

WORKSHOPS

CURRENT TRENDS IN BIOMEDICINE 2019

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ACTIN-BASED MECHANOSENSATION AND FORCE GENERATION IN HEALTH AND DISEASE

SCOPE

The actin cytoskeleton provides pushing and pulling forces that are precisely coordinated in complex processes, such as cell migration. A large array of machineries controlling actin polymerization and motors driving actin filament contraction have been identified, force generation has been reconstituted *in vitro*, and the underlying molecular mechanisms are relatively well understood. Recent evidence, however, suggests that the actin cytoskeleton is as critical for sensing forces as it is for generating forces in the cell. These two roles of actin seem to be intimately coupled. Cells exert forces to the underlying substratum and to neighboring cells, and simultaneously sense the mechanical properties of their environment and the provided external forces. Dissection of these intermingled mechanisms is a major challenge that requires a multidisciplinary approach, where physicists and engineers team up with cell and molecular biologists. One of the main goals of the workshop is to draw a conceptual framework that integrates mechanosensation with force generation. This endeavor is critical not only for our understanding of fundamental cellular processes, but also to address the challenges of pathological situations, such as tumor growth and cancer cell dissemination, when cells do not properly respond to these forces.

FORMAT OF THE WORKSHOP

The workshop will bring together a maximum of 15 speakers and 35 participants, to form a group of around 50 people. The scientific programme will start in the morning of Monday, November 11th, and will end around noon on Wednesday, November 13th. Ample time for informal discussion will be reserved. Participants will be invited to present a poster.

VENUE OF THE WORKSHOP

The workshop will be held in Baeza, at the "Sede Antonio Machado", a XVII century building turned into a Conference Centre of the Universidad Internacional de Andalucía (UNIA). This Seat includes a residence, where participants will be accommodated. Baeza is a World Historic Heritage town, renowned for its Renaissance and Gothic buildings.

SPEAKERS

Inés M. Antón. Centro Nacional de Biotecnología (CNB-CSIC), Centro de Investigación Biomédica en Red de Enfermedades Neurodegenerativas (CIBERNED). Madrid, Spain.

Alexander D. Bershadsky. Mechanobiology Institute, National University of Singapore. Singapore / Department of Molecular Cell Biology, Weizmann Institute of Science. Rehovot, Israel.

William M. Brieher. Department of Cell and Developmental Biology, University of Illinois, Urbana-Champaign. Urbana, IL, USA.

Dylan T. Burnette. Cell and Developmental Biology, Vanderbilt University School of Medicine. Nashville, TN, USA.

Roberto Domínguez. Department of Physiology, Perelman School of Medicine at the University of Pennsylvania. Philadelphia, PA, USA.

Alexis Gautreau. Ecole Polytechnique / CNRS UMR7654, Institut Polytechnique de Paris. Paris, France.

Kinneret Keren. Department of Physics & Network Biology Research Laboratories, Technion - Israel Institute of Technology. Haifa, Israel.

Pekka Lappalainen. Institute of Biotechnology, University of Helsinki. Helsinki, Finland.

Christophe Le Clainche. Institute for Integrative Biology of the Cell, CEA, CNRS, Université Paris-Sud, Université Paris-Saclay. Gif-sur-Yvette, France.

Pere Roca-Cusachs. Institute for Bioengineering of Catalonia (IBEC), The Barcelona Institute of Technology (BIST) / University of Barcelona. Barcelona, Spain.

Klemens Rottner. Division of Molecular Cell Biology, Zoological Institute, TU Braunschweig / Department of Cell Biology, Helmholtz Centre for Infection Research. Braunschweig, Germany.

Khalid Salaita. Department of Chemistry, Emory University. Atlanta, GA, USA.

Miguel Vicente-Manzanares. Centro de Investigación del Cáncer-Instituto de Biología Molecular y Celular del Cáncer, CIC-IBMCC (CSIC-Universidad de Salamanca). Salamanca, Spain.

THE EMBO KEYNOTE LECTURE

Laura M. Machesky. CRUK Beatson Institute and Institute of Cancer Sciences, University of Glasgow. Glasgow, UK.

SPONSOR:



ORGANIZED BY:

Alexis Gautreau
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Salamanca, Spain.

Baeza, Spain

11th-13th November 2019

Deadline:

13th September 2019

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