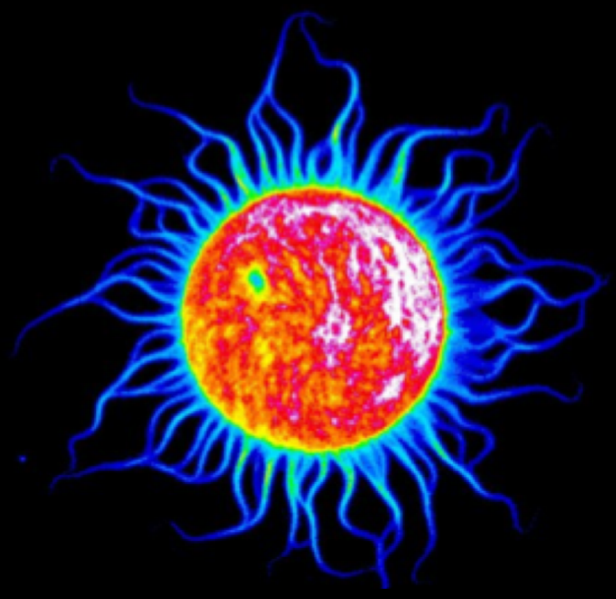
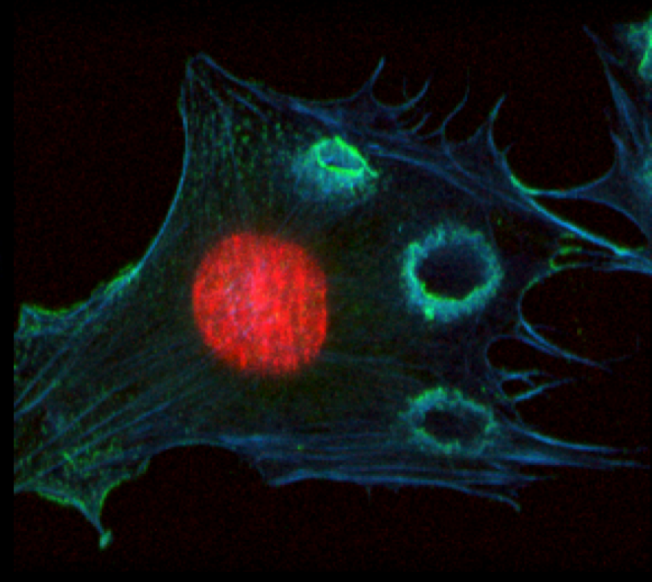
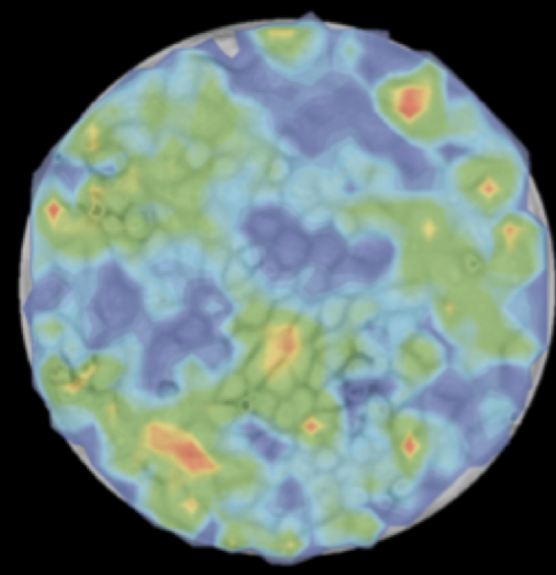
Weizmann Institute of Science and Institut Curie

Biological Physics Days

May 28th – 30th, 2018

Amphitheater Marie Curie, Institut Curie, Paris

PROGRAM

Sponsors

Clore Center for Biological Physics

LabEx CelTisPhyBio

Partners:

