

FEBS Advanced Lecture Course
Extracellular Matrix: Cell Regulation, Epigenetics and Modeling
Patras, September 27 – October 2, 2018

Thursday, 27 September

12:00 – 18:30 **Registration**

Chairpersons/discussion leaders: Zoi Piperigkou & Chrysostomi Gialeli

GENERAL LECTURES / TUTORIALS (L1 – L6)

- 16:00 – 16:15 **A. Theocharis – L1** (University of Patras, Greece)
ECM structure: a dynamic cell regulatory network
- 16:15 – 16:30 **S. Skandalis – L2** (University of Patras, Greece)
Proteoglycans: Structure and neofunctions
- 16:30 – 16:45 **D. Vigetti – L3** (University of Insubria, Italy)
Hyaluronan: a simple ECM molecule with a complex epigenetic regulation
- 16:45 – 17:00 **S. Brezillon – L4** (University of Reims, France)
Matrikines, extracellular matrix-derived peptides which regulate cell activity and tumor invasion, are potential drugs
- 17:00 – 17:15 **B. Hudson – L5** (Vanderbilt University Medical Center, USA)
The ECM at the dawn of the animal kingdom
- 17:15 – 17:30 **M. Dauchez – L6** (University of Reims Champagne-Ardenne, France)
Molecular modelling of the extracellular matrix components: an overview

PANEL DISCUSSION

- 17:30 – 18:00 Groups of young scientists will discuss emerging aspects with tutors
- 18:00 – 18:30 Coffee break

OPENING SESSION

Chairpersons: Renato Iozzo & Nikos Karamanos

- 18:30 – 18:40 **N. Karamanos**, *Chairman of the Organizing Committee*
- 18:40 – 19:15 Welcome addresses by
- B. Vertessy**, *Chair of the FEBS Advanced Courses Committee*
- L. Schaefer**, *President of ISMB*
- D. Kletsas**, *Vice-Chairman of the HSBMB*
- G. Bokias**, *Head of the Department of Chemistry, University of Patras*
- A. Katsifaras**, *Regional Governor, Western Greece*
- Opening of the Conference by
- V. Kyriazopoulou**, *Rector of the University of Patras*

L: Lecture; ST: Selected Talk; FP: Flash Presentation; P: Poster

IUBMB LECTURE (L7)

- 19:15 – 20:00 **R.V. Iozzo – L7** (Thomas Jefferson University, USA)
Proteoglycans regulate autophagy, a key intracellular catabolic pathway
Honorary Awards
- 20:15 Welcome Reception

Friday, 28 September

Chairperson/discussion leader: Alberto Passi

LECTURES / TUTORIALS – GLYCOBIOLOGY IN DISEASE (L8 - L9)

- 09:00 – 09:20 **A. Passi – L8** (University of Insubria, Italy)
Hyaluronan matrikines and cancer: when size matters, the biology of hyaluronan fragments
- 09:20 – 09:25 Discussion
- 09:25 – 09:45 **M. Pavao – L9** (Universidade Federal do Rio de Janeiro, Brazil)
Dermatan sulfates enriched in disulfated disaccharide units attenuates P-selectin mediated platelet deposition in arterial thrombus and tumor cell-platelet complex formation
- 09:45 – 09:50 Discussion

SELECTED TALKS (ST1 – ST4)

- 09:50 – 10:00 **A. Kapoor – ST1 / P1** (Thomas Jefferson University, USA)
Endorepellin induced stress-signaling axis inhibits angiogenesis
- 10:00 – 10:10 **M. Stelling – ST2 / P2** (IFRJ, Rio de Janeiro, Brazil)
Metals and glycosaminoglycans in tumor progression
- 10:10 – 10:20 **K. Karamanou – ST3 / P3** (University of Patras, Greece & University of Reims, France)
Lumican inhibits in vivo melanoma metastasis by altering matrix- effectors and invadopodia markers
- 10:20 – 10:30 **T. Karalis – ST4 / P4** (University of Patras, Greece)
Onco-suppression through hyaluronan synthesis inhibition in breast cancer cells of different ER status
- 10:30 – 11:00 Coffee break

