

**PHYSICS  
OF LIVING SYSTEMS**  
GDR International

# GRISBi

Montpellier

Groupement de Recherche  
Interdisciplinaire sur les  
Systèmes Biologiques

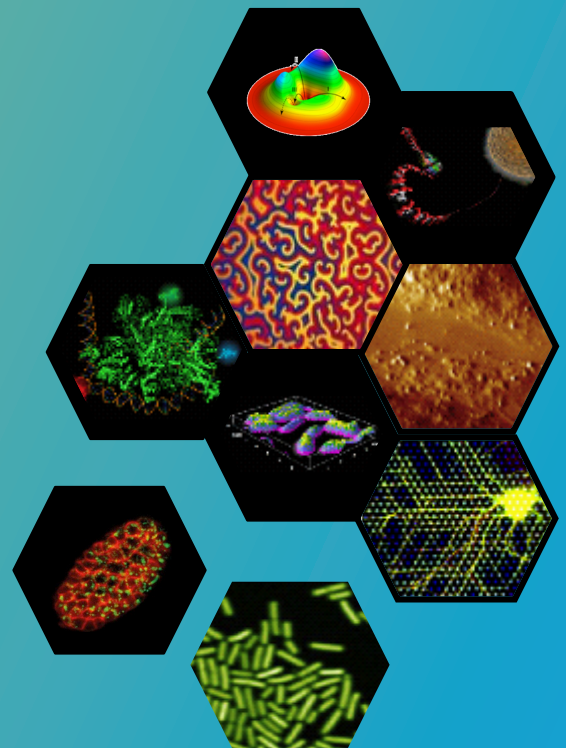
**JOINT MEETING** of the  
**GDRi PHYSICS OF LIVING SYSTEMS** and the **GRISBi network**

*Biophysics across scales :  
from single molecules to organisms*

*June 1-3 2015 - Montpellier, France*

Invited speakers :

Matthias Rief (Munich)  
Harvey Mc Mahon (Cambridge)  
Erwin Frey (Munich)  
Pietro Cicuta (Cambridge)  
Pierre-Francois Lenne (Marseille)  
Terence Strick (Paris)  
Olivier Thoumine (Bordeaux)  
Marco Cosentino Lagomarsino (Paris)



Local Organizing Committee: Emmanuel Margeat (CBS), Vladimir Lorman (L2C), Gladys Massiera (L2C), Pierre Emmanuel Milhiet (CBS), Marcelo Nollmann (CBS), Andrea Parmeggiani (L2C & DIMNP), Francesco Pedaci (CBS)



# June 1st

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*Montpellier School of Medicine – Theatrum Anatomicum*

## 2PM : Welcome address

### 2:15-3:40PM : «Mechanisms and Mechanics of the Cell»

*Chair :*

2:15-3:00PM **Erwin Frey**, *Ludwig-Maximilians-Universität München, München, Germany.*

« Symmetry Breaking and Pattern Formation in Cellular Systems »

3:00-3:20PM **Jean-Baptiste Manneville**, *UMR 144 CNRS-Institut Curie, Paris.*

« Mapping intracellular mechanics on micropatterned substrates »

## 3:20-3:50PM : Coffee Break

### 3:50-5:15PM : « Single cells physiology : theory and experiments »

*Chair :*

3:50-4:35PM **Marco Cosentino Lagomarsino**, *Computational and Quantitative Biology UMR7238 CNRS / UPMC, Paris.*

« Fluctuations of size and cell-cycle control in single E. coli cells »

4:35-4:55PM **Joachim Rambeau**, *DIMNP UMR 5235, Montpellier.*

« Changing the diet: heterogeneous bacterial cell fates in response to carbon source switching »

4:55-5:15PM **Jean-Charles Walter**, *Laboratoire Charles Coulomb, Montpellier.*

« Stochastic self-assembly of ParB proteins nucleated from the centromere builds bacterial DNA segregation apparatus »

**5:15-5:45PM : Refreshments break**

**5:45-7:25PM : «New single molecule methods and applications »**

*Chair :*

5:45-6:30PM **Terence Strick**, *Institut Jacques Monod, Paris.*

« Correlative approaches in single-molecule experimentation »

6:30-6:50PM **Sébastien Balme**, *Institut Européen des Membranes, Montpellier.*

« Macromolecule sensing by Nanopores »

6:50-7:10PM **Laurence Salome**, *Institut de Pharmacologie et de Biologie Structurale, Toulouse.*