For more information contact:
shauna.katz@curie.fr

Program

Monday, May 28th, 2018

9h – 9h20 Welcome and Registration: *Salle Joliot*

9h20 **Pascal Silberzan**, Institut Curie Laboratory of Physico Chemistry
David Weizmann, Directeur général du Comité français de l'Institut Weizmann des Sciences
Welcome and introduction to the workshop

In Vitro Systems

9h30 **Roy Bar Ziv**, Weizmann Institute of Science Department of Materials and Interfaces
Programmable DNA compartments

10h **Pascal Martin**, Institut Curie Laboratory of Physico Chemistry
Self-organized wave-like beating of actin bundles in vitro

10h30 **Efi Efrati**, Weizmann Institute of Science Department of Physics and Complex Systems
Understanding frustrated assemblies: From liquid crystals to twisted organic molecular crystals and biological fibers

11h – 11h30 **Coffee Break** – *Salle Joliot*

11h30 **Gilad Haran**, Weizmann Institute of Science Department of Chemical Physics
Understanding microsecond functional dynamics of proteins with single-molecule FRET

12h **Aurélie Bertin**, Institut Curie Laboratory of Physico Chemistry
Membrane reshaping by curvature sensitive septin filaments

12h30 **Hagen Hoffmann**, Weizmann Institut of Science Department of Chemical Physics
Coupling-enhanced robustness in a disordered protein network

13h – 14h30 **Lunch** – *Bibliothèque 1st floor Pavillon Curie*

Statistical Analysis of Biological Systems

14h30 **Thierry Mora**, École Normale Supérieure Laboratory of Statistical Physics
Memory and prediction in signaling and the immune system

15h **Yoav Soen**, Weizmann Institute of Science Department of Biomolecular Sciences
Individual-specific adaptation by 'dynamic selection' of constrained variation

15h30 **Joshua Waterfall**, Institut Curie Laboratory of Genetics and Biology of Cancers
Learning from rare tumors: genetic mechanisms of oncogenesis

16h – 16h30 **Coffee Break** – *Salle Joliot*

16h30	**Andrew Griffiths**, ESPCI Laboratory of Analytical Sciences, Bioanalytics and Miniturisation *Droplet-Based Microfluidic to Study the Emergence and Dynamics of Darwinian Systems*
17h	**Hervé Isambert**, Institut Curie Laboratory of Physico Chemistry *Learning causal and non-causal networks form large scale genomic and clinical data*
18h30	**Poster Session 1 and Wine and Cheese Cocktail** – *Bibliothèque 1st floor Pavillon Curie*

Program

Tuesday, May 29th, 2018

Single Cell Behaviors

9h30 **Benny Geiger**, Weizmann Institute of Science Department of Molecular Cell Biology
Mechanics of invasive migration of cancer cells

10h **Mathieu Coppey**, Institut Curie Laboratory of Physico Chemistry
Light control of cell polarity and migration

10h30 **Samuel Safran**, Weizmann Institute of Science Department of Materials and Interfaces
Mechanical synchronization of beating within and between cardiomyocytes

11h – 11h30 **Coffee Break** – *Salle Joliot*

11h30 **Eran Bouchbinder**, Weizmann Institute of Science Department of Chemical and Biological Physics
Cell-scale contractile forces emerge from non-mechanosensitive active displacements

12h **Franck Perez**, Institut Curie Laboratory of Subcellular Structure and Cellular Dynamics
Exploiting the diversity of secretory routes in mammalian cells

12h30 **Talila Volk**, Weizmann Institut of Science Department of Molecular Genetics
Nuclear mechano transduction in contractile myofibers

13h – 14h30 **Lunch** – *Bibliothèque 1st floor Pavillon Curie*

14h – 15h30 **Poster Session 2** – *Bibliothèque 1st floor Pavillon Curie*

15h30 – 18h **Walking Tour of the Marais** – *meet at Curie Entrance (11, rue Pierre et Marie Curie) at 15h30*