Chairperson/discussion leader: Hideto Watanabe

LECTURES / TUTORIALS – PROTEOGLYCANS I (L10 – L11)

- 11:00 – 11:20 **I. Lunde – L10** (Oslo University Hospital and University of Oslo, Norway)
Heart failure: the diverse roles of proteoglycans in cardiac remodeling
- 11:20 – 11:25 Discussion
- 11:25 – 11:40 **H. Watanabe – L11** (Aichi Medical University, Japan)
Versican and its turnover: relevance in physiological and pathological conditions

11.40 – 11.45 Discussion

LECTURES / TUTORIALS – MATRIX-REMODELING (L12 – L13)

11:45 – 12:05 **I. Sagi – L12** (Weizmann Institute of Science, Israel)
Revealing silent pathological tissue states through extracellular matrix composition-to-structure translation

12:05 – 12:10 Discussion

12:10 – 12:25 **S. Apte – L13** (Cleveland Clinic, USA)
Cellular regulation by secreted proteases

12:25 – 12:30 Discussion

12:30 – 14:00 All together photo / Lunch

14:00 – 16:30 **Poster Session (I) / Discussion groups (I)**

Chairperson/discussion leader: Manuel Dauchez

LECTURES / TUTORIALS – PROTEOGLYCANS II (L14 – L15)

16:30 – 16:45 **P. Heldin – L14** (Uppsala University, Sweden)
The molecular mechanisms underlying Hyaluronan-mediated signaling in inflammation and cancer

16:45 – 16:50 Discussion

16:50 – 17:10 **D. Vigetti – L15** (University of Insubria, Italy)
Sirtuins and miRNAs: new players in the regulation of hyaluronan synthesis

17:10 – 17:15 Discussion

LECTURES / TUTORIALS – MOLECULAR MODELING FOR UNDESTANDING STRUCTURE / FUNCTION / DYNAMICS RELATIONSHIPS OF MATRICELLULAR MACROMOLECULES (L16)

17:15 – 19:00 **M. Dauchez, N. Belloy, S. Baud – L16A, L16B, L16C** (University of Reims Champagne-Ardenne, France)

- *Examples of structure/function relationships using PDB*
- *Overview of the modeling process to obtain 3D structures of unknown domains*
- *How to build and perform molecular dynamic simulations*
- *Understanding of docking simulations and to visualize data*

Chairperson/discussion leader: Spyros Skandalis

CAREER DEVELOPMENT SESSION

19:00 – 19:15 **B. Vertessy** (Chair, FEBS Advanced Courses Committee; Budapest University, Hungary)
How to write a project proposal

19:15 – 19:20 Discussion

20:30 Dinner

Saturday, 29 September

Chairperson/discussion leader: Martin Götte

LECTURES / TUTORIALS – EPIGENETIC REGULATION OF ECMs (L17 – L18)

- 09:00 – 09:20 **M. Götte – L17** (Muenster University, Germany)
microRNAs as regulators of proteoglycan function
- 09:20 – 09:25 Discussion
- 09:25 – 09:45 **P. Rousselle – L18** (University Lyon 1, France)
Towards elucidation of syndecan-1 function in the epidermis
- 09:45 – 09:50 Discussion

LECTURES / TUTORIALS – PARACRINE INTERACTIONS (L19 – L21)

- 09:50 – 10:10 **S. Brezillon – L19** (University of Reims Champagne Ardenne, France)
Small leucine-rich proteoglycans and matrix metalloproteinase-14: Key partners?
- 10:10 – 10:15 Discussion
- 10:15 – 10:30 **H. Lortat-Jacob – L20** (University Grenoble Alpes, France)
Heparan sulfate controls cell migration induced by CXCL12 isoforms by modulating their presentation to their signaling receptor, CXCR4
- 10:30 – 10:35 Discussion
- 10:35 – 10:50 **M. Onisto – L21** (University of Padova, Italy)
Heparanase regulates renal damage/repair process and fibrosis following ischemia/reperfusion
- 10:50 – 10:55 Discussion
- 10:55 – 12:00 **Speakers corner (I)**
- 12:00 – 12:10 Lunch Box
- 12:10 – 23:30 Excursion Tour / Dinner

