

Euro-IF meeting 2017 – Program

Saint Malo, France - June 14-17, 2017.

Organizing committee

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Venue

Le Palais du Grand Large, Saint Malo, France (<http://www.pgl-congres.com/en/>)

Registration & Abstract Submission

<http://www.pgl-congres.com/european-intermediate-filaments-meeting-online-subscription-links>



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EuroCellNet

Wednesday June 14, 2017

13:00 Welcome Participants

15:00 Opening Remarks

15:15 Session 1. Regulation of Structure & Assembly of IF

***This session is organized in collaboration with the COST Action CA 15214 EuroCellNet
"An integrative action for multidisciplinary studies on cellular structural networks"***

Since their first description, numerous structural biologists, biochemists & cell biologists have worked to solve, at different scales, the structure of the different types of intermediate filaments (IFs) and decipher how they are assembled and regulated in cells. Techniques, equipment, technologies have evolved and allowed major advances leading to our current knowledge of the structure and assembly of IFs. This session will allow a focus of recent advances in this field using different technical approaches.



Chairpersons: **Gisèle Bonne** and **Anne Bertrand**

15:15 Introduction/Overview: Sergei Strelkov – University of Leuven, Belgium.
Intermediate filament structure: Quo vadis?

16:00 Stéphane Vassilopoulos – Pierre & Marie Curie University, Paris, France.
Flat clathrin lattices, branched actin and intermediate filaments form a mechanosensitive compartment required for skeletal muscle function.

16:20 Neelesh Soni – Indian Institute of Science Education and Research, Pune, India.
3D structure and mechanism of Intermediate Filament assembly.

16:40 Ohad Medalia – University of Zurich, Switzerland / Ben Gurion university, Israel.
The molecular organization of lamins in the nuclear lamina.

17:00 Coffee break

17:30 Poster Flash session

Presenting authors of 15 posters will have 3 minutes max to highlight the main message of their poster using a maximum of 3 slides. They will be no question/discussion. The purpose of this poster-flash presentation is not to present all the poster data but rather to stimulate the desire of the audience to visit the poster during the poster sessions.

18:15 Poster viewing

19:15 Free time

19:30 Diner

21:00 Historical lecture: John E. Eriksson – Åbo Akademi University Turku, Finland.

For the young researchers arriving in the field (and also the less young), a retrospective view of the main steps over the last 30-40 years of the IF field, difficulties overcome, technical developments that have pushed the field, etc... and perspectives, vision of the future of the field.

Thursday June 15, 2017

08:30 Opening of congress center

09:00 Session 2. Cytoskeletal Crosstalk

The cytoskeleton is mainly composed of three filamentous networks; microfilaments, microtubules and IFs. These three structures are dynamically controlled and participate in a coordinated manner in fundamental cell functions, such as cell division, cell motility. Evidence is accumulating pointing to an intimate interplay between IFs, actin and microtubules, allowing for the coordinated regulation of these networks. Identification of cytoskeletal crosslinkers and common regulatory pathways will be discussed during this session.

Chairpersons: **Sandrine Etienne-Manneville** and **Catherine Coirault**

- 09:00** *Introduction/Overview:* **Gijsje Koenderink** – AMOLF, Amsterdam, the Netherlands.
Cytoskeletal Cross talk.
- 09:40** **Sandrine Etienne-Manneville** – Institut Pasteur, CNRS UMR3691, Paris, France.
Intermediate filaments control the traction forces and actin-driven cell migration.
- 10:00** **Rudolf Leube** – RWTH, Aachen University, Germany.
Keratins and Actins: Foes or Friends?
- 10:20** **Dolores Pérez-Sala** – Centro de Investigaciones Biológicas, Spain.
Importance of the tail domain in the peripheral redistribution of vimentin in mitosis.

10:40 Coffee break

11:00 Session 3. Mechanobiology of Intermediate filaments

Mechanobiology is an emerging field that aims to elucidate the fundamental nature of how cells and tissues sense and respond to mechanical signals. Mechanobiology is being increasingly appreciated as being of primary importance in a plethora of both physiological and pathological biological processes and evidence is accumulating pointing to the importance of intermediate filaments for controlling the response of mechanical signals and their conversion into biochemical ones. Identification of the role of IFs in mechanobiology and common regulatory pathways in health and diseases will be discussed during this session.

