55 **P. Heldin** (*University of Uppsala, Sweden*)
Insights into the function of glycans
- 16:55-17:00 Discussion
- 17:00-17:30 Coffee break
- 17:30-17:50 **J. -O. Winberg** (*University of Tromsø, Norway*)
Matrix Metalloproteinases: biological significance in health and disease
- 17:50-17:55 Discussion
- 17:55-18:15 **M. Franci** (*University of Bologna, Italy*)
Collagen and functional implications
- 18:15-18:20 Discussion
- 18:20-18:40 **D. Gullberg** (*University of Bergen, Norway*)
ECM cell surface receptors
- 18:40-18:45 Discussion

Chairpersons: Nikos Karamanos & Renato Iozzo

- 18:45-19:00 Welcome Addresses by
- Chairman and members of the Organizing Committee
 - Rector of the University of Patras
 - Chair of the FEBS Advanced Courses Committee
 - President of Hellenic Society of Biochemistry and Molecular Biology

IUBMB LECTURE (L7)

- 19:00-20:00 **H. Nagase** (*University of Oxford, UK*)
The endocytic receptor LRP1 is a master regulator of extracellular levels of ECM-degrading metalloproteinases
Honorary Medal Award conferred to Professor Hideaki Nagase by the Rector of the University of Patras
- 20:00 Welcome Reception

Friday, 25 September

Chairperson/discussion leader: Peter Friedl

LECTURES / TUTORIALS - MATRIX PATHOBIOLOGY (L8-L10)

- 9:00-9:20 **M. Paulsson** (*University of Cologne, Germany*)
How periferibrillar proteins influence collagen secretion and fibril interactions
- 9:20-9:25 Discussion
- 9:25-9:45 **M. Elkin** (*Hadassah-Hebrew University Medical Center, Jerusalem, Israel*)
Tumor-host interactions in pancreatic carcinoma: role of heparanase enzyme
- 9:45-9:50 Discussion
- 9:50-10:10 **P. Friedl** (*Radboud University, Netherlands*)
Tissue niches for collective cancer cell invasion and therapy resistance
- 10:10-10:15 Discussion

SELECTED TALK (ST1)

- 10:15-10:25 **M. Onisto** (*University of Padova, Italy*)
Novel molecular pathways potentially involved in renal fibrosis: role of HIPK2 and Heparanase
- 10:25-10:30 Discussion
- 10:30-11:00 Coffee break

Chairperson/discussion leader: Martin Götte

LECTURES / TUTORIALS - MATRIX PATHOBIOLOGY (L11-L13)

- 11:00-11:20 **T. Wight** (*University of Washington, USA*)
Versican: An enigmatic matrix component and the control of disease cell phenotype
- 11:20-11:25 Discussion
- 11:25-11:45 **M. Götte** (*Muenster University, Germany*)
Interplay of syndecan-1 and heparanase in cancer stem cell function
- 11:45-11:50 Discussion

- 11:50-12:10 **K. Dobra** (*Karolinska University, Stockholm, Sweden*)
The role of syndecan-1 in mesenchymal tumors
- 12:10-12:15 Discussion
- SELECTED TALKS (ST2 - ST5)**
- 12:15-12:25 **E. Regős** (*Semmelweis University, Hungary*)
Syndecan-1 in liver fibrosis and regeneration
- 12:25-12:30 Discussion
- 12:30-12:40 **P. Bouris** (*University of Patras, Greece*)
Tumorigenic role of serglycin in breast cancer cells
- 12:40-12:45 Discussion
- 12:45-12:55 **D. Barbouri** (*University of Patras, Greece*)
Syndecans as key partners in the interaction between breast cancer cells and endothelium
- 12:55-13:00 Discussion
- 13:00-13:10 **M. Farshchian** (*University of Turku, Finland*)
AIM2 promotes progression of cutaneous squamous cell carcinoma
- 13:10-13:15 Discussion
- 13:15-14:45 Lunch
- 14:45-16:30 Poster session (I) (P1-P26)/ Discussion groups (I)

