



GESELLSCHAFT DEUTSCHER CHEMIKER



Fachgruppe Biochemie

New Frontiers in Chemical Biology and Biochemistry

Meeting of the Division of Biochemistry

September 30 – October 2, 2024

Dortmund

MAX PLANCK INSTITUTE
OF MOLECULAR PHYSIOLOGY



www.gdch.de/biochemistry2024



SCIENTIFIC COMMITTEE

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Monday, September 30, 2024

- 01.00 p.m. **OPENING** - S. Raunser, A. Sickmann, D. Summerer
- 01.05 p.m. **KEYNOTE LECTURE**
Evolution of a Chemical Principle for Chemical Biology
H. Waldmann, Dortmund/DE

1st Session

"Chemical biology and new strategies in drug discovery"

- 02.00 p.m. **Uncommon Phosphorylation Modes: Protein Pyrophosphorylation and Oligophosphorylation in Human Cells**
D. Fiedler, Berlin/DE, J. Morgan, Berlin/DE, L. Kurz, Berlin/DE, R. Bhandari, Berlin/DE, A. Celik, Berlin/DE, C. Stieger, Berlin/DE, B. Hanf, Berlin/DE
- 02.35 p.m. **Characterizing vulnerabilities associated with phenotypic cell state transitions in Non-Small Cell Lung Cancer cell lines as a foundation for drug development**
D. B. Konrad, München/DE
- 03.00 p.m. **Morphological Profiling of Small Molecules Using Cell Painting**
S. Ziegler, Dortmund/DE
- 03.25 p.m. **Next generation bioconjugates for intra- and extra-cellular targeting**
C. Hackenberger, Berlin/DE
- 04.00 p.m. **COFFEE BREAK**
- 04.30 p.m. **Breaking bacterial resistance by chemical strategies**
S. Sieber, München/DE
- 05.05 p.m. **Chem-CRISPR/dCas9FCPF - A platform for chemically induced epigenome editing at the single-gene level**
X. Cheng, Frankfurt (Main)/DE
- 05.30 p.m. **Comprehensive kinetic characterization of advanced therapeutic modalities from small molecules to cells**
R. Strasser, München/DE, I. Ponzo, München/DE, M. De Pascali, München/DE, A. Soldà, München/DE, V. Hafner, München/DE, N. Matscheko, München/DE, U. Rant, München/DE

Monday, September 30, 2024

- 05.55 p.m. **Peptide modulators of mRNA deadenylation**
P. 't Hart, Dortmund/DE, S. Pal, Dortmund/DE, I. Gordijenko, Dortmund/DE, S. Schmeing, Dortmund/DE, S. Biswas, Dortmund/DE, Y. Akbulut, Dortmund/DE, R. Gasper, Dortmund/DE
- 06.20 p.m. **PROTACs to investigate Deubiquitinases in cancer**
N. Klink, Dortmund/DE, S. Urban, Essen/DE, J. A. Seier, Essen/DE, M. P. Schwalm, Frankfurt/DE, B. Adhikari, Würzburg/DE, E. Wolf, Würzburg/Kiel/DE, S. Knapp, Frankfurt/DE, A. Paschen, Essen/DE, B. M. Grüner, Essen/DE, M. Gersch, Dortmund/DE
- 07.00 p.m. **POSTER SESSION AND GET TOGETHER**



Tuesday, October 1, 2024

2nd Session "Nucleic acid chemical biology"

- 09.00 a.m. **Expanding the scope of mRNA with non-natural modifications**
A. Rentmeister, München/DE
- 09.35 a.m. **Intracellular Expression of a Fluorogenic DNA Aptamer Using Retron Eco2**
M. A. Vibhute, Dortmund/DE, C. Machatzke, Dortmund/DE, K. Bigler, Dortmund/DE, S. Krümpler, Dortmund/DE, D. Summerer, Dortmund/DE, H. Mutschler, Dortmund/DE
- 10.00 a.m. **Translation without Ribosomes**
C. Richert, Stuttgart/DE, S. Reußwig, Stuttgart/DE, N. Giannakopoulos, Stuttgart/DE, E. Kervio, Stuttgart/DE
- 10.25 a.m. **COFFEE BREAK**
- 10.45 a.m. **Engineering covalent small molecule–RNA complexes in living cells**
R. Micura, Innsbruck/AT, R. Bereiter, Innsbruck/AT, L. Flemmich, Innsbruck/AT, K. Nykiel, Innsbruck/AT, S. Heel, Innsbruck/AT, S. Geley, Innsbruck/AT, M. Hanisch, Innsbruck/AT, C. Eichler, Innsbruck/AT, K. Breuker, Innsbruck/AT, A. Lusser, Innsbruck/AT
- 11.20 a.m. **Ribozymes for RNA labelling via adenosine alkylation**
C. P. M. Scheitl, Würzburg/DE, C. Höbartner, Würzburg/DE
- 11.45 a.m. **From nucleotides to cells: exploring the early steps of evolution in the lab**
S. Wunnava, München/DE, P. Schwintek, München/DE, M. Weingart, München/DE, A. Salditt, München/DE, J. Langlais, München/DE, A. Floroni, München/DE, P. Aikkila, München/DE, F. Dänekamp, München/DE, A. Schmid, München/DE, C. Mast, München/DE, H. Mutschler, München/DE, D. Braun, München/DE
- 12.10 p.m. **AlkBH1 demethylates m3C modification in mitochondrial tRNA in human cells**
S. Schneider, München/DE, O. Hofmeister, München/DE, A. Reichl, München/DE, F. Hagelskamp, München/DE, A. Reichl, München/DE, F. Schelter, München/DE, L. Daumann, Düsseldorf/DE, T. Carell, München/DE, S. Kaiser, Frankfurt/DE
- 12.35 p.m. **LUNCH**

