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 – GLYCOSCIENCE IN DISEASE (L8 - L9)
09:00 – 09:20 A. Passi – L8 (University of Insubria, Italy)
Hyaluronan matrakines 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

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

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

17β-estradiol modulates the expression of matrix metalloproteinases-2 and -9 in extravillous trophoblast in vitro

10:20 – 10:30  A. Reszeki – ST7 / P7 (Semmelweis University, Hungary)

The role of decorin in primary hepatocellular carcinoma

10:30 – 10:40  H. Thekkekara Puthenparampili – ST8 / P8 (Ludwig Boltzmann Institute for Lung Vascular Research, Austria)

Transcriptomic profiling reveals pivotal involvement of IncRNAs 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)

TGFβ 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. Fourmel-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 (ST1 – ST17)
09:50 – 10:00  K. Rypdal – ST14 / P18 (University of Oslo, Norway)
ADAMTS13, 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-α4β1 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)

L: Lecture; ST: Selected Talk; FP: Flash Presentation; P: Poster
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
Serglycin is an accomplice of the aggressiveness of glioblastoma cells

18:35 – 18:45  
**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

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**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*

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