Chairperson/discussion leader: Renato Iozzo

LECTURES / TUTORIALS - MATRIX PATHOBIOLOGY (L14 - L16)

- 16:30-16:50 **R. Iozzo** (*Thomas Jefferson University, USA*)
Novel proteoglycan roles in evoking autophagy independent of nutrient deprivation
- 16:50-16:55 Discussion
- 16:55-17:15 **I. Kovalszky** (*Semmelweis University, Hungary*)
Tumor-stroma interaction of hepatomas with slow or fast proliferation rate
- 17:15-17:20 Discussion
- 17:20-17:40 **K. Forsberg-Nilsson** (*University of Uppsala, Sweden*)
Modeling glioma and targeting the glioma niche
- 17:40-17:45 Discussion

SELECTED TALKS (ST6 - ST8)

- 17:45-17:55 **T. Neill** (*Thomas Jefferson University, USA*)
A new mechanistic link between decorin-evoked Peg3 and TFEB for autophagic induction and angiostasis
- 17:55-18:00 Discussion

- 18:00-18:10 **K. Baghy** (*Semmelweis University, Hungary*)
Decorin expression in human hepatocellular carcinoma
- 18:10-18:15 Discussion
- 18:15-18:25 **D. Avery** (*University of Pennsylvania, USA*)
The role of fibroblast activation protein (FAP) in lung tumorigenesis
- 18:25-18:30 Discussion
- 18:30-19:00 Break

Chairpersons: Nikos Karamanos & Dimitris Kletsas

HONORARY PLENARY LECTURE (L17)

- 19:00-20:00 **R. Sanderson** (*University of Alabama, USA*)
Targeting heparanase for myeloma therapy
Honorary Medal Award conferred to Prof. R. Sanderson
by the Rector of the University of Patras
- 20:00 Dinner

Saturday, 26 September

Chairperson/discussion leader: Paraskevi Heldin

LECTURES/TUTORIALS - GLYCOBIOLOGY AND METABOLIC
REGULATION OF ECM MOLECULES (L18-L19)

- 9:00-9:20 **V. Hascall** (*Cleveland Clinic Foundation, USA*)
How does heparin prevent intracellular synthesis of hyaluronan
in hyperglycemic dividing cells?
- 9:20-9:25 Discussion
- 9:25-9:45 **P. Heldin** (*University of Uppsala, Sweden*)
Role of hyaluronan-CD44 interactions during cancer progression
- 9:45-9:50 Discussion

SELECTED TALKS (ST9-ST11)

- 9:50-10:00 **M. Mehić** (*Uppsala University, Sweden*)
The deubiquitinating enzymes USP4 and USP17 target hyaluronan
synthase 2 and affect its function
- 10:00-10:05 Discussion
- 10:05-10:15 **D. Vigetti** (*University of Insubria, Italy*)
The long non-coding RNA HAS2-AS1 is a new regulator of hyaluronan
synthesis and its involved in human vascular diseases
- 10:15-10:20 Discussion

- 10:20-10:30 **A. -J. Deen** (*University of Eastern Finland, Finland*)
The UDP-sugar substrates of hyaluronan synthase 3 (HAS3) regulate its intracellular traffic and extracellular shedding, controlling hyaluronan synthesis and correlating with phenotypic changes in early stages of melanoma
- 10:30-10:35 Discussion
- 10:35-11:05 Coffee break

Chairperson/discussion leader: Alberto Passi

LECTURES / TUTORIALS - I GLYCOBIOLOGY AND METABOLIC REGULATION OF ECM MOLECULES (L20-L22)

- 11:05-11:25 **H. Watanabe** (*Aichi Medical University, Japan*)
Role of versican, and chondroitin sulfate in development and diseases
- 11:25-11:30 Discussion
- 11:30-11:50 **A. Passi** (*University of Insubria, Italy*)
Hyaluronan amount and size are critical in human pathology
- 11:50-11:55 Discussion
- 11:55-12:15 **L. Kjellen** (*University of Uppsala, Sweden*)
Cellular design of heparan sulfate
- 12:15-12:20 Discussion

SELECTED TALKS (ST12-ST15)

