

6th FEBS Advanced Lecture Course

Matrix Pathobiology, Signaling and Molecular Targets
Spetses, May 25th – May 30th, 2017

Program: Lecture (L), Selected Talk (ST), Flash Presentation (FP),
Poster (P)

Thursday, May 25th

12:00 – 18:00 Registration

Chairpersons/discussion leaders: Tabea Dierker & Chrysostomi Gialeli

GENERAL LECTURES / TUTORIALS (L1 - L6)

- 14:00 – 14:15 **S. Skandalis – L1** (University of Patras, Greece)
An introduction to ECM dynamic network – Proteoglycans
- 14:15 – 14:30 **N. Karamanos – L2** (University of Patras, Greece)
Syndecans – central players in cell functional properties and signaling
- 14:30 – 14:45 **D. Seidler – L3** (Hannover Medical School, Germany)
Glycosaminoglycans: structure, biosynthesis and key functions
- 14:45 – 15:00 **Y. Itoh – L4** (University of Oxford, UK)
Matrix Metalloproteinases: target or not to target
- 15:00 – 15:15 **R. Boot-Handford – L5** (University of Manchester, UK)
Collagens: types and functions
- 15:15 – 15:30 **P. Roussele – L6** (CNRS, University Lyon 1, France)
ECM receptors: their importance in cell functions

Chairpersons/discussion leaders: Thomas Neill & Zoi Piperigkou

PANEL DISCUSSION

- 15:30 – 16:45 Groups of young scientists will discuss emerging aspects with tutors
- 16:45 – 17:15 Coffee break

Chairpersons/discussion leaders: Nikolaos Afratis & Ilaria Caon

CAREER DEVELOPMENT SESSION I

- 17:15 – 17:30 **G. Guner** (Chair, FEBS Education Committee; School of Medicine, Izmir, Turkey)
Ph.D. Training: Tips for success for a Ph.D. student
- 17:30 – 17:35 Discussion
- 17:35 – 17:55 **B. Vertessy** (Chair, FEBS Advanced Courses Committee; Budapest, Hungary)
Career planning: how to jump the transitions on your career path?
- 17:55 – 18:00 Discussion
- 18:00 – 18:20 **M. Papatriantafyllou** (Editor of FEBS Letters, Heidelberg, Germany)
How to write a scientific paper
- 18:20 – 18:25 Discussion
- 18:25 – 18:30 Break

Chairpersons: Renato Iozzo & Nikos Karamanos

OPENING SESSION

- 18:30 – 18:50 **N. Karamanos**, Chairman of FEBS ALCs - MPST 2007 - 2017
Ten years of FEBS ALCs on Matrix Pathobiology: achievements and prospectives
- 18:50 – 19:15 Welcome Addresses by
V. Kyriazopoulou, Rector of the University of Patras
B. Vertessy, Chair of the FEBS Advanced Courses Committee
D. Kletsas, President of the Hellenic Society of Biochemistry & Molecular Biology
L. Schaefer, President of ISMB

IUBMB LECTURE (L7)

- 19:15 – 20:15 **F.-X. Maquart – L7** (University of Reims, France)
Matrikines as important players in matrix physiopathology
Honorary Awards
- 20:30 Welcome Reception

Friday, May 26th

Chairperson/discussion leader: Liliana Schaefer

LECTURES / TUTORIALS – GLYCOBIOLOGY -
GLYCOSAMINOGLYCANS & PROTEOGLYCANS (L8 - L9)

- 09:00 – 09:20 **P. Heldin – L8** (Ludwig Institute for Cancer Research,
Uppsala University, Sweden)
The role of hyaluronan - CD44 interactions in inflammation and cancer
- 09:20 – 09:25 Discussion
- 09:25 – 09:45 **L. Schaefer – L9** (Goethe University, Germany)
Proteoglycan neofunctions: Regulation of inflammation & beyond
- 09:45 – 09:50 Discussion

SELECTED TALKS (ST1 – ST4)

