NANO-BIO-PHYSICS SYMPOSIUM

"STRETCHING THE BOUNDARIES OF PHYSICS, ONE MOLECULE AT A TIME"

PROF. HERMANN GAUB
VENUE

LMU Munich
Geschwister-Scholl-Platz 1
80539 Munich

September 6, 2019 - Lecture Hall H030
accessible via Schellingstr. 4

September 7, 2019 - Lecture Hall N120
accessible via Amalienstr. 54

PROGRAM COMMITTEE

Prof. Matthias Rief (TU Munich)
Prof. Jan Lipfert (LMU Munich)
Dr. Martin Benoit (LMU Munich)

Administrative Coordination: Sylvia Kreuzer

USEFUL INFORMATION

Wi-Fi
You can use @BayernWLAN.
In addition, eduroam Wi-Fi is available.
Let us know if you need any assistance.

Coffee break
Foyer, Schellingstr. 4

Lunch/Dinner
Good weather: Salinenhof, Faculty of Physics
Bad weather: StuCafé, Adalbertstraße 5
08:30  Registration opens

09:05  Opening and welcome remarks

**Chairperson – Prof. Jan Lipfert**
09:30  Prof. Joachim Rädler, LMU Munich  
As time goes by: Insights from single cell timelapse movies
09:50  Prof. Wolfgang Parak, University of Hamburg  
Interfacing cells with semiconductors
10:10  Dr. Kerstin Blank, Max Planck Institute, Potsdam  
Molecular Force Sensors – From Molecular Mechanisms to Applications in Biology and Materials Science

10:30 - 11:00  Coffee break and time for poster viewing

**Chairperson – Dr. Daniel Lietha**
11:00  Prof. Andreas Engel, University of Basel  
Aquaporins: ancient proteins present in all cells
11:20  Prof. Jan Lipfert, LMU Munich  
Magnetic Tweezers: New regimes of Force Spectroscopy
11:40  Prof. Ernst-Ludwig Florin, University of Texas at Austin  
When noise is your signal
12:00  Dr. Philipp Baaske & Dr. Stefan Duhr, NanoTemper Munich  
2008 – 2019: A Biotech’s Odyssey

12:20 - 13:30  Lunch and time for poster viewing

**Chairperson – Prof. Wenke Zhang**
13:30  Prof. Tom Perkins, University of Colorado  
Uncovering hidden dynamics in protein unfolding
13:50  Prof. Elias Puchner, University of Minnesota  
Investigating lipid droplet metabolism in living cells with novel labeling strategies for super-resolution microscopy
14:10  Prof. Philip Tinnefeld, LMU Munich
SMFS (single-molecule FLUORESCENCE spectroscopy) meets DNA nanotech

14:30  Prof. Hauke Clausen-Schaumann, Munich University of Applied Sciences
Mechanical activation of amide bond hydrolysis

14:50 - 15:20 Coffee break and time for poster viewing

Chairperson – Dr. Claus Duschl

15:20  Prof. Daniel Müller, ETH Zurich
Mechanically Detecting and Directing Virus Transduction towards Vision Restoration

15:40  Prof. Manfred Radmacher, University of Bremen
Mechanics in Diseases

16:00  Dr. Niels Fertig, nan]i[on Munich
High-throughput ion channel measurements – from university lab to global player

16:20 - 16:50 Coffee break and time for poster viewing

Chairperson – Prof. Monika Fritz

16:50  Prof. Evan Evans, University of British Columbia
Nano-engineering enables tactile control & photonic calibration for an O-T micro-force probe exploring nano-interfacial contacts in liquids

17:10  Prof. Thorsten Hugel, University of Freiburg
Seeing the boundaries of physics, photon by photon

17:30  Prof. Kay Gottschalk, University of Ulm
Biophysics of Cellular Aging

17:50  Concluding remarks

18:15  Group Picture

18:45  Conference dinner (informal discussions, music, open end)
Saturday, September 7

09:15  Opening remarks

Chairperson – Prof. Cui Shuxun
09:20  Prof. Matthias Rief, TU Munich
Single Molecule Mechanics in Protein Folding and Binding
09:40  Prof. Viola Vogel, ETH Zurich
Mechanobiology at the single molecule level
10:00  Prof. Erich Sackmann, TU/LMU Munich
How molecular forces guide the global polar cell migration

10:20 - 10:50  Coffee break and time for poster viewing
10:45  Paul Koza, LMU Munich: best experiments part 1

Chairperson – Prof. Christiane Helm
10:50  Prof. Ed Bayer, The Weizmann Institute of Science
Cellulosomes
11:10  Prof. Dieter Braun, LMU Munich
Emergence of Replication
11:30  Prof. Helmut Grubmüller, Max Planck Institute, Göttingen
Once upon a force...

11:50 - 13:30  Lunch and time for poster viewing
13:10  Paul Koza, LMU Munich: best experiments part 2

Chairperson – Prof. Josef Käs
13:30  Prof. Roland Netz, FU Berlin
Stretching water: How plants avoid embolies at negative pressures
13:50  Dr. Günther Gerisch, Max Planck Institute, Martinsried
Dynamic patterns of the cell membrane and actin cortex
14:10  Prof. Michael Nash, University of Basel/ETH Zurich
Quantifying Dual Binding Modes of a Mechanostable Adhesion Complex
14:30 - 15:00 Coffee break and time for poster viewing
14:55 Paul Koza, LMU Munich: best experiments part 3

Chairperson – Dr. Martin Benoit
15:00 Prof. Jürgen Rabe, HU Berlin
   Between two faces – a gap to act and stretch the imaginable
15:20 Prof. Ulrich Hofmann, University of Freiburg
   Connecting to brains - Electroceuticals are coming!
15:40 Prof. Hongbin Li, University of British Columbia
   Mechanical Design Governs the Efficient Translocation of Bacterial Toxin RTX Proteins

16:00 - 16:50 Coffee break and time for poster viewing
16:20 Paul Koza, LMU Munich: best experiments part 4

Chairperson – Prof. Christoph Bräuchle
16:50 Prof. Tim Liedl, LMU Munich
   DNA origami force clamps: Stretching billions of molecules at a time
17:10 Prof. Zaida Luthey-Schulten, University of Illinois
   Modeling the minimal cell: Integration of experiments, theory, and simulations
17:30 Dr. Benjamin Gaub, ETH Zurich
   FullCircle

17:50 Prof. Hermann E. Gaub
   Concluding remarks

18:10 Informal discussions (open end)