

# **Biomembrane Days in Potsdam**

on the occasion of the 80<sup>th</sup> birthday of Wolfgang Helfrich

## **Wednesday, September 19**

9:00 – 9:05 Welcome by Reinhard Lipowsky

**Molecular organisation of biomembranes I** – Chairman: Mathias Winterhalter

9:05 – 9:40 Tobias Baumgart: "*Biophysics of lipid and protein interactions modulated by membrane curvature*"

9:40 – 10:15 Thomas Schmidt: "*Membrane domains - From biomimetics to cellular function*"

10:15 – 10:50 Paul Janmey: "*Counterion-induced cluster formation by polyphosphoinositides in monolayers and bilayers*"

-- Coffee break --

**Shapes of membranes and vesicles** – Chairman: Saša Svetina

11:15 – 11:50 Christine Keating: "*Experimental models of the intracellular environment based on aqueous phase separation and lipid vesicles*"

11:50 – 12:25 Rumiana Dimova: "*Vesicles and electric fields*"

12:25 – 13:00 Reinhard Lipowsky: "*Spontaneous tubulation of membranes and vesicles*"

-- Lunch --

**Physics of membranes I** – Chairman: Michael Schick

14:00 – 14:35 Evan Evans: "*Exploring symmetry breaking in membranes: nucleation of nanopores under rising tension*"

14:35 – 15:10 Roland Netz: "*Hydration repulsion between bio-membranes from an interplay of dehydration and depolarization*"

15:10 – 15:45 Wolfgang Helfrich: "*Some loose ends of many years in fluid membranes*"

-- Coffee break --

16:10 – 16:45 Gerhard Gompper: "*Simulating blood flow: Red-cell rheology and white-cell margination*"

16:45 – 17:05 Andrea Grafmüller: "*Simulating membrane remodelling - fusion, rupture and lipid exchange*"

17:10 – 19:00 **Poster Session**

## Thursday, September 20

### **Molecular organisation of biomembranes II** – Chairman: Joshua Zimmerberg

- 9:00 – 9:35 Patricia Bassereau: "*Curvature-induced sorting of proteins*"  
9:35 – 10:10 Andreas Herrmann: "*Transmembrane peptides as a tool to detect intermediates of lipid organisation in membranes – The hemifusion diaphragm*"  
10:10 – 10:45 Sam Safran: "*Lipid mixtures and the stability of membrane and cellular rafts*"

-- Coffee break --

### **Shaping of biological membranes** – Chairman: Joshua Zimmerberg

- 11:10 – 11:45 Harvey McMahon: "*Curvature proteins and membrane fission*"  
11:45 – 12:20 Michael Kozlov: "*Shaping of the Endoplasmic Reticulum by proteins: theoretical models*"  
12:20 – 12:55 Yoshinori Ohsumi: "*Molecular dissection of autophagosome formation in yeast*"

-- Lunch --

### **Biomembrane adhesion** – Chairman: Matthias Schneider

- 14:00 – 14:35 Michael Dustin: "*Reconstitution of the immunological synapse with artificial membranes*"  
14:35 – 15:10 Erich Sackmann: "*Physics of cell adhesion: Adhesion domains as reaction centers and cell polarizers*"  
15:10 – 15:45 Udo Seifert: "*Dynamics of specific adhesion of membranes*".

-- Coffee break --

### **Physics of membranes II** – Chairman: Thomas Franke

- 16:10 – 16:45 David Andelman: "*Ionic specific effects beyond the Poisson-Boltzmann theory: electrolytes, surfaces and membranes*"  
16:45 – 17:20 Markus Deserno: "*Determining the Gaussian curvature modulus in simulations*"  
17:20 – 17:40 Jinglei Hu: "*DPD simulations of specific membrane adhesion: a general relation between  $K_{2D}$  and  $K_{3D}$  that includes the thermal membrane roughness*"  
17:40 – 18:00 Roland Knorr: "*Shape stability of sheet-like organelles*"

19:00 **Conference Dinner** at the restaurant "Historische Mühle" in Potsdam

## Friday, September 21

### **Membranes and nanoparticles** – Chairman: Heinz Hoffmann

9:00 – 9:35 Joachim Rädler: *“Switchable supported membranes and membrane-coated nanoparticles”*

9:35 – 10:10 Zhong-can Ou-Yang: *“Helfrich variation: From membrane vesicles, fullerenes, and amphiphilic peptide nanotubes to icosahedral self-assemblies”*

10:10 – 10:45 Alfred Blume: *“The aggregation behavior of single chain bolalipids: From nanoparticles to nanofibers to lamellar phases”*

-- Coffee break --

### **Cellular processes** – Chairman: Heinz Hoffmann

11:10 – 11:45 Dennis Discher: *“ From bending and porating polymer membranes to stretching of biopolymers at the nuclear membrane”*

11:45 – 12:20 Ulrich Schwarz: *“Growing up to speed at the leading edge: autocatalytic versus zeroth order branching in lamellipodial actin networks”*

12:20 – 12:55 Rob Phillips: *“Bacteria are stressed out too: The physics of mechanosensation”*

-- Lunch --

**End**