Tuesday, October 1, 2024

Seminar room D 1.04 (right next to the lecture hall)

- 12.45 p.m. **GENERAL MEETING of the GDCh-Division Biochemistry**
Tagesordnung / Agenda
 1. Begrüßung & Protokoll der Mitgliederversammlung vom 30.06.2022 / Welcome & protocol of the last general meeting
 2. Bericht des Vorstands / Report of the Board of Directors
 3. Diskussion & Anregungen aus der Mitgliedschaft / Discussion & suggestions
 4. Verschiedenes / Miscellaneous

3rd Session "Modern imaging in biochemistry"

- 02.00 p.m. **From DNA Nanotechnology to biomedical insight: Towards single-molecule spatial omics**
R. Jungmann, München/DE
- 02.35 p.m. **Synthetic Probes for Visualization and Topographic Mapping of Single Synapses**
H. M. Maric, Würzburg/DE
- 03.00 p.m. **High- and Super-Resolved RNA and Protein Visualization with Fluorescent Light-Up Aptamers**
F. Grün, Heidelberg/DE, A. Jäschke, Heidelberg/DE, N. Bergh, Heidelberg/DE, M. Klevanski, Heidelberg/DE, M. S. Verma, Eindhoven/NL, B. Bühler, Heidelberg/DE, G. U. Nienhaus, Karlsruhe/DE, T. Kuner, Heidelberg/DE, D. Englert, Heidelberg/DE, M. Sunbul, Heidelberg/DE, A. Jäschke, Heidelberg/DE
- 03.25 p.m. **Quo Vadis MicroED**
T. Gonen, Los Angeles/US

04.00 p.m. COFFEE BREAK

04.30 p.m. AWARD CEREMONY AND AWARD LECTURES:**Award ceremony German Chemical Biology Lectureship****Prize winner:** Nina Hartrampf**Award ceremony Förderpreis FG Biochemie****Prize winner:** Davide Tamborrini und Minh Nguyen Trung**Award ceremony Albrecht Kossel Prize****Prize winner:** Andreas Marx07.00 p.m. **POSTER SESSION AND GET TOGETHER**

Wednesday, October 2, 2024

4th Session "Molecular interactions and novel approaches in synthetic biology"

- 09.00 a.m. **Establishing cell-free synthetic biology for planet and societal health**
M. Jewett, Stanford/US
- 09.35 a.m. **Structure-Function Profiling of Heme Binding to Blood Coagulation Proteins**
M.-T. Hopp, Koblenz/DE
- 10.00 a.m. **Discovery of glycopeptides by mRNA display with chemical modification**
S. Jongkees, Amsterdam/NL, R. Yoshisada, Amsterdam/NL, N. L. van der Meijs, Amsterdam/NL, S. J. van Vliet, Amsterdam/NL
- 10.25 a.m. **Engineering a synthetic model cell with RNA origami**
K. Göpfrich, Heidelberg/DE
- 11.00 a.m. **COFFEE BREAK**
- 11.30 a.m. **How a single mutation in CFTR causes the systemic disease Cystic Fibrosis as understood through Interactions, PTMs, and Structure**
J. Yates, La Jolla/US, S. Pankow, La Jolla/US, C. Bamberger, La Jolla/US, S. Martinez-Bartolomé, San Diego/US, S. K. Park, San Diego/US
- 12.05 p.m. **Network Pharmacology and Computational studies of Galanthus woronowii to Uncover the Potential Targets for Alzheimers Disease**
V. Malakar, Ooty, The Nilgiris/IN, D. A. Justin, Ooty, The Nilgiris/IN
- 12.30 p.m. **Cell Penetrating Peptides for Intracellular Nanobody Delivery to Restore F508del Cystic Fibrosis Transmembrane Conductance Regulator Activity**
L. Franz, Berlin/DE, T. Rubil, Berlin/DE, A. Balazs, Berlin/DE, M. Mall, Berlin/DE, C Hackenberger, Berlin/DE
- 12.55 p.m. **AWARD CEREMONY, POSTER PRIZES, THANKS, CLOSING**
- 01.15 p.m. Expected end of the conference