- 09:50 – 10:00 **A. Abbadi – ST1 / P1** (Cleveland Clinic Foundation, USA)
*Heparin inhibits the differentiation of M1 and promotes M2
macrophages under hyperglycemic stress*
- 10:00 – 10:10 **T. Dierker – ST2 / P2** (Uppsala University, Sweden)
*Identification of novel chondroitin sulfate sulfotransferases and
proteoglycan core proteins in the nematode C. elegans*
- 10:10 – 10:20 **K. Karamanou – ST3 / P3** (University of Reims, France)
*Lumican effectively regulates the estrogen receptors-associated
functional properties of breast cancer cells, expression of matrix
effectors and epithelial-to-mesenchymal transition*
- 10:20 – 10:30 **S. Skandalis – ST4 / P4** (University of Patras, Greece)
*Effects of the inhibition of hyaluronan synthesis by
4-methylumbelliferone on breast cancer cells of different ER status*
- 10:30 – 11:00 Coffee break

Chairperson/discussion leader: Irit Sagi

LECTURES / TUTORIALS – METALLOPROTEINASES & MATRIX AS A DYNAMIC STRUCTURAL NETWORK (L10 – L15)

- 11:00 – 11:20 **Y. Itoh – L10** (University of Oxford, UK)
Role of MT1-MMP in inflammatory arthritis: a potential therapeutic target?
- 11:20 – 11:25 Discussion
- 11:25 – 11:40 **I. Sagi – L11** (Weizmann Institute of Science, Israel)
Matrix remodeling and proteolysis as key regulator of embryo implantation
- 11:40 – 11:45 Discussion
- 11:45 – 12:05 **M. Franchi – L12** (University of Bologna, Italy)
Cancer cell morphology and local microenvironment
- 12:05 – 12:10 Discussion
- 12:15 All together photo
- 12:20 – 14:00 Lunch
- 14:00 – 16:30 **Poster Session (I): P1 – P21 / Discussion groups (I)**

Chairperson/discussion leader: Dimitris Kletsas

SELECTED TALKS (ST5 – ST7)

- 16:30 – 16:40 **I. Gonçalves – ST5 / P22** (Lund University, Sweden)
ADAMTS-7 is associated with a high-risk plaque phenotype in human atherosclerosis
- 16:40 – 16:50 **I. Solomonov – ST6 / P23** (Weizmann Institute of Science, Israel)
Distinct biological events generated by ECM proteolysis by two homologous collagenases
- 16:50 – 17:00 **C. Gauthier-Rouviere – ST7 / P24** (University of Montpellier, France)
The new metastatic markers flotillins promote tumor cell invasion through MT1-MMP-dependent ECM degradation
- 17:00 – 17:20 **D. Kletsas – L13** (NCSR “Demokritos”, Greece)
Altered metalloprotease and proteoglycan expression in senescent human breast stromal fibroblasts: implications in tumour progression
- 17:20 – 17:25 Discussion
- 17:25 – 17:40 **S. Fournel-Gigleux – L14** (University of Lorraine, France)
Glycosaminoglycan biosynthetic enzymes: actors and targets in pathobiology
- 17:40 – 17:45 Discussion
- 17:45 – 18:00 **M. Dauchez – L15** (University of Reims Champagne-Ardenne, France)
Molecular modelling of the ECM: what could we do? What could we learn?
- 18:00 – 18:05 Discussion

Chairperson/discussion leader: Spyros Skandalis

CAREER DEVELOPMENT SESSION II

18:05 – 18:25 **B. Vertessy** (Chair, FEBS Advanced Course Committee; Budapest, Hungary)
How to write a project proposal

18:25 – 18:30 Discussion

20:00 Dinner

Saturday, May 27th

Chairperson/discussion leader: Renato Iozzo

LECTURES / TUTORIALS – MATRIX PATHOBIOLOGY (L16 – L19)

09:00 – 09:20 **R. Iozzo – L16** (Thomas Jefferson University, USA)
Novel proteoglycan roles in regulating autophagy and angiogenesis

09:20 – 09:25 Discussion

09:25 – 09:45 **S. Brezillon – L17** (University of Reims, France)
Lumican delays melanoma growth in mice and drives tumor molecular assembly as well as response to extracellular matrix-targeted therapy

