Helicases and Nucleic Acid-Based Machines

Structure, Mechanism, Regulation, and Roles in Human Diseases

Lisbon Congress Centre - Lisbon, Portugal

June 29 – July 3, 2025

Conference Organizers:

Markus T. Bohnsack (University Medical Center Göttingen, Germany)

Fernando Moreno Herrero (CSIC, Madrid, Spain)

Sua Myong (Harvard Medical School, Boston, USA)

PROGRAM AGENDA

Sunday, June 29, 2025

4:00 PM – 9:00 PM	**REGISTRATION**
5:30 PM – 6:00 PM	**WELCOME (Organizers)**
6:00 PM – 7:00 PM	Keynote: **Timothy Lohman,** Washington University, St. Louis, USA *Structural Basis for Activation of Dimeric UvrD-family Helicases*
7:00 PM – 8:00 PM	**WELCOME RECEPTION**

Funded by the European Union

Monday, June 30, 2025

8:00 AM – 1:00 PM	**REGISTRATION**
9:00 AM – 3:05 PM	***Session 1: Helicases Associated with Genomic Instability, Cancer and Aging***
9:00 AM – 9:25 AM	**Edwin Antony**, Saint Louis University, USA *An RPA Phosphocode, Kinase Feed-back Loop, and Control of Events at Ss-dsDNA Junctions*
9:25 AM – 9:50 AM	**Bob Brosh**, National Institutes of Health, USA *Functional Roles and Pathways of Helicases that Impact Human Health and Aging*
9:50 AM – 10:10 AM	**Patrick Sung** *DNA Break Repair Pathway Choice via Regulation of the BLM and WRN Helicases*
10:10 AM – 10:30 AM	**Denitsa Yaneva,** LMU, Munich, Stingele Lab, Germany *The FANCJ Helicase Converts DNA Single-strand Breaks Shielded by Trapped PARP1 into Double-strand Breaks*
10:30 AM – 10:50 AM	**COFFEE BREAK**
10:50 AM – 11:15 AM	**Mark S. Dillingham**, University of Bristol, UK *Control of Bacterial DNA Break Repair by Phage-encoded DNA Mimics*
11:15 AM – 11:40 AM	**Maria Spies**, Iowa University, USA *The RAD52 double-ring remodels replication forks restricting fork reversal by SMARCAL1 helicase*
11:40 AM – 12:00 PM	**Silvia Hormeño,** National Center of Biotechnology, CSIC, Spain *A Novel Secondary DNA-binding Site in HELB's N-terminal domain mediates RPA Displacement from Single-stranded DNA*
12:00 PM – 12:20 PM	**Nasim Sabouri**, Umeå University, Sweden *Mechanistic Insights into Poly-(rC)-binding Protein 1 (PCBP1) Driven Unfolding of Selected i-motif DNA at G1/S Transition*
12:20 PM – 1:30 PM	**LUNCH**

1:30 PM – 1:55 PM	**Brandt Eichman**, Vanderbilt University, USA *A mechanistic basis for replication fork reversal by F-box helicase 1*
1:55 PM – 2:20 PM	**Michael Trakselis**, Baylor University, USA *Structural, Enzymatic, and Fork Protection Functions of an Activated Human MCM8/9 Complex*
2:20 PM – 2:45 PM	**Elizabeth Tran**, Purdue University, USA *Supinoxin Blocks Small Cell Lung Cancer Progression by Inhibiting Mitochondrial Respiration through DDX5*
2:45 PM – 3:05 PM	**Linda Bloom**, University of Florida, USA *Escherichia coli Rad3/XPD-family Helicases Push and Pull Single-stranded DNA Binding Protein on DNA*
3:10 PM – 3:40 PM	**GROUP PHOTO / COFFEE BREAK**
3:40 PM – 5:35 PM	***Session 2: Ribosome Biogenesis and Translation***
3:40 PM – 4:05 PM	**Katrin Karbstein**, Vanderbilt University, USA *A DEAD-box-ATPase Mediated Checkpoint Avoids RNA Mfolding*
4:05 PM – 4:30 PM	**Denis Lafontaine**, Brussels University, Belgium *Title: TBA*
4:30 PM – 4:55 PM	**Anthony Henras**, University of Toulouse, France *The Dual Life of Disordered Lysine-rich Domains of snoRNPs and RNA Helicases in rRNA Modification and Nucleolar Compaction*
4:55 PM – 5:15 PM	**Vikram Panse**, University of Zurich, Switzerland *DNTTIP2 Orchestrates RNA Processing and Quality Control During Human Ribosome Assembly*
5:15 PM – 5:35 PM	**Valentin Mitterer**, University of Graz, Austria *RNA Helicases in Co-transcriptional Ribosome Assembly*
5:35 PM – 5:50 PM	**Special Session: Oxford Nanopore** *Title: TBA*
6:15 PM – 7:15 PM	**DINNER**
7:30 PM – 8:45 PM	**POSTER SESSION Even numbers**
8:45 PM – 10:00 PM	**POSTER SESSION Odd numbers**

