

# Physics and Biological Systems 2014 | Program

June 24-27 2014, Gif-sur-Yvette, France

## Tuesday, June 24<sup>th</sup>

REGISTRATION & COFFEE OPEN AT 12:00

14:00 Patricio Lebœuf Opening remarks

### Session 1: Instrumental developments

14:30 Petra Schwillie Design features of protein clockworks

15:15 Ata Akin What can fNIRS tell us about neurovascular coupling? Advantages and limitations.

COFFEE BREAK (16:00–16:30)

16:30 Peter Dedecker Fluorescence imaging with smart labels

17:15 Laura Lechuga Nanobiosensor devices for the direct and label-free deciphering of cellular pathways

## Wednesday, June 25<sup>th</sup>

### Session 2: Molecular biophysics

09:00 Franck Artzner Self-assemblies of peptide nanotubes : from structures to applications

09:45 Alain Arneodo Chromatin state dynamics and plasticity of the replication spatio-temporal program during human cell differentiation

COFFEE BREAK (10:30–11:00)

11:00 Edward Egelman Cryo-EM of Helical Polymers at Near Atomic Resolution: New Insights into Evolutionary Divergence

11:45 Ewa Paluch Actin cortex mechanics in animal cell morphogenesis

POSTER SESSION (12:30–13:30)

LUNCH (13:30–14:30)

### Session 3: Viruses

14:30 Bogdan Dragnea Mechanical properties of icosahedral viruses under osmotic stress

15:15 Douglas E. Smith Viral Genome Packaging Powered by DNA Translocating Molecular Motors

COFFEE BREAK (16:00–16:30)

16:30 Patrick Forterre Viruses and vesicles of hyperthermophilic archaea from terrestrial and deep sea vents: novel biological systems waiting for further exploration

17:15 Gijs Wuite Unlocking the mechanics of viral maturation

POSTER SESSION (18:00–20:00)

CONFERENCE DINNER

Thursday, June 26<sup>th</sup>

**Session 4: Cellular Mechanics**

09:00 Viola Vogel Nanomechanics by which cells explore their environments and pick up their prey  
09:45 Bela Mulder Taking directions: modeling self-organization in the plant cytoskeleton

COFFEE BREAK (10:30–11:00)

11:00 Margaret Gardel Mechanics of contractile matter  
11:45 Anne Houdusse How nanomotors produce force in cells - insights from the myosin superfamily

POSTER SESSION (12:30–13:30)

LUNCH (13:30–14:30)

**Session 5: Morphogenesis and development**

14:30 Matthieu Piel Cell trajectories: from a universal law of cell migration to search strategies  
15:15 Pierre-François Lenne Mechanics of cell contacts during tissue morphogenesis

COFFEE BREAK (16:00–16:30)

16:30 René Doursat Computational Modeling and Simulation of Animal Early Embryogenesis  
17:15 Julien Vermot Real time endocardial biomechanics during heart valve development

Friday, June 27<sup>th</sup>

**Session 6: Single molecules**

09:00 Antigoni Alexandrou Exploring the membrane architecture with single-molecule tracking, Bayesian inference, and hydrodynamic force  
09:45 Emmanuel Margeat Structural dynamics of single G-protein coupled receptors

COFFEE BREAK (10:30–11:00)

11:00 Matthias Rief Mechanics of Single Protein Molecules  
11:45 Naoki Watanabe Dynamic view of mechanical regulation of actin cytoskeleton through single-molecules

SPENCER BROWN POSTER AWARD (12:30)