Sunday, 30 September

Chairperson/discussion leader: Boris Turk

LECTURES / TUTORIALS – SIGNALING AND DISEASE MOLECULAR TARGETING (L22 - L23)

- 09:00 – 09:20 **B. Turk – L22** (Jožef Stefan Institute, Slovenia)
Extracellular cysteine cathepsins - targets for diagnostics and therapy in cancer
- 09:20 – 09:25 Discussion
- 09:25 – 09:55 **P. Friedl – L23** (Radboudumc, Netherlands & University of Texas, USA)
Plasticity of matrix guidance and adhesion regulation in cancer cell invasion in vivo
- 09:55 – 10:00 Discussion

SELECTED TALKS (ST5 – ST8)

- 10:00 – 10:10 **Z. Piperigkou – ST5/ P5** (University of Patras, Greece)
Estrogen receptors as epigenetic mediators of miR-10b and miR-200b in mammary cancer
- 10:10 – 10:20 **D. Cujic – ST6 / P6** (University of Belgrade, Serbia)
17 β -estradiol modulates the expression of matrix metalloproteinases-2 and -9 in extravillous trophoblast in vitro
- 10:20 – 10:30 **A. Reszki – ST7 / P7** (Semmelweis University, Hungary)
The role of decorin in primary hepatocellular carcinoma
- 10:30 – 10:40 **H. Thekkekara Puthenparampill – ST8 / P8** (Ludwig Boltzmann Institute for Lung Vascular Research, Austria)
Transcriptomic profiling reveals pivotal involvement of lncRNAs in the pathogenesis of IPAH: the role of PAXIP1-AS1 in vascular remodelling
- 10:40 – 11:10 Coffee break

Chairperson/discussion leader: Ralph Sanderson

LECTURES / TUTORIALS – INTERACTIONS AND FUNCTIONS OF MATRIX MACROMOLECULES (L24 - L25)

- 11:10 – 11:30 **R. Sanderson – L24** (University of Alabama at Birmingham, USA)
Heparanase regulation of exosome biogenesis and function in cancer
- 11:30 – 11:35 Discussion
- 11:35 – 11:55 **K. Rilla – L25** (University of Eastern Finland, Finland)
Extracellular vesicles as functional components of the ECM
- 11:55 – 12:00 Discussion

SELECTED TALKS (ST9 – ST12)

- 12:00 – 12:10 **K. Kolliopoulos – ST9 / P9** (Uppsala University, Sweden)
TGF β induces CD44 intramembranous proteolytic cleavage during cancer progression
- 12:10 – 12:20 **C. Gialeli – ST10 / P10** (Lund University, Sweden)
Complement inhibitor CSMD1 interactome results in its tumor suppressive actions
- 12:20 – 12:30 **E. Regos – ST11 / P11** (Semmelweis University, Hungary)
Syndecan-1 inhibits thioacetamide induced fibrogenesis of the liver
- 12:30 – 12:40 **A. Kocak – ST12 / P12** (Dokuz Eylul University, Turkey)
Meprin metalloproteases: Molecular regulation and function in scleroderma patients
- 12:40 – 14:00 Lunch
- 14:00 – 16:00 **Poster Session (II) / Discussion groups (II)**

Chairperson/discussion leader: Sylvie Fournel-Gigleux

LECTURES / TUTORIALS – BIOINFORMATICS (L26 – L27)

- 16:00 – 16:20 **A. Naba – L26** (University of Illinois at Chicago, USA)

L: Lecture; ST: Selected Talk; FP: Flash Presentation; P: Poster

Proteomic and bioinformatic approaches to study the extracellular matrix of normal and diseased tissues

16:20 – 16:25 Discussion

16:25 – 16:45 **S. Fournel-Gigleux – L27** (University of Lorraine, France)

