Giersch - Summerschool & International Conference
at the Frankfurt Institute for Advanced Studies

Theoretical and Experimental Quantitative Cell Biology

April 26 to May 03, 2020

For further information and registration, please visit: https://fias.institute/en/events/gsic2020

This event is funded by Stiftung Giersch.
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in cooperation with

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Organisation Committee

Enrico Schleiff
Program

Giersch – Summerschool & International Conference on Theoretical and Experimental Quantitative Cell Biology

Sunday, 26th of April to Sunday, 3rd of May 2020

Goethe University Frankfurt / Main
FIAS-Building
Ruth Moufang-Str. 1

Sunday, 26th of April

18:00 - 22:00  Get-together
FIAS Faculty Club

Monday, 27th of April

08:00 - 09:00  Registration, gathering
FIAS, entrance hall

Quantitative Cell Biology

Chair: Enrico Schleiff & Franziska Matthäus

FIAS Lecture Hall

09:00 - 09:30  Welcome Remarks
tba

09:30 - 10:30  High-resolution cryoEM of membrane protein complexes
Keynote Lecture by Werner Kühlbrandt
Max-Planck-Institute of Biophysics Frankfurt,
Germany

10:30 - 11:00  Title
Achilleas Frangakis, Goethe University Frankfurt,
Germany
11:00 - 11:30  
Coffee Break

11:30 - 12:00  
**Title**
Anna Kreshuk, EMBL Heidelberg, Germany - invited

12:00 - 12:30  
**TNFR1 oligomerization in the plasma membrane studied with quantitative super-resolution microscopy**
Mike Heilemann, Goethe University Frankfurt, Germany

12:30 - 13:00  
**Title**
Neal Devaraj, University of California, San Diego, USA

13:00 - 14:30  
Lunch in FIAS Faculty Club

14:30 - 15:00  
**Title**
Ivan Dikic, Goethe University Hospital Frankfurt, Germany

15:00 - 15:30  
**Continuous cycles of MICOS-dependent cristae membrane remodelling revealed by STED nanoscopy**
Andreas Reichert, University Hospital Düsseldorf, Germany

15:30 - 16:00  
**Title**
Ute Hellmich, Johannes Gutenberg-University Mainz, Germany

16:00 - 16:30  
Coffee Break

16:30 - 17:00  
**Nano matters: Super-resolution imaging of neural structure and function**
Valentin Nägerl, University Bordeaux, School of Neuroscience, Bordeaux, France

17:00 - 17:30  
**Title**
Ernst Stelzer, Goethe University Frankfurt, Germany

17:30 - 18:00  
**Title**
Roberto Covino, Frankfurt Institute for Advanced Studies, Germany

18:30 - 19:30  
Open Lecture
**Normativity and Natural Sciences**
Matthias Lutz-Bachmann
JQ Young Academy at Goethe

19:30 - 22:00  
Dinner in FIAS Faculty Club
Tuesday, 28th of April

Theoretical Biology

Chair: Volker Lindenstruth & Achilleas Frangakis

FIAS Lecture Hall
09:00 - 10:00

Aim for mechanistic models!
Keynote Lecture by Martin Meier-Schellersheim
National Institute of Allergy and Infectious Diseases (NIAID)

10:00 - 10:30

Mathematical Modeling of collective cell motility in development and disease
Franziska Matthäus, Frankfurt Institute for Advanced Studies, Germany

10:30 - 11:00

Image-based mathematical modelling of spatial cell-cell interactions
Sabine Fischer, Julius-Maximilians-University Würzburg, Germany

11:00 - 11:30

Coffee Break

11:30 - 12:00

Title
Gerhard Hummer, Max-Planck-Institute of Biophysics, Frankfurt, Germany

12:00 - 12:30

Understanding Genotype-Phenotype relationships using the model plant
Arabidopsis thaliana
Arthur Korte, University Würzburg, Germany

12:30 - 13:00

Title
Tatjana Tchumatchenko, Max Planck Institute for Brain Research, Germany

13:00 - 14:30

Lunch in FIAS Faculty Club

14:30 - 15:00

Title
Thomas Sokolowski, Frankfurt Institute for Advanced Studies, Germany

15:00 - 15:30

Title
Matthias Kaschube, Frankfurt Institute for Advanced Studies, Germany

15:30 - 16:00

Title
François Nédélec, EMBL Heidelberg, Germany

16:00 - 16:30

Coffee Break

16:30 - 17:00

Title
Paul Macklin, Indiana University, Bloomington, USA

17:00 - 17:30

Decoding a cancer-relevant splicing decision in the RON proto-oncogene using high-throughput mutagenesis
Kathi Zarnack, Goethe University Frankfurt, Germany