Chairpersons: **Sandrine Etienne-Manneville** and **Jan Lammerding**

- 11:00** *Introduction/Overview:* **Paul Janmey** – University of Pennsylvania, Philadelphia, USA.
Elastic response of IF networks: compression stiffening of cells and tissues
- 11:40** **Thomas Magin** – University of Leipzig, Germany.
On the role of intermediate filament proteins in mechanotransduction.
- 12:00** **Zenlin Li** – Pierre & Marie Curie University, Paris, France.
Vimentin invalidation results in carotid stiffness in mice.
- 12:20** **Catherine Coirault** – Pierre & Marie Curie University, Paris, France.
Mechanotransduction defects of LMNA mutant myoblasts cause a decreased formation of stable cell-cell contacts in LMNA-mutated muscle precursors through deregulation of YAP and β -catenin.

12:40 Lunch

14:00 Session 4. Cancer, Migration & Epigenetics

Since several years, new dynamic functions of IF are emerging. Indeed the Intermediate filaments play an important role in cancer progression or invasion. Among these functions, cell migration is a crucial cellular process during pathological situations, and in particular promotes tumor spreading where cancer cells invade adjacent tissues and form metastases. So, IFs form an extensive and elaborate network which connects the cell cortex to intracellular organelles and likely contributes its biophysical properties to the mechanical and motile properties of the cell. On the other hand, IFs can be related to epigenetics modifications and for extension to cancer modifications and progression. Presentation and identification of these new roles of IFs in cancer, migration and some epigenetics pathways will be discussed during this session.

Chairpersons: **Patrick Vicart** and **Gisèle Bonne**

14:00 *Introduction/Overview:* **Philippe Collas** – University of Oslo, Norway.

Regulation of epigenetic states and 3-dimensional genome conformation by nuclear lamins.

14:40 **Luiza Stankevics** – Saarland University, Germany.

The role of vimentin in leukocyte amoeboid migration.

15:00 **Roy Beck-Barkai** – Tel Aviv University, Israel.

Escaping the crowd: the role of vimentin expression in dense cultures.

15:20 **Annica Gad** – Karolinska Institute, Sweden.

Vimentin in the control of cell-matrix adhesions, migration speed, and shape of transformed human fibroblasts.

15:40 **Coffee break**

16:00 **Claire Lépinoux-Chambaud** – MINT, Institut de Biologie en Santé, France.

The NFL-TBS.40-63 peptide: a new therapeutic agent against glioblastoma multiform, able to specifically target and kill tumor cells.

16:20 **Ryszard Rzepecki** – University of Wroclaw, Poland.

Proteomic analyses of protein complexes containing lamin B – interactions with topo II in vivo both directly and indirectly through the same sequences of DNA on chromatin.

16:40 **Arun P. Venu** – Åbo Akademi University, Finland.

Vimentin phosphorylation's effect on directional cell migration of macrophages in zebrafish.

17:00 **Poster Flash session**

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17:45 **Poster viewing**

18:45 **Free time**

Friday June 16, 2017

08:30 Opening of congress center

9:00 Session 5. Disease modelling & Translational development

Disease modelling is essential not only for the exploration of the pathomechanisms at play in many rare diseases due to mutations in genes encoding intermediate filaments but also to identify therapeutic targets and test therapeutic approaches for these diseases. This session will be composed of an intro/overview talk of representative example of recent and successful translational development for intermediate filament, followed by a round table made of short talks of selected speakers who will discuss pros and cons of different models & opportunities for translational aspects.

Chairpersons: **Pascale Bomont** and **Onnik Agbulut**

09:00 *Introduction/Overview:* **Annachiara DeSandre-Giovannoli** – Aix-Marseille University, France.
Successful translational developments in intermediate filaments-associated disorders.

09:40 **Antoine Muchir** – Pierre & Marie Curie University, Paris, France.
Altered signaling in dilated cardiomyopathy caused by nuclear A-type lamins gene mutation.

10:00 **Yoseph Gruenbaum** – Hebrew University of Jerusalem, Israel.
*Global transcriptional changes caused by mechanical strain correlate to tissue specific disease phenotypes in mutant *C. elegans*.*

10:20 **Pascale Bomont** – Institute for Neuroscience Montpellier, France.
Fishing for Intermediate Filaments

10:35 Coffee break

11:00 **Rachel Battaglia** – University of North Carolina, United States.
Generation of a patient-derived astrocyte model of Alexander Disease via cellular reprogramming.

11:20 **Coline Macquart** – Pierre & Marie Curie University, Paris, France.
Altered trafficking of connexin 43 participates to the development of LMNA-cardiomyopathy.