A new perspective on the pathogeny of glycosaminoglycan synthesis genetic defects: towards “omic” approaches

16:45 – 16:50 Discussion

SELECTED TALKS (ST13)

16:50 – 17:00 **R. Kaushik – ST13 / P13** (German Center for Neurodegenerative Diseases, Germany)

Understanding synaptic changes underlying neuronal communication by vital imaging of tetrapartite synapses

FLASH PRESENTATIONS (FP1 – FP4)

17:00 – 17:05 **I. Kalograiaki – FP1 / P14** (Centro de Investigaciones Biológicas (CIBCSIC), Spain)

Advancements in the structural characterisation of an adenocarcinoma-related matrix epitope defined by the monoclonal antibody A10

17:05 – 17:10 **D. Riga – FP2 / P15** (Vrije Universiteit, Netherlands)

Caught in the net: hippocampal extracellular matrix mediates cognitive deficits in depression

17:10 – 17:15 **E. Ergülen – FP3 / P16** (Izmir University of Economics, Faculty of Medicine, Turkey)

DNAJA1 as a Novel Interacting Partner of Human Transglutaminase 2

17:15 – 17:20 **R. Costantini – FP4 / P17** (University of Pavia, Italy)

Generation and characterization of an animal model of chondrodysplasia with joint dislocations gPAPP type

17:20 – 18:20 **Speakers corner (II)**

18:20 – 20:30 Free time / Short tour excursion

21:00 Dinner

Monday, 1 October

Chairperson/discussion leader: Martin Humphries

LECTURES / TUTORIALS – CELL RECEPTORS SIGNALING (L28 – L29)

09:00 – 09:20 **M. Humphries – L28** (University of Manchester, UK)

Reticular adhesions are a distinct class of cell-matrix adhesions that mediate attachment during mitosis

09:20 – 09:25 Discussion

09:25 – 09:45 **E. Papadimitriou – L29** (University of Patras, Greece)

Targeting Receptor Protein Tyrosine Phosphatase beta/zeta: New insights

09:45 – 09:50 Discussion

SELECTED TALKS (ST14 – ST17)

- 09:50 – 10:00 **K. Rypdal – ST14 / P18** (University of Oslo, Norway)
ADAMTSL3, a matrix glycoprotein expressed by cardiac fibroblasts, is up-regulated in the failing heart and regulates expression of matrix molecules involved in fibrosis
- 10:00 – 10:10 **S. Zaghdoudi – ST15 / P19** (Cancer Research Center of Toulouse, France)
Fibroblastic FAK activity modifies pancreatic ductal adenocarcinoma microenvironment and progression
- 10:10 – 10:20 **M. Stan – ST16 / P20** (University of Bucharest, Romania)
Targeting the extracellular matrix regulation with β -cyclodextrin-conjugated silymarin in a mouse model of fibrosis
- 10:20 – 10:30 **C. Fuselier – ST17 / P21** (University of Reims Champagne Ardenne, France)
Influence of Phenacetinum 4CH on murine melanoma progression
- 10:30 – 11:00 Coffee break

Chairperson/discussion leader: Dimitris Kletsas

LECTURES / TUTORIALS – CELL REGULATION AND ECM-BASED NANOTECHNOLOGY (L30 – L32)

- 11:00 – 11:20 **J. Couchman – L30** (University of Copenhagen, Denmark)
Syndecan receptors, signaling and the cytoskeleton
- 11:20 – 11:25 Discussion
- 11:25 – 11:45 **D. Kletsas – L31** (National Centre for Scientific Research "Demokritos", Greece)
Senescent fibroblasts as modulators of tumor microenvironment
- 11:45 – 11:50 Discussion
- 11:50 – 12:05 **M. Franchi – L32** (University of Bologna, Italy)
Collagen array affects the phenotype of breast cancer cells
- 12:05 – 12:10 Discussion

SELECTED TALKS (ST18 – ST20)

