2nd workshop
on nanobioscience
CNB CSIC-IMDEA NANOCIENCIA

Friday, 18th May, 2012

www.nanociencia.imdea.org
www.cnb.csic.es

9:00-9.15 **Welcome**
R. Miranda, *Director IMDEA*
F. Moreno-Herrero, *Organizer*

Session 1: Molecular AFM
Session Chair: Fernando Moreno-Herrero, *CNB-CSIC, Madrid*

9:15-10:00 **Plenary (40+5 min)**
Molecular Machines of DNA Break Repair: What they look like and how they work
Claire Wyman, *Erasmus Medical Center, Rotterdam, The Netherlands*

10:00-11:00 **Talks (10+5 min)**

10:00-10:15 **Monitoring disassembly of individual adenovirus particles shows stepwise dismantling and core uncoating in real time**
Pedro J. de Pablo, *UAM, Madrid*

10:15-10:30 **The High Speed AFM; a window into biomolecular dynamics**
Ignacio Casuso, *INSERM, Marseille*

10:30-10:45 **Noninvasive Protein Structural Flexibility Mapping by Bimodal Dynamic Force Microscopy**
Elena Tomás, *IMM-CSIC, Madrid*

10:45-11:00 **The importance of carbohydrate-carbohydrate interactions in 3D supramolecular self-assembly**
Mónica Luna, *IMM-CSIC, Madrid*

11.00-11.45 Coffee Break

Session 2: Cellular and Fluorescence Biophysics
Session Chair: Arturo M. Baró Vidal, *ICMM-CSIC, Madrid*

11:45-12:45 **Talks (10+5 min)**

11:45-12:00 **Mechanical interactions of cells with their local microenvironment in normal and diseased conditions examined at the nanoscale**
Jordi Alcaraz, *UB, Barcelona*

12:00-12:15 **Bacterial cytoskeleton on surfaces: from structure and dynamics to function**
Marisela Vélez, *ICP-CSIC & IMDEA-Nanociencia*

12:15-12:30 **Single Molecule Nanophotonic approaches to study membrane receptors organization**
Carlo Manzo, *ICFO, Barcelona*

12:30-12:45 **Common traits at the start of the neurodegenerative cascade**
Rubén Hervás, *Instituto Cajal CSIC, Madrid*

12.45-14.00 **Lunch**

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Session 3: Optical Tweezers

Session Chair: Benjamin Gollnick, *CNB-CSIC, Madrid*

14.00-14.45 **Plenary (40+5)**

Nanomechanics with Optical Tweezers: How Cellular Machines Recombine DNA & Work Against Protein Friction

Erik Schaeffer, *Biotechnology Center, TU Dresden, Germany*

14:45-15:45 **Talks (10+5 min)**

14:45-15:00 **Single molecule kinetics of peptides and proteins binding nucleic acids**
Felix Ritort, *UB, Barcelona*

15:00-15:15 **Optical tweezers studies reveal the DNA unwinding mechanism of the Phi29 DNA polymerase**
Borja Ibarra, *IMDEA-Nanociencia, Madrid*

15:15-15:30 **Mechanical stability of low-humidity single DNA molecules**
Ricardo Arias, *IMDEA-Nanociencia, Madrid*

15:30-15:45 **A single molecule comparison of the mechanical properties of double-stranded RNA and DNA**
Elias Herrero, *CNB-CSIC, Madrid*

15.45-16.30 **Coffee Break**

Session 4: Other Biophysical Techniques

Session Chair: José L. Carrascosa, *CNB-CSIC & IMDEA-Nanociencia Madrid*

16:30-17:30 **Talks (10+5 min)**

16:30-16:45 **Single molecule studies of the translocation properties of a model DNA helicase with Magnetic Tweezers**
Carolina Carrasco, *CNB-CSIC, Madrid*

16:45-17:00 **Direct observation of stalled fork restart by chicken foot formation in the T4 replication system**
María Manosas, *UB, Barcelona*

17:00-17:15 **Development of nanomechanical systems for biological analysis**
Javier Tamayo, *IMM-CSIC, Madrid*

17:15-17:30 **STED system performance evaluation by means of a Fourier transform method**
David Merino, *ICFO, Barcelona*

17:30-18:00 **Concluding Remarks**

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