11:40 **Alain Lilienbaum** – Agence comptable de l'Université Paris Diderot, France.
Severe intestinal pseudo-obstruction in a myofibrillar myopathy knock-in mouse model with a R405W desmin mutation.

12:00 **Round table:** Short Poster Flash presentations of 3 min followed by general discussions:

Vicente Andres – CNIC, Spain.

Targeting the ER stress response inhibits atherosclerosis and retards associated death in progeroid mice.

12:30 Lunch

14:00 Session 6. IF in Neuronal development

Developing neurons express a series of IF proteins, sequentially, at different stages of cell differentiation. This correlates with altered morphologies during the neuronal development, including axon outgrowth, guidance and conductivity. Importantly, alteration of the IF neuronal network is a hallmark of neurodegenerative diseases such as ALS, Alzheimer's and Parkinson's diseases. Neurodegenerative diseases, but also acute CNS trauma and ischemia also coincide with the upregulation and rearrangement of the IFs in glial cells. During this session, we will discuss the functions of the IF network during brain development and their alteration during pathological situations.

Chairpersons: **Sandrine Etienne-Manneville** and **Joel Eyer**

14:00 Introduction/Overview: **Milos Pekny** – University of Gothenburg, Sweden.
TBA.

14:40 **Elly Hol** – Brain Center Rudolf Magnus, UMC Utrecht, The Netherlands.
Deciphering the role of GFAP isoforms in neural stem cells and glioma.

15:00 **Rishel Vohnoutka** – University of Massachusetts Lowell, United States.
Influence of a novel GSK3 β phosphorylation site on neurofilament dynamics.

15:20 **Kristell Barreau** – MINT University Angers, France.
The neurofilament-derived NFL-TBS.40-63 peptide enters in human fetal neural stem cells and increases their differentiation in vitro.

15:40 **Free time**

20:30 **Gala Diner**

Saturday June 17, 2017

08:30 **Opening of congress center**

9:00 **Session 7. Metabolic regulation & Mitochondria**

Over the last decade, an increasing number of studies are demonstrated that IFs have a specific role on cell metabolism, metabolic regulations and mitochondrial function. During this session, we will discuss the functions of the IF network on these processes both in physiological and pathological situations.

Chairpersons: **Onnik Agbulut**

09:00 *Introduction/Overview:* **Michelle Kerns**– J Hopkins School of Public Health, Baltimore, USA.
Oxidative stress and dysfunctional NRF2 precede onset of palmoplantar keratoderma in a model of pachyonychia congenita.

09:40 **Diana Toivola** – Åbo Akademi University, Turku, Finland.
Keratins regulate β -cell mitochondrial morphology, motility and homeostasis.

10:00 **Ponnuswamy Mohanasundaram** - Åbo Akademi University, Turku, Finland.
Vimentin regulates cell size through the insulin/mTOR signaling pathway.

10:20 **Yassemi Capetanaki** – Biomedical Research Foundation, Academy of Athens, Greece.
TBA.

10:40 **Coffee break**

11:00 **Scientific Session 8. Proteostasis**

Intermediate Filaments are highly dynamic structures and their turn-over have now been evidenced in vitro and in animals. This session will focus on the proteostasis of Intermediate Filaments, to provide an overview of the post-translational modifications that regulate IF degradation and on the different cellular pathways used to sustain their steady state. Finally, we will discuss how targeting IF proteostasis can be a promising therapeutic avenue for human diseases.

Chairpersons: **Sabrina Batonnet-Pichon** and **Pascale Bomont**

11:00 **Pascale Bomont** – Institute for Neuroscience, Montpellier, France.
IF Proteostasis is a dynamic process and an active regulator of IF activity.

11:25 **Ryan F. O'Shaughnessy** – UCL-London, UK.
Lamin degradation and autophagy in epidermal terminal differentiation.

11:45 **Natasha Snider** – University of North Carolina, USA
Restoring IF proteostasis via pharmacological targeting of aberrant post-translational modifications.

12:05 **Elin Torvaldson** – Åbo Akademi university, Turku, Finland.
Sumoylation as a novel regulator of IF-mediated signaling

12:25 **Alexander Minin**– Inst. Protein Research, Russian Academy of Sciences, Russian Federation.
Calpain controls the interaction of mitochondria with vimentin IFs.

12:40 **Concluding remarks**

13:00 **Lunch & Departure**