- 12:10 – 12:20 **N. Afratis – ST18 / P22** (Weizmann Institute of Science, Israel)
Development and characterization of inhibitory antibody that control the activity of LOXL2 enzyme
- 12:20 – 12:30 **A. Capuano – ST19 / P23** (CRO National Cancer Institute, Italy)
Abrogation of EMILIN1- α 4 β 1 integrin interaction affects experimental colitis and colon carcinogenesis enhancing lymphatic dysregulation and increasing inflammatory cascade
- 12:30 – 12:40 **C. Ural – ST20 / P24** (Dokuz Eylul University, Turkey)
The investigation of the therapeutic effect of pirfenidone on peritoneal fibrosis in sclerosing encapsulating peritonitis model in rats

FLASH PRESENTATIONS (FP5 – FP8)

- 12:40 – 12:45 **M.E. Christopoulou – FP5 / P25** (University of Patras, Greece)

Wisp1 enhances MIF expression in human synovial fibroblasts from patients with osteoarthritis

- 12:45 – 12:50 **A. Moroni – FP6 / P26** (CIT NOBA (UNNOBA-CONICET), JUNIN, Argentina)
Participation of the CD44 receptor expressed in the hippocampus in cognitive deficit of chronically stressed mice. Mechanisms involved in its modulation
- 12:50 – 12:55 **S. Vasileiou – FP7 / P27** (University of Patras, Greece)
Effect of statins in extracellular matrix biosynthesis in cancer
- 12:55 – 13:00 **E. Poletto – FP8 / P28** (Centro di Riferimento Oncologico di Aviano (CRO), Italy)
Multimerin-2 as a gatekeeper of vascular stability
- 13:00 – 14:30 Lunch
- 14:30 – 16:30 **Poster Session (III) / Discussion groups (III)**

LECTURES / TUTORIALS – INFLAMMATORY ECMs (L33 – L36)

Chairperson/discussion leader: Liliana Schaefer

- 16:30 – 16:50 **E. Korpos – L33** (University of Muenster, Germany)
Mechanisms of leukocyte penetration of the basement membranes
- 16:50 – 16:55 Discussion
- 16:55 – 17:10 **R. Savani – L34** (University of Texas, USA)
Extracellular Superoxide Dismutase (EC-SOD) knockout mice have worse alveolarization, inflammation and cytokine elaboration after neonatal hyperoxia exposure
- 17:10 – 17:15 Discussion
- 17:15 – 17:30 **L. Schaefer – L35** (Goethe University, Germany)
Proteoglycan signaling at the crossroads
- 17:30 – 17:35 Discussion
- 17:35 – 17:50 **J. Filmus – L36** (Sunnybrook Research Institute, Canada)
Glypican-6 promotes intestinal elongation by simultaneously regulating Wnt and Hedgehog signaling
- 17:50 – 17:55 Discussion

SELECTED TALKS (ST21 – ST25)

- 17:55 – 18:05 **J. Redondo Muñoz – ST21 / P29** (Universidad Complutense de Madrid, Spain)
WDR5 controls cell morphology, nuclear mechanics and epigenetic changes induced by confined 3D matrix. Functional role in cell migration
- 18:05 – 18:15 **D. Legutko – ST22 / P30** (Nencki Institute of Experimental Biology, Poland)
MMP-9 activity following L-Glu uncaging on dendritic spines from organotypic cultures
- 18:15 – 18:25 **E. Khan – ST23 / P31** (INM-Leibniz Institute for New Materials, Germany)
Photoactivatable HSP47: A tool to regulate collagen assembly & related disorders
- 18:25 – 18:35 **D. Manou – ST24 / P32** (University of Patras, Greece)

L: Lecture; ST: Selected Talk; FP: Flash Presentation; P: Poster

- 18:35 – 18:45 *Serglycin is an accomplice of the aggressiveness of glioblastoma cells*
G. Yildirim Buharalioglu – ST25 / P33 (Ege University, Turkey)
Epigenetic regulation of TIMP-3 transcription in human macrophages

CAREER DEVELOPMENT SESSION (Cont.)