09:45 – 09:50 Discussion

09:50 – 10:10 **G. Christensen – L18** (University of Oslo, Norway)
Extracellular matrix and heart failure

10:10 – 10:15 Discussion

10:15 – 10:35 **A. Theocharis – L19** (University of Patras, Greece)
Serglycin implication in malignancies: unraveling novel molecular mechanisms

10:35 – 10:40 Discussion

10:40 – 12:30 **Speakers corner (!)**

12:30 Lunch Box

13:30 – 21:30 Excursion / Dinner

Sunday, May 28th

Chairperson/discussion leader: Ralph Sanderson

LECTURES / TUTORIALS – INTERACTIONS & FUNCTIONS OF MATRIX MACROMOLECULES (L20 - L21)

09:00 – 09:20 **P. Rousselle – L20** (University Lyon 1, France)
Dual function of syndecan-1 in epidermal regeneration and homeostasis

09:20 – 09:25 Discussion

09:25 – 09:45 **R. Sanderson – L21** (University of Alabama, USA)
Roles of heparanase and exosomes in regulating the tumor microenvironment

09:45 – 09:50 Discussion

SELECTED TALKS (ST8 – ST11)

09:50 – 10:00 **V. Juskaite – ST8 / P25** (Imperial College London, UK)
Collagen induces activation of DDR1 through lateral dimer association and phosphorylation between dimers

10:00 – 10:10 **M. Gross-Cohen – ST9 / P26** (Technion, Israel)
Heparanase 2 attenuates tumor vascularity and growth, associating with enhanced cell differentiation and inversely correlating with tumor grade and stage

10:10 – 10:20 **P. Sogaard – ST10 / P27** (University of Oxford, UK)
Signalling through the collagen receptor, DDR1, is required for epithelial polarisation and morphological remodelling in 3D matrices

10:20 – 10:30 **V. Abbonante - ST11 / P28** (University of Pavia, Italy)
Altered megakaryopoiesis in Type VI collagen KO mice

10:30 – 11:00 Coffee break

Chairperson/discussion leader: Alberto Passi

LECTURES / TUTORIALS – GLYCOBIOLOGY & METABOLIC REGULATION OF ECM MOLECULES (L22 - L23)

11:00 – 11:20 **A. Passi – L22** (University of Insubria, Italy)
Translational control and epigenetic events in hyaluronan synthase 2

11:20 – 11:25 Discussion

11:25 – 11:45 **D. Seidler – L23** (Hannover Medical School, Germany)
The function of 2 O-sulfation of chondroitin/dermatan sulfate under physiological and pathological conditions

11:45 – 11:50 Discussion

SELECTED TALKS (ST12 – ST15)

11:50 – 12:00 **A.J. Deen – ST12 / P29** (University of Eastern Finland, Finland)
UDP-N-Acetylglucosamine regulation of epithelial-to-mesenchymal transition in breast cancer

12:00 – 12:10 **S. Delbaere – ST13 / P30** (Ghent University, Belgium)
Zebrafish modeling of the β 4GalT7-deficient type of Ehlers-Danlos syndrome

12:10 – 12:20 **I. Caon – ST14 / P31** (University of Insubria, Italy)
HAS2-AS1 regulates breast cancer cells aggressiveness through a molecular sponge effect

12:20 – 12:30 **U. Arasu – ST15 / P32** (University of Eastern Finland, Finland)
HAS3-induced Extracellular Vesicles (HAS3-EVs) promote EMT in human keratinocyte to acquire malignant properties

12:30 – 14:00 Lunch

14:00 – 16:00 **Poster Session (II): P22 – P47 / Discussion groups (II)**

Chairperson/discussion leader: Elvira Grigorieva

LECTURES / TUTORIALS – GLYCOBIOLOGY & METABOLIC
REGULATION OF ECM MOLECULES (L24 - L25)