- P01 **Probing of DNA photochemistry with C-nucleosides as photosensitizer**
S. Häcker, Karlsruhe/DE, A. Kuhlmann, Karlsruhe/DE, M. Schrödter, Karlsruhe/DE, T. Zähringer, Mainz/DE, H.-A. Wagenknecht, Karlsruhe/DE
- P02 **Design of novel synthetic RNA replicons based on Emesvirus zinderi**
A. Wagner, Dortmund/DE, H. Mutschler, Dortmund/DE
- P03 **Molecular Basis and Regulation of Ankyrin-Mediated Ligand-Recruitment to Neuronal Axonal Versus Synaptic Sites**
O. R. Valanju, Würzburg/DE, V. Gerstmeir, Würzburg/DE, S. Kalcher, Würzburg/DE, L. Schönemann, Würzburg/DE, P. Jenkins, Michigan/US, H. M. Maric, Würzburg/DE
- P04 **Co-Evolution of a NIR Aptamer-Dye System for RNA Imaging in Mammalian Live Cells**
P. Doll, Heidelberg/DE, S. Fürbacher, Heidelberg/DE, F. Grün, Heidelberg/DE, N. Van den Bergh, Heidelberg/DE
- P05 **Ribosome Evolution for Translation of Non-Natural 2'-Fluoro mRNA in Cell-Free Protein Expression System**
J. De Capitani, Dortmund/DE, E. Kalb, Minneapolis/US, L. Stelzer, Dortmund/DE, K. Adamala, Minneapolis/US, H. Mutschler, Dortmund/DE
- P06 **Clickable Benzylguanines for Immune Cell Labeling**
J. Schöning, München/DE, L. Rösner, Münster/DE, D. A. Depke, Münster/DE, S. Hüwel, Münster/DE, M. Schäfers, Münster/DE, A. Rentmeister, München/DE
- P07 **Direct α -Hydroxy Acid Loading onto a Bacterial Thio-template Assembly Line via a Multienzyme Gateway**
J. Fiedler, Jena/DE, F. Trottmann, Jena/DE, K. Ishida, Jena/DE, M. Ishida-Ito, Jena/DE, C. Hertweck, Jena/DE
- P08 **Mass-spectrometric analysis of the polyubiquitome reveals unknown targets of small molecules altering ubiquitination**
S. Fuehrer, Dortmund/DE, K. Gallant, Dortmund/DE, P. Janning, Dortmund/DE, M. Gersch, Dortmund/DE, H. Waldmann, Dortmund/DE
- P09 **Synthetic proteins with a non-canonical amino acid at key catalytic positions**
C. Dunker, Münster/DE, H. D. Mootz, Münster/DE

- P10 **The type of DNA damage response after decitabine treatment depends on the level of DNMT activity**
M. Däther, München/DE, T. Aumer, München/DE, L. Bergmayr, München/DE, S. Kartika, München/DE, T. Zeng, München/DE, Q. Ge, München/DE, G. Giorgio, München/DE, A. Hess, München/DE, S. Michalakos, München/DE, F. Traube, Stuttgart/DE
- P11 **Harnessing Indole Scaffolds to Identify IRE1 α Ribonuclease Inhibitors Modulating XBP1 mRNA Splicing**
Y. Liu, Dortmund/DE, A. Avathan Veettil, Dortmund/DE, R. Gasper, Dortmund/DE, M. Jiang, Dortmund/DE, O. Hastürk, Dortmund/DE, P. Wu, Dortmund/DE
- P12 **Discovery of small-molecule inhibitors and activators targeting the endoribonuclease IRE1**
A. Avathan Veettil, Dortmund/DE, Y. Liu, Dortmund/DE, R. Gasper, Dortmund/DE, M. Jiang, Dortmund/DE, O. Hastürk, Dortmund/DE, P. Wu, Dortmund/DE
- P13 **Discovery of pregnane xenobiotic receptor antagonists and their effects on regulation of the metabolic genes in the hepatocyte models.**
K. Rajamanikkam, Hradec Králové/CZ, I. Mejdrová, Prague/CZ, R. Nencka, Prague/CZ, P. Pávek, Prague/CZ
- P14 **Exploring Epigenetic Regulation - Unveiling the Role of TET Enzymes through the Development of Novel Small Molecule Modulators**
S. Willems, Dortmund/DE, L. Maksumic, Dortmund/DE, T.-C. Lin, Dortmund/DE, T. Schulz, Dortmund/DE, J. Niggenaber, Dortmund/DE, J. Weisner, Dortmund/DE, S. Sievert, Dortmund/DE, D. Rauh, Dortmund/DE, D. Summerer, Dortmund/DE
- P15 **Lightening up the Synapse: Sylites**
C. Huhn, Würzburg/DE, K. Heinze, Würzburg/DE, J. W. Hell, Davis/US, H. M. Maric, Würzburg/DE, S.-Y. Ho, Davis/US, C. Schulte, Würzburg/DE, V. Khayenko, Würzburg/DE, K. Hemmen, Würzburg/DE, T. O. Peulen, Würzburg/DE, F. Lützenkirchen, Hamburg/DE, A.-L. Wießler, Würzburg/DE, M. Kneussel, Hamburg/DE, C. Villmann, Würzburg/DE, M. Hruska, Morgantown/USA
- P16 **The structure and function of a uniquely complex insecticidal Tc toxin**
R. Bader, Dortmund/DE, O. Sitsel, Okinawa/JP, P. Günther, Boston/US, L. Kroczeck, Cologne/DE, D. Obergfäll, Erlangen/DE, A. Belyy, Groningen/NL, L. Kerkmann, Essen/DE, D. Prumbaum, Dortmund/DE, O. Hofnagel, Dortmund/DE, S. Raunser, Dortmund/DE