- 18:45 – 19:00 **G. Guner** (Chair, FEBS Education Committee; School of Medicine, Izmir, Turkey)
Ph.D. Training: Tips for success for a Ph.D. student
- 19:00 – 19:05 Discussion
- 19:05 – 20:30 Free time / Short tour excursion
- 20:30 Dinner

Tuesday, 2 October

Chairperson/discussion leader: Sylvie Ricard-Blum

LECTURES / TUTORIALS – MATRIX AS A DYNAMIC STRUCTURAL NETWORK (L37 – L40)

- 09:00 – 09:20 **S. Ricard-Blum – L37** (University Lyon 1, France)
Role of intrinsic disorder in extracellular matrix interaction networks: focus on the propeptide of lysyl oxidase and syndecans
- 09:20 – 09:25 Discussion
- 09:25 – 09:40 **L. Kaczmarek – L38** (Nencki Institute, Warsaw, Poland)
Matrix metalloproteinase MMP-9 at the synapse opens brain-mind window
- 09:40 – 09:45 Discussion

SELECTED TALKS (ST26 – ST29)

- 09:45 – 09:55 **A. Michopoulou – ST26 / P34** (CNRS Université Lyon 1, France)
Receptor syndecan-1 plays a pivotal role in MMP-9 expression during keratinocyte migration
- 09:55 – 10:05 **V. Haydont – ST27 / P35** (L'Oréal Advanced Research, France)
Identification of matrix proteins as biomarkers of human papillary and reticular dermis in ageing skin
- 10:05 – 10:15 **J. Motta – ST28 / P36** (Universidade Federal do Rio de Janeiro, Brazil)
Systemic manganese distribution is affected by tumor development and is possibly related to metastasis establishment
- 10:15 – 10:25 **Y. Rinkevich – ST29 / P37** (Helmholtz Zentrum München, Germany)
Two succeeding fibroblastic lineages drive dermal development and the transition from regeneration to scarring

FLASH PRESENTATIONS (FP9 – FP15)

- 10:25 – 10:30 **K. Kyriakopoulou – FP9 / P38** (University of Patras, Greece)
EGFR contributes to functional cell properties, EMT and ECM remodeling in mammary cancer

- 10:30 – 10:35 **E. Kefali – FP10 / P39** (University of Patras, Greece)
The role of EGFR in aggressiveness, angiogenesis and the expression of cancer stem cell markers in triple negative breast cancer cells
- 10:35 – 10:40 **E. Mrówczyńska – FP11 / P40** (University of Wrocław, Poland)
The role of gelsolin and non-integrin laminin receptor in development of dorsal root ganglion in the context of different extracellular matrix proteins
- 10:40 – 10:45 **E. Mazurkiewicz – FP12 / P41** (University of Wrocław, Poland)
Gelsolin involvement in malignant melanoma cells' motility on selected extracellular matrix proteins
- 10:45 – 10:50 **M. Nazemi – FP13 / P42** (The University of Sheffield, UK)
ECM internalisation as a novel modulator of cancer cell growth/survival
- 10:50 – 10:55 **A. Moreira – FP14 / P43** (University of Porto, Portugal)
Extracellular Matrix and Cancer Stem-like Cells: using decellularized matrices to decipher their crosstalk
- 10:55 – 11:00 **A. Tavianatou – FP15 / P44** (University of Patras, Greece)
Hyaluronan molecular size as a key player in regulating biological effects in aggressive mammary cancer cells

Chairperson/discussion leader: Ilona Kovalszky

- 11:00 – 11:20 **A. Day – L39** (University of Manchester, UK)
TSG-6: a versatile modulator of matrix structure and function
- 11:20 – 11:25 Discussion
- 11:25 – 11:45 **I. Kovalszky – L40** (Semmelweis University Budapest, Hungary)
Communication between hepatoma cells and activated myofibroblasts of the liver
- 11:45 – 11:50 Discussion
- 11:50 – 12:05 **Closing Remarks & Awards**
- 12:05 – 13:00 **Farewell Party**
- Afternoon **Departure**