

Programme

Day 0 – Wednesday 18, April

16.00-20.00 Registration (NH Constanza hotel)

Day 1 – Thursday 19, April

08.00-12.30 Registration (NH Constanza hotel)

10.00-12.30 Posters set up (CosmoCaixa, Conference site, Science Museum)

10.00 Transfer 1 from hotel to conference site for all Posters and Speakers of Day 1

10.30 Transfer 2 from hotel to conference site

11.00 Transfer 3 from hotel to conference site

11.30-12.30 Coffee/Snack/lunch available at conference site

12.30 General introduction of the conference, Organizing committee

12.40 Opening keynote address

What is the biological relevance of the specific bond properties revealed by single molecule studies?

Pierre Bongrand, INSERM, Marseille, France

13.40 Break

SESSION I | CELLS, CELLULAR INTERACTIONS

13.55 **Yves Dufrêne** introduces the session and Invited speakers

14.00 Adapting AFM for studying living cells

J.K. Heinrich Hörber University of Bristol, Bristol, United-Kingdom

14.30 AFM measurement of leukocyte adhesion to endothelial cells

Vincent Moy University of Miami, Miami FL, USA

15.00 Measurement of cell mechanical properties by atomic force microscopy

Daniel Navajas Universitat de Barcelona, Barcelona, Spain

15.30 Coffee Break / Posters

Day 1 – Thursday 19, April (cont.)

- 16.00 Mechanical dynamics during cell death
[Andrew Pelling](#) University College London, United-Kingdom
- 16.15 Elastic membrane heterogeneity of living cells revealed by stiff nanoscale membrane domains
[Frank Lafont](#) Pasteur Institute, Lille, France
- 16.30 Probing microbial interfacial properties by force spectroscopy and microelectrophoresis
[Fabien Gaboriaud](#) Nancy-University, CNRS, Villers-lès-Nancy, France
- 16.45 Monitoring of biomechanical cellular activity induced by vascular active agonists with AFM
[Charles M. Cuerrier](#) Université de Sherbrooke, Canada
- 17.00 Cell topometry analysis can replace direct measurement of fluid permeability
[Christoph Riethmuller](#) University of Munster, Germany
- 17.15 Exploring the surface of living microbial cells using AFM
[Yves Dufréne](#) Université catholique de Louvain, Louvain-la-Neuve, Belgium
- 17.45 Coffee break / Poster session # 1 (Sessions I and IV)
- 18.45 Departure for the NH Constanza hotel
- 19.30 Arrival at the NH Constanza hotel
- 20.00 Departure for the concert
- 20.30 Concert in the church (Monastir de Pedralbes)
- 21.30 Tapas in « refectori » of the Monastery
- 23.00 Departure for the NH Constanza hotel

Day 2 - Friday 20, April

SESSION II | SINGLE MOLECULAR RECOGNITION, AFFINITY, UNFOLDING FORCES

- 08.55 Peter Hinterdorfer introduces the session and Invited speakers
- 09.00 Nanobiotechnological drug screening: imaging, sensing and locating ligands that drive cellular machines
Daniel J. Müller Center of Biotechnology, Dresden, Germany
- 09.30 Molecular devices: sensors, grabbers and actuators
Hermann Gaub Ludwig-Maximilians-Universität, München, Germany
- 10.00 A rotaxane based method of determining hairpin location and kinetics in nucleic acids with an AFM
Brian Ashcroft University Tempe, Arizona, USA
- 10.15 Single molecule force spectroscopy mapping
Arturo M Baró Instituto de Ciencia de Materiales de Madrid (CSIC), Spain
- 10.30 Coffee Break / Posters
- 11.00 Molecular mechanisms contribute to the fracture resistance of bone: repeatable energy dissipation by sacrificial bonds and hidden length in molecular networks
Georg E. Fantner University of California Santa Barbara, CA, USA
- 11.15 Mechanical properties of glucans/Dectin-1 interactions: Implications for pathogen recognition
Liz Adams University of Delaware, USA
- 11.30 Myomesin: a molecular spring with adaptable elasticity
Patricia Bertoncini CNRS Institut des Matériaux Jean Rouxel, Nantes, France
- 11.45 Atomic Force Microscopy study of interactions between supercoil-dependent gene regulatory proteins and DNA
Sergey Chasovskikh Georgetown University Washington, USA

Day 2 - Friday 20, April (cont.)