16:00 – 16:20 **M.I. Tammi – L24** (University of Eastern Finland, Finland)
*Hyaluronan synthesis and O-GlcNAc-signaling in malignant tumors
role of hexosamine biosynthesis and UDP-N-acetylglucosamine content*

16:20 – 16:25 Discussion

16:25 – 16:45 **E. Grigorieva – L25** (Karolinska Institute, Sweden)
Heparan sulfate biosynthesis in health and disease

16:45 – 16:50 Discussion

SELECTED TALKS (ST16 – ST17)

16:50 – 17:00 **Z. Piperigkou – ST16 / P33** (University of Patras, Greece)
*MicroRNA targeting as a regulatory mechanism of breast cancer cells
with different estrogen receptor status*

17:00 – 17:10 **J. Wragg – ST17 / P34** (University of Manchester, UK)
*The impacts of ER stress associated chondrodysplasias on
metabolomics*

FLASH PRESENTATIONS (FP1 – FP5)

17:10 – 17:15 **K. Jandl – FP1 / P35** (Ludwig Boltzmann Institute for Lung Vascular
Research, Austria)
*Alterations in basement membrane proteoglycans defines vascular
remodelling in pulmonary hypertension associated with lung diseases*

17:15 – 17:20 **N. Mohammadzadeh – FP2 / P36** (University of Oslo, Norway)
*Lack of the extracellular matrix proteoglycan lumican in mice
exacerbates left ventricular dilatation and contractile dysfunction
upon pressure overload*

17:20 – 17:25 **D. Vitale – FP3 / P37** (Cit Noba, Unnoba-Conicet, Argentina)
*Hyaluronan modulates tumor progression, angiogenesis and
proliferation during Doxorubicin treatment*

17:25 – 17:30 **M.E. Christopoulou – FP4 / P38** (University of Patras, Greece)
*TGF- β 1 suppresses the IL-1 β -induced production of matrix
metalloproteinase-1 from human pterygium fibroblasts through
PKA activation*

17:30 – 17:35 **C. Yeung – FP5 / P39** (University of Copenhagen, Denmark)
*Understanding the tendon circadian clock as therapeutic target for
treatment of age-related chronic tendinopathies*

17:35 – 18:45 **Speakers corner (II)**

19:00 – 20:30 Free time

21:00 Dinner

Monday, May 29

Chairperson/discussion leader: Sylvie Ricard-Blum

LECTURES / TUTORIALS – ECM NETWORKS & ECM-BASED NANOTECHNOLOGY (L26 - L27)

09:00 – 09:20 **S. Ricard-Blum – L26** (University Lyon, France)
Extracellular interaction networks: from extracellular matrix assembly to the cell surface

09:20 – 09:25 Discussion

09:25 – 09:45 **M. Pavaõ – L27** (University of Rio de Janeiro, Brasil)
Non-anticoagulant Heparan sulfate from a marine bivalve mollusk inhibits P-selectin and heparanase: effect on cellular recruitment and tumor metastasis

09:45 – 09:50 Discussion

SELECTED TALKS (ST18 – ST21)

09:50 – 10:00 **J. Caldeira – ST18 / P40** (University of Porto, Portugal)
Pathobiology of the ageing matrix: on the path to intervertebral disc regeneration

10:00 – 10:10 **A. Buson – ST19 / P41** (Pharmaxis Ltd., Australia)
Inhibition of lysyl oxidase like 2 reduces collagen cardiac interstitial fibrosis in mice

10:10 – 10:20 **M. Weissmann – ST20 / P42** (Technion, Israel)
9E8 Anti-Heparanase antibody neutralizes heparanase activity and inhibits invasion of cancer cells after class switching from IgM to IgG

10:20 – 10:30 **S. van Helvert – ST21 / P43** (Radboud Institute Molecular Life Science, The Netherlands)
Strain stiffening and structural ECM remodelling by invading cancer cells

FLASH PRESENTATIONS (FP6 – FP11)

10:30 – 10:35 **A. Kocak – FP6 / P44** (Dokuz Eylul University, Turkey)
Protective effects of epigallocatechin-3-gallate on fibrosis in scleroderma model