▶ INFORMATION FOR AUTHORS

For your presentation we provide a PC and a projector.

▶ AWARDS

The German Chemical Biology Lectureship, the Förderpreis FG Biochemie and the Albrecht Kossel Prize will be awarded during this conference.

This will be on **October 1, 2024 (4.30 p.m. to 7.00 p.m.)**.

▶ POSTER

The poster list confirmed by the Scientific committee is available on the internet:

www.gdch.de/biochemistry2024

The poster session will take place in the **foyer in front of the lecture hall**.

Poster session I: Monday, September 30, 2024, from 7.00 p.m.

Poster session II: Tuesday, October 1, 2024, from 7.00 p.m.

Poster prizes: Wednesday, October 2, 2024, 12:55 pm

The best posters will be awarded. Posters will be displayed throughout the conference.

▶ BEVERAGES

Coffee, tea and softs will be provided during the breaks.

▶ LUNCH

Lunch on October 1 will be provided at the conference site.

▶ REGISTRATION

All tickets and congress papers will be handed to the participants upon check-in at the registration desk. Participants are requested to wear their congress badges at all times for identification and admittance to the conference rooms.

By online registration, payment by credit card or direct debit is preferred. If you wish to pay by bank transfer (free of bank commission) please do not forget to print the invoice at the end of your online-registration.

BANK DETAILS

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ATTENTION:

Participants from EU countries except Germany please use the IBAN (International Bank Account Number) and SWIFT-BIC (Bank Identifier Code) instead of the bank and account number:

▶ BEFORE AND AFTER THE CONFERENCE

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The registration desk will be located in the **foyer** of the Max Planck Institute of Molecular Physiology.

Opening hours of the conference office:

Monday, September 30, 2024 11.30 a.m. – 4.30 p.m.

Tuesday, October 1, 2024 8.30 a.m. – 2.30 p.m.

Wednesday, October 2, 2024 8.30 a.m. – 11.30 a.m.

▶ VENUE

Max Planck Institute of Molecular Physiology

Otto-Hahn-Straße 11

44227 Dortmund

Germany

www.mpi-dortmund.mpg.de/institute/contact

GENERAL INFORMATION

▶ HOW TO GET TO THE VENUE

By Plane

From Dortmund/Wickede Airport, it takes approx. 30 minutes to reach the Institute by car or one hour by bus and train. Take the AirportExpress Bus from the airport to Dortmund Central Station. Then take S-Bahn S1 going to Solingen/Düsseldorf and exit at Dortmund University. Then take the Bus 445 to Otto-Hahn-Str. From Düsseldorf Airport it takes approx. 45 min by train to Dortmund Central Station (either S1 or RE1) and another 20 min to the institute. Take the AirportExpress Bus from the airport to Dortmund Central Station. Then take S-Bahn S1 going to Solingen/Düsseldorf and exit at Dortmund University. Then take the Bus 445 to Otto-Hahn-Str.

By Train

Travel to Dortmund Central Station (Dortmund Hauptbahnhof), from where it takes approx. 20 minutes to reach the Institute by cab. Alternatively, take the S-Bahn S1 to the station Dortmund-Universität, which is a 5 minutes' drive or 10 minutes' walk away from the Institute. Then take the Bus 445 to Otto-Hahn-Str.