- 12.00 Single molecule recognition force microscopy
Peter Hinterdorfer Johannes Kepler Universität Linz, Linz, Austria
- 12.30 Lunch
- SESSION III | HIGH RESOLUTION IMAGING**
- 13.55 **Simon Scheuring** introduces the session and Invited speakers
- 14.00 G-Protein coupled receptors are active as dimers and higher oligomers:
a lesson from rhodopsin
Andreas Engel University of Basel, Basel, Switzerland
- 14.30 Dynamic behaviors of proteins at work captured by high-speed AFM
Toshio Ando Kanazawa University, Kanazawa, Ishikawa, Japan
- 15.00 Imaging of individual protein molecules with femto newton force sensitivity
Ricardo Garcia Instituto de Microelectronica de Madrid, Madrid, Spain
- 15.30 Coffee Break / Posters
- 16.00 The supramolecular architecture of junctional microdomains in native lens
membranes
Nikolay Buzhynskyy Institut Curie, UMR-CNRS, Paris, France
- 16.15 High resolution AFM imaging of native single-standed DNA binding (SSB) protein –
DNA complexes
Olivier Piétrement Institut Gustave-Roussy, Villejuif, France
- 16.30 Specific patterning of LH2 and LH1 protein complexes
M. Escalante-Marun University of Twente, The Netherlands

Day 2 - Friday 20, April (cont.)

- 16.45 Characterization of transcription regulatory complexes of bacteriophage Phi29 by AFM
Paloma Gutiérrez del Arroyo Universidad Autónoma de Madrid, Spain
- 17.00 Structure and assembly of membrane proteins in native membranes by AFM
Simon Scheuring Institut Curie, Paris, France
- 17.30 Coffee break / Poster session # 2 (Sessions II and III)
- 18.30 Departure for the NH Constanza hotel
- 19.00 Arrival at the NH Constanza hotel
- 19.50 Departure for Hotel Casa Fuster
- 20.15 Cocktail and dinner in Hotel Casa Fuster
Keynote address
High speed AFM and quantitative indentation testing
Paul Hansma, UC Santa Barbara, California, USA
- 23.15 Departure for the hotel

Day 3 – Saturday 21, April

SESSION IV | MODEL MEMBRANES AND PROTEIN-MEMBRANE INTERACTIONS

- 08.55 **Christian Le Grimmellec** introduces the session and Invited speakers
- 09.00 Fingerprinting membranes with force spectroscopy
Fausto Sanz Universitat de Barcelona, Barcelona, Spain
- 09.30 Quantitative analysis of coarsening and spatial domain distribution in a ternary membrane
Adam Cohen Simonsen University of Southern Denmark, Denmark
- 09.45 How can Atomic Force Microscopy help to understand sepsis?
Thomas Gutschmann Research Center Borstel, Germany
- 10.00 Dynamic strength of the interaction between lung surfactant protein D (SP-D) and saccharide ligands
Esben Thormann University of Southern Denmark, Odense, Denmark
- 10.15 Atomic force microscopy characterization of supported planar bilayers that mimic the mitochondrial inner membrane
Jordi Hernandez-Borrell Universitat de Barcelona, Spain
- 10.30 **Coffee Break / Posters**
- 11.00 Concept of dynamic DNA network dedicated to DNA-Protein interactions studies
Céline Elie-Caille FEMTO-ST Institute, CNRS, Besançon, France
- 11.15 Using Atomic Force Microscopy to Quantify Amyloid Formation at the Nanoscale
Martijn van Raaij University of Twente Enschede, The Netherlands

Day 3 – Saturday 21, April (cont.)

- 11.30 Alkaline phosphatase interactions with domains in supported bilayers
Christian Le Grimellec INSERM, Montpellier, France
- 12.00 Closing keynote address
A little can go a long way!
Mike Horton, UCL. Dept. of Medicine, United-Kingdom
- 13.00 End of the conference
Transfers to the NH Constanza hotel and to the airport will be available