10:35 – 10:40 **I. Kalograiaki – FP7 / P45** (Biological Research Center (CIB), Spain)
Structural studies of a tumour-associated carbohydrate epitope defined by the monoclonal antibody A10

10:40 – 10:45 **M. Szczygiel – FP8 / P46** (German Cancer Research Center (DKFZ), Germany)
Investigating the dynamics of tumor - stroma interactions in lung cancer

10:45 – 10:50 **M. Le Borgne-Rochet – FP9 / P47** (University of Montpellier, France)
P-cadherin promotes reorientation of collagen fibers during collective cell migration

10:50 – 10:55 **E. Bengtsson – FP10 / P48** (Lund University, Sweden)
Cartilage oligomeric matrix protein associates with a vulnerable plaque phenotype in human atherosclerosis

10:55 – 11:00 **R. Cocchiola – FP11 / P49** (University of Rome, Italy)
Glucosamine and its peptidyl-derivative NAPA: novel therapeutic strategy for chondrocytes matrix remodeling

11:00 – 11:30 Coffee break

Chairperson/discussion leader: Martin Götte

LECTURES / TUTORIALS – SIGNALING & DISEASE
MOLECULAR TARGETING (L28 – L34)

11:30 – 11:50 **M. Götte – L28** (Muenster University, Germany)
Heparan sulfate proteoglycans as modulators of therapeutic resistance in breast cancer

11:50 – 11:55 Discussion

11:55 – 12:15 **I. Kovalszky – L29** (Semmelweis University Budapest, Hungary)
Cervical cancer cells downregulate tissue pathway inhibitor2 (TFPI2) in tumor-associated fibroblasts

12:15 – 12:20 Discussion

12:20 – 12:35 **T. Neill – L30** (Thomas Jefferson University, USA)
Decorin evokes tumor cell mitophagy via mitostatin and Parkin

12:35 – 12:40 Discussion

SELECTED TALKS (ST22 – ST24)

12:40 – 12:50 **K. Baghy – ST22 / P50** (Semmelweis University, Budapest, Hungary)
Decorin delivery hinder primary and metastatic tumor formation in the liver

12:50 – 13:00 **D. Manou – ST23 / P51** (University of Patras, Greece)
Suppression of serglycin decreases glioblastoma cell aggressiveness

13:00 – 13:10 **C. Gialeli – ST24 / P52** (Lund University, Sweden)
Complement inhibitor CSMD1 acts as a tumor suppressor in breast cancer by interacting with extracellular matrix receptor EGFR

13:10 – 14:30 Lunch

14:30 – 16:30 **Poster Session (II): P48 – P72 / Discussion groups (II)**

Chairperson/discussion leader: John Couchman

16:30 – 16:50 **J. Couchman – L31** (University of Copenhagen, Denmark)
Syndecans: signalling and regulation of cell adhesion

16:50 – 16:55 Discussion

16:55 – 17:10 **I. Gjervold Lunde – L32** (University of Oslo, Oslo, Norway)
Syndecan-4 promotes hypertrophic remodeling of the heart through NFAT signaling

17:10 – 17:15 Discussion

- 17:15 – 17:30 **D. Zeugolis – L33** (Remodel Laboratory, NUI Galway, Galway, Ireland)
Rebuilding the matrix: The influence of microenvironmental signalling in matrix synthesis and deposition
- 17:30 – 17:35 Discussion
- 17:35 – 17:50 **P. Bruckner – L34** (Muenster University, Germany)
The binding capacity of $\alpha 1\beta 1$ -, $\alpha 2\beta 1$ - and $\alpha 10\beta 1$ -integrins depends on non-collagenous surface macromolecules rather than the collagens in cartilage fibrils
- 17:50 – 17:55 Discussion
- SELECTED TALKS (ST 25 – ST 27)
- 17:55 – 18:05 **N. Afratis – ST25 / P53** (University of Patras, Greece
University of Copenhagen, Denmark)
IGF-IR inhibits breast cancer cells aggressiveness via regulation of syndecan-4 and MMPs expression
- 18:05 – 18:15 **A. Kiss – ST26 / P54** (University of Szeged, Hungary)
Chronic inflammation, oxidative-nitrosative stress, mitochondrial dysfunction, improper integrin expression, loss of sarcomeres and proteolysis of myofibrillar proteins allow diagnosis of muscular dystrophy in Drosophila type IV collagen col4a1 mutants
- 18:15 – 18:25 **K. Rada – ST27 / P55** (Semmelweis University Budapest, Hungary)
Tumour-stroma interaction in the case of different hepatomas
- 20:30 Dinner