19h30 **Gala Dinner** – *Institut Pierre Gilles de Gennes*

Institut Pierre Gilles de Gennes
6, rue Jean Calvin
75005 Paris

Program

Wednesday, May 30th, 2018

9h30 **Geneviève Almouzni**, Director of the Research Center of Institut Curie
Welcome and introduction to the Institut Curie

Single Cell Behaviors Continued

9h45 **Sasha Bershadsky**, Weizmann Institute of Science Department of Molecular Cell Biology
Integrin adhesions mediate and are shaped by the crosstalk between microtubules and the actomyosin cytoskeleton

10h15 **Danijela Vignjevic**, Institut Curie Laboratory of Subcellular Structure and Cellular Dynamics
Active cell migration promotes epithelial turnover along intestinal villi

10h45 **Matthieu Piel**, Institut Curie Laboratory of Subcellular Structure and Cellular Dynamics
Mega Def(ormation): mechanisms and consequences of large cell deformations

11h15 – 11h45 **Coffee Break** – *Salle Joliot*

Theme 3 – Multicellular Processes

11h45 **Stéphanie Descroix**, Institut Curie Laboratory of Physico Chemistry
Microfluidics for biomimetism

12h15 **Isabelle Bonnet**, Institut Curie Laboratory of Physico Chemistry
Collective extrusion of transformed epithelial cells

12h45 – 14h15 **Lunch** – *Bibliothèque 1st floor Pavillon Curie*

14h15 **Jean-François Joanny**, Institut Curie Laboratory of of Physico Chemistry & Director of the ESPCI
Physics of tissue monolayers

14h45 **Jean-Léon Maître**, Institut Curie Laboratory of Genetics and Developmental Biology
Mechanics of blastocyst morphogenesis

15h15 – 15h45 **Coffee Break** – *Salle Joliot*

15h45 **Elisha Moses**, Weizmann Institute of Science Department of Physics of Complex Systems
Criticality in the brain? (Probably not)

16h15 **Karine Guevorkian**, Institut Curie Laboratory of Physico Chemistry
Mechanics of vertebrate axis elongation and somitogenesis