- 12:20-12:30 **T. Dierker** (*Uppsala University, Sweden*)
Detection of hitherto unknown chondroitin core proteins together with unexpected sulfation of chondroitin in the nematode *C. elegans*
- 12:30-12:35 Discussion
- 12:35-12:45 **F. Malfait** (*Ghent University, Belgium*)
Zebrafish modeling of β 3GalT6 and β 4GalT7-deficient types of Ehlers-Danlos syndrome stresses the importance of glycosaminoglycans in development
- 12:45-12:50 Discussion
- 12:50-13:00 **S. -L. Taylor** (*University of Liverpool, UK*)
The purification and characterization of heparin by-products for applications in wound healing
- 13:00-13:05 Discussion
- 13:05-13:15 **A. Abbadi** (*Cleveland Clinic Foundation, USA*)
Heparin inhibits the differentiation of M1 and promotes M2 macrophages under hyperglycemic stress
- 13:15-13:20 Discussion
- 13:20-14:15 Speakers corner (I)
- 14:15-21:30 Lunch box - Excursion tour

Sunday, 27 September

Chairperson/discussion leader: Donald Gullberg

LECTURES / TUTORIALS - INTERACTIONS AND FUNCTIONS OF MATRIX MACROMOLECULES (L23 - L24)

- 9:00-9:20 **M. Franci** (*University of Bologna, Italy*)
Collagen in tendon and ligament
- 9:20-9:25 Discussion
- 9:25-9:45 **D. Gullberg** (*University of Bergen, Norway*)
Collagen receptors- static contacts or dynamic modulators?
- 9:45-9:50 Discussion

SELECTED TALKS (ST16 - ST18)

- 9:50-10:00 **D. Gavriilidou** (*Imperial College London, UK*)
Interactions of discoidin domain receptors with fibrillar and non-fibrillar collagen forms: ligand binding versus receptor activation
- 10:00-10:05 Discussion
- 10:05-10:15 **B. Pilecki** (*University of Southern Denmark, Denmark*)
MFAP4 is a novel regulator of elastic fiber assembly and integrin-dependent cellular signaling
- 10:15-10:20 Discussion
- 10:20-10:30 **S. Molon** (*University of Padova, Italy*)
Role of collagen VI in intestine homeostasis
- 10:30-10:35 Discussion
- 10:35-11:05 Coffee break

Chairperson/discussion leader: François-Xavier Maquart

LECTURES / TUTORIALS - INTERACTIONS AND FUNCTIONS OF MATRIX MACROMOLECULES (L25 - L26)

- 11:00-11:20 **F.-X. Maquart** (*University of Reims, France*)
Basement membrane collagens in the control of tumor cell invasion
- 11:20-11:25 Discussion
- 11:25-11:45 **A. Blom** (*Lund University, Malmo, Sweden*)
Cartilage oligomeric matrix protein (COMP) contributes to the development and metastasis of breast cancer
- 11:45-11:50 Discussion

SELECTED TALKS (ST19 - ST20)

- 11:50-12:00 **M. Keremidarska** (*Bulgarian Academy of Sciences, Bulgaria*)
Mesenchymal stem cells adhesive behavior to different extracellular matrix proteins alters during osteogenic differentiation

- 12:00-12:05 Discussion
- 12:05-12:15 **A. -C. Silva** (*Universidade do Porto, Porto, Portugal*)
The versatility of fetal and adult ECM-derived microenvironments:
The impact of ontogeny on cardiac cells
- 12:15-12:20 Discussion
- 12:30-14:15 Lunch
- 14:15-16:15 Poster session (II) P27-P53/ Discussion groups (II)
- 16:15-17:00 **B. -G. Vertessy** (*Budapest University of Technology and Economics, Hungary*)
Career Planning

Chairperson/discussion leader: Liliana Schaefer

CELL RECEPTORS SIGNALING AND ECM BASED
NANOTECHNOLOGY (L27 - L30)

