

# GENERAL INFORMATION

## ORGANIZERS



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## DATES

Madrid, November 4th-5th, 2016

## VENUE

**cnic**

CENTRO NACIONAL DE INVESTIGACIONES CARDIOVASCULARES (CNIC)

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TECHNICAL SECRETARIAT

**TRAMA**  
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Madrid, November 4th-5th, 2016  
[www.cnic-conference.com](http://www.cnic-conference.com)



## organizers

Jorge Alegre-Cebollada  
Nadia Mercader  
María Montoya  
Miguel Á. del Pozo

## external organizer

Martin Schwartz (Yale University)

sponsored by:



venue: **cnic** CENTRO NACIONAL DE INVESTIGACIONES CARDIOVASCULARES (CNIC)  
Melchor Fernández Almagro, 3 - 28029 Madrid, Spain

## Friday 4th November 2016

08:30-08:50 Registration  
08:50-09:00 Opening by CNIC General Director (Valentín Fuster) and Conference Organizers

### Session I - Mechanosensing, mechanotransduction and morphogenesis

**Chair: Nadia Mercader**

09:00-09:30 **Mike Sheetz.** Columbia University, New York USA, Mechanobiology Institute, Singapore  
*"Rigidity sensing contractions inhibit transformed growth"*

09:30-10:00 **Clare Waterman.** National Institutes of Health, Bethesda, USA  
*"FMN2 makes perinuclear actin to protect nuclei during confined migration and promote metastasis"*

10:00-10:15 **Short talk**  
**Sandra B. Lemke.** Max Planck Institute of Biochemistry, Martinsried, Germany  
*"Measuring molecular tension at developing muscle attachment sites"*

10:15-10:30 **Short talk**  
**Daniela Panáková.** Max Delbrück Center for Molecular Medicine, Berlin, Germany  
*"Planar cell polarity pathway links mechanosensitive feedback between cardiac remodelling and muscle differentiation"*

10:30-10:50 **Coffee Break**

10:50-11:20 **Xavier Trepát.** Institute for Bioengineering of Catalonia, Barcelona, Spain  
*"Mechanical guidance of collective cell migration and invasion"*

11:20-11:50 **Flash presentations**  
**Fidel-Nicolás Lolo.** Spanish National Center for Cardiovascular Research (CNIC), Madrid, Spain  
*"Identifying mechanosensing and mechanotransducer elements within caveolae"*  
**Jose Manuel García-Aznar.** Zaragoza University, Spain  
*"The role of matrix mechanics on 3D cell migration: from microfluidics to numerical modeling"*  
**Ines Marques.** Bern University, Switzerland  
*"Role of extracellular matrix stiffness in heart regeneration"*  
**César Lépez-Pastrana.** National Center of Biotechnology (CNB), CSIC, Madrid, Spain  
*"Force and twist dependence of repc nicking activity on torsionally-constrained DNA molecules"*  
**Raúl Pérez-Jiménez.** CIC nanoGUNE, San Sebastián, Spain  
*"Mechanochemical evolution of the giant muscle protein titin as inferred from resurrected proteins"*

12:00-13:00 **Lunch**

### Session II - Novel experimental approaches in mechanobiology: from single molecules to in silico models

**Chair: María Montoya**

13:00-13:30 **Jochen Guck.** Technical University, Dresden, Germany  
*"Feeling for cell function - mechanical phenotyping at 1000 cells/sec"*

13:30-14:00 **Julio M. Fernández.** Columbia University, New York, USA  
*"The mechanical work of titin folding and muscle contraction"*

14:00-14:30 **Marino Arroyo.** Polytechnic University, Barcelona, Spain  
*"Control of epithelial resilience and shape through matrix hydraulics"*

14:30-15:00 **Jan Lammerding.** Cornell University, Ithaca, NY, USA  
*"Nuclear mechanics during migration in 3D environments"*

15:00-15:30 **Vadim Frolov.** University of the Basque Country, Bilbao, Spain  
*"Mechanochemistry of membrane fission driven by dynamins"*