16h45 Closing Remarks: Organizing Committee

Speakers

BAR ZIV	Roy	roy.bar-ziv@weizmann.ac.il	Weizmann Institut of Science, Department of Materials & Interfaces
BERSHADSKY	Sasha	alexander.bershadsky@weizmann.ac.il	Weizmann Institut of Science, Department of Molecular Cell Biology; Mechanobiology Institute, National University of Singapore
BERTIN	Aurélie	aurelie.bertin@curie.fr	Institut Curie / UMR168 - Physico Chemistry Lab
BONNET	Isabelle	isabelle.bonnet@curie.fr	Institut Curie / UMR168 - Physico Chemistry Lab
BOUCHBINDER	Eran	eran.bouchbinder@weizmann.ac.il	Weizmann Institut of Science, Dept. Of Chemical and Biological Physics
COPPEY	Mathieu	mathieu.coppey@curie.fr	Institut Curie / UMR168 - Physico Chemistry Lab
DESCROIX	Stéphanie	stephanie.descroix@curie.fr	Institut Curie / UMR168 - Physico Chemistry Lab; IPGG
EFRATI	Efi	efi.efrati@weizmann.ac.il	Weizmann Institut of Science, Dept. Of Physics and Complex Systems
GEIGER	Benny	benny.geiger@weizmann.ac.il	Weizmann Institut of Science, Department of Molecular Cell Biology
GRIFFITHS	Andrew	andrew.griffiths@espci.fr	ESPCI / UMR8231 - Laboratory of Analytical Sciences, Bioanalytics and Miniturisation
GUEVORKIAN	Karine	karine.guevorkian@curie.fr	Institut Curie / UMR168 - Physico Chemistry Lab
HARAN	Gilad	gilad.haran@weizmann.ac.il	Weizmann Institut of Science, Dept. Of Chemical Physics
HOFMANN	Hagen	hagen.hofmann@weizmann.ac.il	Weizmann Institut of Science, Dept. Of Structural Biology
ISAMBERT	Hervé	herve.isambert@curie.fr	Institut Curie / UMR168 - Physico Chemistry Lab
JOANNY	Jean-François	jean-francois.joanny@curie.fr	Institut Curie / UMR168 - Physico Chemistry Lab; Director of the ESPCI
MAÎTRE	Jean-Léon	jean-leon.maitre@curie.fr	Institut Curie / UMR3215 - Genetics and Developmental Biology
MARTIN	Pascal	pascal.martin@curie.fr	Institut Curie / UMR168 - Physico Chemistry Lab
MORA	Thierry	thierry.mora@gmail.com	Ecole Normale Superieure / Laboratory of Statistical Physics
MOSES	Elisha	elisha.moses@weizmann.ac.il	Weizmann Institut of Science, Physics of Complex Systems
PEREZ	Franck	franck.perez@curie.fr	Institut Curie / UMR144 - Subcellular Structure and Cellular Dynamics
PIEL	Matthieu	matthieu.piel@curie.fr	Institut Curie / UMR144 - Subcellular Structure and Cellular Dynamics
SAFRAN	Sam	sam.safran@weizmann.ac.il	Weizmann Institut of Science, Dept. Of Materials and Interfaces
SOEN	Yoav	yoavs@weizmann.ac.il	Weizmann Institut of Science, Dept. Of Biomolecular Sciences
VIGNJEVIC	Danijela	danijela.vignjevic@curie.fr	Institut Curie / UMR144 - Subcellular Structure and Cellular Dynamics
VOLK	Talila	talila.volk@weizmann.ac.il	Weizmann Institut of Science, Dept. Of Molecular Genetics
WATERFALL	Josh	joshua.waterfall@curie.fr	Institut Curie / U830 - Genetics and Biology of Cancers

Clore Center for Biological Physics

מכון ויצמן למדע
WEIZMANN INSTITUTE OF SCIENCE

The Clore Center was launched in 2001, with the primary objective of initiating and supporting research activities in the emerging field of biological physics. Under the Center's patronage, biologists, chemists, computer scientists, and physicists study and collaborate together, in a variety of fundamental issues in biology and develop new approaches in which to address them.

Over the years a large group of Weizmann Institute scientists have been associated with the Center's activities. This includes members of the Faculties of Biology, Biochemistry, Chemistry, and Physics. The projects supported by the Clore Center encompassed a wide spectrum of studies, ranging from the investigation of cell division, migration and adhesion, single molecule studies, analysis of protein folding, stem cell bioinformatics, the development of novel embryonic and adult stem cells, gene discovery screens, automated microscopy and many others. In addition, the Center provides support for the purchase and development of novel equipment.

The Clore Center provides funding support for research projects focusing on diverse biological systems, new Faculty members, in addition to scientific meetings, seminars and research visits.

LabEx CelTisPhyBio

Since its start in March 2012, the Labex CelTisPhysBio at the Institut Curie has promoted research, training and technology transfer at the intersection of physics, chemistry and cell biology. This support has come in the form of ensuring funding for talented young scientists, innovative collaborative projects, international training courses, workshops and symposia, acquisition of state-of-the-art equipment as well as visiting international Chairs of Excellence. Overall, the Labex has been able to reinforce the Institut Curie as being at the forefront of research at the intersection of biological, physical and chemical sciences.

The Labex encourages the use of multiscale (from molecules to cells to tissues to organisms) and cutting-edge approaches to unravel the physical laws that underlie the dynamics, functions and architecture in living systems. with the underlying aim to develop of novel tools and potential therapeutic/diagnostic approaches.