17:30 - 18:00

Live is complicated, but models have to be simple: Boolean semi-quantitative Models
Thomas Dandekar, University Würzburg, Germany

18:30 - 19:30

Open Lecture
The Theory in Biology
Thomas Südhof, Stanford University, USA
Wednesday, 29th of April

**AI in Biology & Medicine**

*Chair: Gerhard Hummer & Wolf Singer*

FIAS Lecture Hall

**Title of talk**

**Keynote Lecture by J.B. Brown, Kyoto**

Kyoto University, Graduate School of Medicine, Center for Medical Education

invited

**Title**

Peng Liu, Xidian University, Xi’an, China

10:30 - 11:00

**Title**

Chuipeng Gou, Xidian University, Xi’an, China

10:00 - 10:30

**Title**

Michael Wand, Johannes Gutenberg-University Mainz, Germany

11:00 - 11:30

Coffee Break

11:30 - 12:00

**Title**

Michael Wand, Johannes Gutenberg-University Mainz, Germany

12:00 - 12:30

**AI for quantitative high-resolution microscopy**

Philip Kollmannsberger, University of Würzburg

Germany

12:00 - 12:30

**Title**

Bing Han, Xidian University, Xi’an, China

12:30 - 13:00

Lunch

13:00 - 14:30

**Title**

Xiyang Liu, Xidian University, Xi’an, China

14:30 - 15:00

**Title**

Daniel Merk, Goethe University Frankfurt, Germany - invited

15:00 - 15:30

**Title**

Christian Wachinger, University München Hospital, LMU München, Germany

15:30 - 16:00

Coffee Break

16:00 - 16:30

**Title**

Marcell Schulz, Goethe University Hospital Frankfurt, Germany

16:30 - 17:00

**Title**

Maria Barbarossa, Heidelberg University

Germany

17:00 - 17:30

**Title**

Katrin Heinze, Rudolf-Virchow-Center for Experimental Biomedicine, University Würzburg, Germany

17:30 - 18:00

Break

18:00 - 18:30

Open Lecture

Challenges in Medicine
Peter Wild, Senckenberg Institute of Pathology

19:00 - 22:00 Dinner in FIAS Faculty Club

Thursday, 30th of April

08:00 - 9:00 Registration for Newcomers
Seminary rooms 1 & 2 2 paralle sessions with 30 participants each
09:00 - 12:00 Lectures EM & Light Microscopy - Big Data analysis
Alexander Hahn - Electron Microscopy
Achilleas Frangakis - Electron Microscopy
Ernst Stelzer - Light Sheet Microscopy
Mark Schröder - Single Molecule Microscopy

Lectures NGS & Omix - Big Data analysis
Kathi Zarnack - Next Generation Sequencing
Ingo Ebersberger - Proteome Analysis
Helge Bode - Metabolome

12:00 - 13:00 Lunch in FIAS Faculty Club

Lecture Hall
13:00 - 15:30 Demonstrations
15:30 - 16:00 Coffee Break
16:00 - 18:00 8 each 15 min. talks of students
18:00 - 19:00 Open Discussion "AI in Industry"
Andreas Widl, SAMSON AG

19:00 - 22:00 Dinner in FIAS Faculty Club

Friday, 1st of May

Seminary rooms 1 & 2 2 paralle sessions with 30 participants each
09:00 - 10:30 Lectures Structural Dynamics
Gerhard Hummer - tba
Roberto Covino - tba
tba

10:30 - 12:00 Lectures Cellular Dynamics
Franziska Matthäus - Modeling motion and dispersal
Nadine Flinner - Image Processing
Firederike Schmidt - Physical Modelling

12:00 - 13:00 Lunch in FIAS Faculty Club

Lecture Hall
13:00 - 15:30 Demonstrations
15:30 - 16:00 Coffee Break
16:00 - 18:00 8 each 15 min. talks of students
18:00 - 19:00 Open Discussion "AI in Industry"
Andreas Widl, SAMSON AG
19:00 - 22:00 Dinner in FIAS Faculty Club

Saturday, 2nd of May

Seminary rooms 1 & 2  2 parallel sessions with 30 participants each

09:00 - 10:30 Lectures Neuroscience & Theoretical Biology
Matthias Kaschube - tba
Jochen Triesch - tba
Tatjana Tschumatchenko - tba

10:30 - 12:00 Lectures Simulations in Medicine
Daniel Merk - Constructive machine learning
Xiyang Liu - tba
Marcel Schulz - tba

12:00 - 13:00 Lunch in FIAS Faculty Club

Lecture Hall
13:00 - 15:30 Demonstrations
15:30 - 16:00 Coffee Break
16:00 - 19:00 Excursion to Giersch Museum
19:00 - 20:00 Discussion
19:00 - 22:00 Dinner