- 17:00-17:20 **L. Schaefer** (*Goethe-Universität Frankfurt am Main, Germany*)
SLRP signaling in inflammation
- 17:20-17:25 Discussion
- 17:25-17:45 **J. Couchman** (*University of Copenhagen, Denmark*)
Syndecans: transmembrane proteoglycans controlling the cell
adhesion phenotype
- 17:45-17:50 Discussion
- 17:50-18:10 **M. Pavao** (*University of Rio de Janeiro, Brasil*)
Inhibition of manganese-mediated tumor cell migration by heparin
analogs
- 18:10-18:15 Discussion
- 18:15-18:45 Break
- 18:45-19:05 **R. -C. Savani** (*University of Texas Southwestern Medical Center, USA*)
Molecular mechanism of RHAMM activation of Src kinase and the
signaling pathway for nitric oxide production in the endothelium
- 19:05-19:10 Discussion
- SELECTED TALKS (ST21 - ST23)
- 19:10-19:20 **F. -C. -O. -B. Teixeira** (*Universidade Federal do Rio de Janeiro, Brasil*)
Sulfated fucans and sulfated galactans from sea urchins as potent
inhibitors of selectin-dependent hematogenous metastasis.
Are there any structural requirements?
- 19:20-19:25 Discussion
- 19:25-19:35 **A. -O. Melleby** (*University of Oslo, Norway*)
Glypican-6 is increased in experimental and clinical heart failure and
might play a role in cardiac fibrosis through BMP4 signaling
- 19:35-19:40 Discussion

19:40-19:50	H. Pratsinis (<i>NCSR “Demokritos”, Greece</i>) Three-dimensional culture systems for the study of growth factors on intervertebral disc cells
19:50-19:55	Discussion
20:00	Dinner

Monday, 28 September

Chairperson/discussion leader: Carl-Henrik Heldin

SIGNALING AND DISEASE MOLECULAR TARGETING (L31 - L33)

9:00-9:20	C. -H. Heldin (<i>Ludwig Cancer Institute, Sweden</i>) Smad and non-Smad signaling via TGF- β receptors – possible targets in tumor therapy
9:20-9:25	Discussion
9:25-9:45	N. Karamanos (<i>University of Patras, Greece</i>) The regulatory roles of estrogen receptors and syndecans in breast cancer cell properties and functions
9:45-9:50	Discussion
9:50-10:10	D. Nikitovic (<i>University of Crete, Greece</i>) IGF-I/ EGF signaling affect breast cancer cell adhesion through cytoskeleton reorganization
10:10-10:15	Discussion

SELECTED TALKS (ST24 - ST28)

10:15-10:25	N. Afratis (<i>University of Patras, Greece</i>) Syndecan-4 as a switch of epithelial to mesenchymal transition in breast cancer cells
10:25-10:30	Discussion
10:30-10:40	S. -K. Jha (<i>University of Helsinki, Finland</i>) CCBE1 enhances lymphangiogenesis by regulating VEGF-C activation
10:40-10:45	Discussion
10:45-11:15	Coffee break
11:15-11:25	J. Nuechel (<i>University of Cologne, Germany</i>) TGF- β release by fibroblasts requires regulated secretion via autophagosomal intermediates
11:25-11:30	Discussion
11:30-11:40	C. Kolliopoulos (<i>University of Uppsala, Sweden</i>) HMGA2 regulates HAS2 and its natural antisense transcript during TGF- β -mediated EMT
11:40-11:45	Discussion

- 11:45-11:55 **Z. Piperigkou** (*University of Patras, Greece*)
The role of ER β in regulation of functional properties and gene expression of matrix macromolecules in aggressive breast cancer cells
- 11:55-12:00 Discussion

Chairperson/discussion leader: Jerry Turnbull

SIGNALING AND DISEASE MOLECULAR TARGETING
(L34 - L35)

- 12:00-12:20 **J. Turnbull** (*University of Liverpool, UK*)
Proteoglycans as drug development targets: chemical biology routes to new therapeutics
- 12:20-12:25 Discussion
- 12:25-12:45 **D. Kletsas** (*NCSR "Demokritos", Greece*)
Senescence of stromal fibroblasts triggered by anticancer treatments: implications in tumor progression
- 12:45-12:50 Discussion