15:30-16:00 **Flash presentations**  
**Amy Beedle.** King's College London, UK  
*"Protein s-sulfenylation is a fleeting molecular switch that regulates non-enzymatic oxidative folding"*  
**Pablo Sáez.** Polytechnic University of Catalonia, Barcelona, Spain  
*"Computational analysis of mechanical forces in the endothelial glycocalyx"*  
**Carmen Suay-Corredera.** Spanish National Center for Cardiovascular Research (CNIC), Madrid, Spain  
*"Nanomechanical phenotypes in familial hypertrophic cardiomyopathy"*  
**Roger Oriá.** Institute for Bioengineering of Catalonia, Barcelona, Spain  
*"Force loading explains how substrate rigidity and ligand nano-distribution regulate cell response"*  
**Ohad Cohen.** Weizmann Institute of Science, Rehovot, Israel  
*"Dynamical response and synchronous beating of isolated cardiaccells"*

16:00-16:20 **Coffee Break and Poster exhibition (Even numbers)**

16:20-16:50 **Roger Kamm.** MIT, Cambridge, USA  
*"The Role of Mechanical Force in Tumor Cell Migration and Extravasation"*

### Session III - Mechanical forces in the cardiovascular system

**Chair: Jorge Alegre-Cebollada**

16:50-17:20 **Martin Schwartz.** Yale University, New Haven, USA  
*"Mechanical forces in vascular health and disease"*

17:20-17:50 **David Warshaw.** University of Vermont, Burlington, USA  
*"Myosin Binding Protein C: Steps on the gas and brake simultaneously to regulate cardiac contractility"*

17:50-18:20 **Julien Vermot.** Institute of genetics and molecular and cellular biology, Illkirch, France  
*"Mechanotransduction and cardiovascular morphogenesis"*  
**EMBO Young Investigator Lecture**

18:20-18:50 **Lucie Carrier.** University Medical Center Hamburg-Eppendorf, Hamburg, Germany  
*"Gene therapy for pediatric sarcomeric cardiomyopathies"*

18:50-19:05 **Short Talk**  
**Achim Paululat.** Universität Osnabrück, Osnabrueck, Germany  
*"Role of the ecm in modulating mechanical forces in the drosophila cardiovascular system"*

19:05-19:20 **Short Talk**  
**Asier Echarri.** Spanish National Center for Cardiovascular Research (CNIC), Madrid, Spain  
*"An ABL-FPB17 mechanosensing system couples local plasma membrane curvature and stress fiber remodeling during mechanoadaptation"*

## Saturday 5th November 2016

### Session IV - Mechanical forces in disease

**Chair: Miguel Ángel del Pozo**

9:00-09:30 **Valerie Weaver.** University of California San Francisco, USA  
*"Forcing tumor progression"*

09:30-10:00 **Emmanuel Farge.** Curie Institute, Paris, France  
*"From mesoderm mechanotransductive evolutionary origins to tumourigenic mechanical induction"*

10:00-10:30 **David Beech.** University of Leeds, UK  
*"Piezo1 channel: mechanical force sensor in the endothelium"*

10:30-10:50 **Coffee Break and Poster exhibition (Odd numbers)**

10:50-11:20 **Javier Díez.** University of Navarra, Pamplona, Spain  
*"Molecular basis of mechanical alterations of the myocardial collagen network in heart failure"*

11:20-11:50 **Elizabeth McNally.** Northwestern University, Chicago, USA  
*"Modifiers of myopathy affecting heart and muscle"*

11:50-12:05 **Short Talk**  
**Joe Swift.** The University of Manchester, UK  
*"Nuclear decoupling and chaperones protect cell homeostasis during mechanical loading"*

12:05-12:20 **Short Talk**  
**Linda J. Kenney.** Mechanobiology Institute, Singapore  
*"Super-resolution imaging of salmonella spi-2 regulation: a view from 20 nm to 30,000 feet"*

12:20-12:50 **Stefano Piccolo.** University of Padova, Italy  
*"YAP/TAZ in somatic stem cells, organoids, tissue repair and cancer"*  
**The EMBO Keynote Lecture**

12:50-13:00 **Concluding remarks and farewell**