« High-throughput analysis of DNA conformational changes by Tethered Particle Motion on single molecule arrays »

**7:15PM : Dinner cocktail at the School of Medicine – Cour d'honneur**

# June 2nd

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*Amphitheatre Mediterannée – CRDP Canopé*

## **9:00-10:25 : «Cell mechanics and interactions »**

*Chair :*

9:00-9:45AM **Pierre-François Lenne**, *Institut de Biologie du Développement de Marseille, Marseille.*

« Mechanics of cell-cell contacts during tissue morphogenesis »

9:45-10:05AM **Elsen Tjhung**, *Laboratoire Charles Coulomb, Montpellier.*

« Dynamical first order transition in simple model of cell crawling »

10:05-10:25AM **Guillaume Saint-martin**, *L2C - INM, MONTPELLIER.*

« Tissue alterations in spinal cord injured rodent: diffusion magnetic resonance imaging as translational tool. »

## **10:25-10:55AM : Coffee Break**

## **10:55-12:20PM : « Nucleoproteic assemblies »**

*Chair :*

10:55-11:40AM **Pietro Cicuta**, *Cambridge*

« Physical views of bacterial cells: chromosome conformation in E.Coli »

11:40-12:00AM **Antoine Le Gall**, *Centre de Biochimie Structurale, Montpellier.*

« The organization and architecture of Bacillus subtilis chromosome revealed by super-resolution microscopy and HiC »

12:00-12:20PM **Halina Anton**, *Laboratoire de Biophotonique et Pharmacologie, CNRS UMR 7213, Strasbourg, Illirch.*

« Investigating the cellular distribution and interactions of HIV-1 Nucleocapsid protein by quantitative fluorescence microscopy »

## 12:30-3:00PM : Lunch at the CRDP with posters session

### 3:00-4:25PM : « Membrane organization and dynamics »

*Chair :*

3:00-3:45PM **Harvey McMahon**, *MRC Laboratory of Molecular Biology, Cambridge, UK.*

« A New Membrane Trafficking Pathway »

3:45-4:05PM **Didier Marguet**, *Centre d'Immunologie de Marseille Luminy, Marseille.*

« Deciphering the cell membrane organization by fluorescence correlation spectroscopy at different length scales »

4:05-4:25PM **Laurent Fernandez**, *Centre de Biochimie Structurale, Montpellier.*

« Membrane dynamics and partitioning of CD9 and CD81 are differentially regulated by the actin network »

### 4:25-4:45PM : Coffee Break

### 4:45-5:15PM : "Recreation-Time": Opening to Games

*Chair :*

**Chiara Mocenni**, *Dept Inf. Eng. and Science, Siena.*

« Game Interactions and Dynamics on Networked Populations »

### 5:15PM : IPOLS BUSINESS MEETING

### FREE EVENING

# June 3rd

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*Amphitheatre Mediterannée – CRDP Canopé*

## 9:00-9:45 : « Cell dynamics and motility »

*Chair :*

- 9:00-9:45AM **Olivier Thoumine**, *Interdisciplinary Institute for Neuroscience, Bordeaux.*  
« Mechanical coupling between actin flow and N-cadherin adhesion in neuronal motility »
- 9:45-10:05AM **Viviana Clavería**, *Centre de Biochimie Structurale, Montpellier.*  
« Clustering of red blood cells under flow conditions »
- 10:05-10:25AM **Ashley Nord**, *Centre de Biochimie Structurale, Montpellier.*  
« Manipulation of the bacterial flagellar motor with magnetic tweezers »

## 10:25-10:55AM : Coffee Break

## 10:55-12:40 : « Structure, folding, and dynamics »

*Chair :*

- 10:55-11:40AM **Matthias Rief**, *Physikdepartment der Technischen Universität, München, Germany.*  
« Single Molecule Mechanics of Adenylate Kinase »
- 11:40-12:00AM **Remy Sounier**, *Institut de Génomique Fonctionnelle, Montpellier.*  
« Propagation of conformational changes during  $\mu$ -opioid receptor activation »
- 12:00-12:20AM **François Richard**, *CRBM, Montpellier.*  
« Repeat or not repeat in protein sequence? 3D structure as a decision criterion. »
- 12:20-12:40AM **Alessandro Barducci**, *EPFL, Lausanne, Switzerland.*  
« Hsp70 chaperones as non-equilibrium machines: ultra-affinity by energy consumption »

**12:40 : Concluding Remarks, Talks and Poster prizes and departure.**