SELECTED TALK (ST29)

- 12:50-13:00 **T. Brown** (*Monash University, Australia*)
Development of hyaluronan as a CD44-targeted drug delivery vehicle in the treatment of cancer
- 13:00-13:05 Discussion
- 13:05-14:30 Lunch
- 14:30-16:00 Poster Session (III) P54-P79 / Discussion groups (III)
- 16:00-17:00 Speakers corner (II)

Chairperson/discussion leader: Jan-Olof Winberg

MATRIX REGULATION IN HEALTH AND DISEASE (L36 - L38)

- 17:00-17:20 **J.-O. Winberg** (*University of Tromsø, Norway*)
The core protein of serglycin is a matrix metalloprotease-9 substrate
- 17:20-17:25 Discussion
- 17:25-17:45 **S. Brezillion** (*University of Reims, France*)
Lumican: A new inhibitor of matrix metalloproteinase-14 activity
- 17:45-17:50 Discussion
- 17:50-18:10 **S. Heymans** (*KU Leuven, Belgium*)
Osteoglycin (mimecan) protects against ischemic heart disease but increases adverse cardiac inflammation in viral myocarditis
- 18:10-18:15 Discussion
- 18:15-18:45 Break

SELECTED TALKS (ST30-ST33)

- 18:45-18:55 **E. Karousou** (*University of Insubria, Italy*)
Cross talk between breast cancer cells and fibroblasts: effect of the uncharacterized protein q7z3e2 on hyaluronan synthesis
- 18:55-19:00 Discussion
- 19:00-19:10 **B. Deschrevel** (*University of Rouen, France*)
An innovative biomaterial for tridimensional eukaryotic cell development: applications in tissue engineering and in tumor engineering
- 19:10-19:15 Discussion
- 19:15-19:25 **X. Stachtea** (*Lund University, Sweden*)
Loss of dermatan sulfate results in neonatal lethality in mice despite normal lymphoid and non-lymphoid organogenesis
- 19:25-19:30 Discussion
- 19:30-19:40 **M. -E. Strand** (*University of Oslo, Norway*)
Shedding of syndecan-4 promotes immune cell recruitment and preserves heart function after lipopolysaccharide challenge
- 19:40-19:45 Discussion
- 20:00 Dinner

Tuesday, 29 September

Chairperson/discussion leader: Boris Turk

MATRIX REGULATION IN HEALTH AND DISEASE (L39 – L41)

- 9:00-9:20 **B. Turk** (*J. Stefan Institute, Slovenia*)
Extracellular cysteine cathepsins: from signalling to matrix degradation
- 9:20-9:25 Discussion
- 9:25-9:45 **V. -M. Kähäri** (*University of Turku, Finland*)
Proteolytic control of skin cancer progression
- 9:45-9:50 Discussion
- 9:50-10:10 **D. Vynios** (*University of Patras, Greece*)
ADAMTS proteinases in health and disease
- 10:10-10:15 Discussion

SELECTED TALKS (ST34-ST37)

- 10:15-10:25 **K. Andenæs** (*University of Oslo, Norway*)
The extracellular matrix proteoglycan fibromodulin is up-regulated in experimental and clinical heart failure, and might attenuate development of myocardial fibrosis by interacting with TGF- β signaling

10:25-10:30	Discussion
10:30-10:40	B. Bluhm (<i>University of Cologne, Germany</i>) MicroRNAs: posttranscriptional modulators of cellular and extracellular cartilage compartments
10:40-10:45	Discussion
10:45-10:55	L. Monti (<i>University of Pavia, Italy</i>) Animal models of desbuquois dysplasia type 1 to study the role of CANT1 in proteoglycan metabolism
10:55-11:00	Discussion
11:00-11:10	A.-V. Suhovskih (<i>Novosibirsk State University, Russia</i>) Prostate cancer cells stably change proteoglycans expression in normal fibroblasts in cell culture model <i>in vitro</i>
11:10-11:15	Discussion
11:15-11:40	Closing remarks / Young Scientist Awards
11:40-13:15	Farewell / Departure