Tuesday, May 30th

Chairperson/discussion leader: Raymond Boot-Handford

LECTURES / TUTORIALS – MATRIX REGULATION IN HEALTH & DISEASE (L35 – L38)

- 09:00 – 09:20 **R. Boot-Handford – L35** (University of Manchester, UK)
ER stress as a pathogenic factor in ECM diseases
- 09:20 – 09:25 Discussion
- 09:25 – 09:45 **M. Onisto – L36** (University of Padova, Italy)
Role of heparanase in the onset of organ fibrosis
- 09:45 – 09:50 Discussion

SELECTED TALKS (ST 28 – ST 31)

- 09:50 – 10:00 **G. Bellin – ST28 / P56** (University/Hospital of Verona, Italy)
Heparanase regulates macrophage M1 polarization and tubular cells crosstalk after kidney ischemia/reperfusion injury
- 10:00 – 10:10 **E. Shimshoni – ST29 / P57** (Weizmann Institute of Science, Rehovot, Israel)
Unraveling silent pathological states by decoding their unique extracellular matrix signature in intestinal inflammation

10:10 – 10:20	M. Pinto – ST30 / P58 (University of Porto, Portugal) <i>Decellularized human colorectal cancer matrices polarize macrophages towards a pro-invasive phenotype</i>
10:20 – 10:30	J. Toraskar – ST31 / P59 (Norwegian University of Science and Technology-NTNU, Norway) <i>Extracellular matrix Nephronectin in breast cancer metastasis</i>
FLASH PRESENTATIONS (FP12 – FP17)	
10:30 – 10:35	E. Caravà – FP12 / P60 (University of Insubria, Italy) <i>Vascular inflammation and extracellular matrix modifications</i>
10:35 – 10:40	R. Constantini – FP13 / P61 (University of Pavia, Italy) <i>Towards the generation of an animal model of chondrodysplasia with joint dislocations gPAPP type</i>
10:40 – 10:45	S. Gencer – FP14 / P62 (İşıköy University, Turkey) <i>TGF-β receptor I/II signaling at primary glial membrane is regulated by ceramide to modulate cell migration</i>
10:45 – 10:50	M. Catela – FP15 / P63 (University of Reims, France) <i>Lumican effect on MMP-14 expression and migration of Snail overexpressing MC38 colon carcinoma cells</i>
10:50 – 10:55	D. Harmanci – FP16 / P64 (Dokuz Eylül University, Turkey) <i>The activity of serum superoxide dismutase enzyme and the serum level of lipid peroxidation product malondialdehyde in different forms of scleroderma</i>
10:55 – 11:00	V.R. Krishnaswamy – FP17 / P65 (Weizmann Institute of Science, Israel) <i>Intriguing role of dermatopontin in skin re-epithelialization: Implications on chronic cutaneous wounds</i>
Chairperson/discussion leader: Rashmin Savani	
11:00 – 11:15	R. Savani – L37 (University of Texas, USA) <i>Regulation of inflammation by the hyaluronan receptor RHAMM: Studies in knockout and transgenic mice</i>
11:15 – 11:20	Discussion
11:20 – 11:35	A. Rossi – L38 (Department of Molecular Medicine, Unit of Biochemistry, Pavia, Italy) <i>In vivo models of chondrodysplasias caused by defects in proteoglycan biosynthesis: phenotyping and pharmacological approaches</i>
11:35 – 11:40	Discussion
11:40 – 12:00	Closing remarks & Awards
12:00 – 13:00	Farewell Party
Afternoon	Departure