Tuesday, July 1, 2025

8:00 AM – 1:00 PM	**REGISTRATION**
9:00 AM – 12:20 PM	***Session 3: RNA Helicases - Diverse Mechanisms and Biological Roles***
9:00 AM – 9:25 AM	**Dagmar Klostermeier**, University of Münster, Germany *Title: TBA*
9:25 AM – 9:50 AM.	**Hervé Le Hir**, Ecole Normale Supérieue, France *Title: TBA*
9:50 AM – 10:10 AM	**Eric Galburt**, Washington University School of Medicine, USA *Structural Basis for Dimerization and Activation of UvrD-family Helicases*
10:10 AM – 10:30 AM	**Mandy Jeske**, Heidelberg University, Germany *Stimulation of Vasa DEAD-box RNA Helicase Activity by eLOTUS Domains through an Unstructured Positively Charged Stretch*
10:30 AM – 10:50 AM	**COFFEE BREAK**
10:50 AM – 11:15 AM	**Christof Niehrs**, IMB, Mainz, Germany *Role of DDX Proteins in Protein Kinase Regulation*
11:15 AM – 11:40 AM	**Yohei Kirino**, Th. Jefferson University, Philadelphia, USA *An RNA Helicase Required for Releasing Immunostimulatory Short Non-coding RNAs*
11:40 AM – 12:00 PM	**Claudia Ribeiro de Almeida**, Babraham Institute, United Kingdom *RNA Helicase DDX1 Regulates Antibody Immune Responses by Promoting the Splicing of Intron-containing TRNAs*
12:00 PM – 12:20 PM	**Nina Lang**, University of Bayreuth, Germany *Targeting the Autoregulation Mechanism of Human RNA Helicase DHX9 to Modulate RNA Unwinding Activity*
12:20 PM – 1:30 PM	**LUNCH**
1:30 PM – 3:55 PM	***Session 4: Helicases Engaged in Chromatin Remodeling***
1:30 PM – 1:55 PM	**Alessandro Costa**, Francis Crick Institute, London, UK *Parental nucleosome disruption at the replication fork shapes histone inheritance pathway choice*

1:55 PM – 2:20 PM	**Danzhou Yang**, Purdue University, USA *Structural basis for nucleolin recognition of MYC promoter G-quadruplex and G4-epigenetic transcription regulation*
BA	
2:20 PM – 2:45 PM	**Katrin Paeschke**, Bonn University, Germany *Title: TBA*
2:45 PM – 3:30 PM	**COFFEE BREAK**
3:30 PM – 3:55 PM	**Haiwei Song**, IMCB, Singapore *Structural and Functional Insights into the Unwinding Mechanism of Pif1 Helicases*
3:55 PM – 4:20 PM	**Petr Cejka**, ETH, Zürich, Switzerland *Mechanism of BRCA1-BARD1 function in DNA end resection*
4:20 PM – 4:50 PM	**David Lilley**, University of Dundee, UK *ANKLE1 Responds to DNA Tension to Provide a Final Opportunity to Break Links Between Chromosomes Prior to Cell Division*
5:00 PM	**FREE EVENING**

Wednesday, July 2, 2025

8:30 AM – 1:00 PM	**REGISTRATION**
9:00 AM – 2:35 PM	***Session 5: RNA Processing and Gene Expression***
9:00 AM – 9:25 AM	**Clemens Plaschka**, IMP, Vienna, Austria *Mechanisms of Human Messenger RNA Export*
9:25 AM – 9:50 AM	**Rick Russell**, University of Texas, Austin, USA *Probing the mechanisms of DNA target specificity by CRISPR-Cas12a*
9:50 AM – 10:10 AM	**Michael Huen,** The University of Hong Kong, China *R-loop Resolution by ARIP4 Helicase Promotes Androgen-dependent Transcription Induction*
10:10 AM – 10:30 AM	**David Dulin,** VU Amsterdam, Amsterdam, Netherlands *The coronavirus helicase is a major regulator of viral replication*
10:30 AM – 10:50 AM	**COFFEE BREAK**

10:50 AM – 11:15 AM	**Kristian Baker**, Case Western Reserve University, USA *Interrogating the RNA and Protein Interaction Networks Mediating Nonsense-mediated mRNA Decay in Yeast*
11:15 AM – 11:35 AM	**Kevin Raney**, UAMS, USA *Nonconventional Roles of Helicases in Nucleic Acid Metabolism*
11:35 AM – 11:55 PM	**Daan Overwijn,** Biozentrum, University of Basel**,** Switzerland *A Novel Non-canonical DDX-MIF4G Interaction Between DDX19A/B and PAIP1 Provides a Molecular Link Between mRNA Export and Stability*
11:55 PM – 12:15 PM	**Fabienne Becker**, Justus-Liebig-University Giessen, Germany *The Conserved C-terminal Domain of Tho1 Stimulates the DEAD-box Helicase Sub2*
12:20 PM – 1:30 PM	**LUNCH**
1:30 PM – 1:55 PM	**Ailong Ke**, Yale University, New Haven, USA *Exploiting Activation and Inactivation Mechanisms in Type I-C CRISPR-Cas3 for Genome Editing Applications*
1:55 PM – 2:15 PM	**Jorge Cruz-Reyes,** Texas A & M University, USA *Dynamic REH2C Complexes at the Heart of U-indel RNA Editing Regulation During Development*
2:15 PM – 3:15 PM	**BUSINESS MEETING**
3:15 PM – 4:00 PM	**COFFEE BREAK**
4:00 PM – 5:30 PM	***Session 6: Helicases in Viral Infection***
4:00 PM – 4:25 PM	**Smita Patel**, Rutgers University, USA *Title: TBA*
4:25 PM – 4:50 PM	**Michaela Rumlova**, University of Chemistry and Technology, Prague, Czech Republic *Retroviral G-patch Motif Recruits Cellular DHX15 Helicase to Facilitate Retroviral RNA Packaging*
4:50 PM – 5:10 PM	**Francesca Fiorini**, The French National Centre for Scientific Research (CNRS), France *The SARS-CoV-2 Nucleocapsid Protein Hijacks and Inhibits the UPF1 RNA Helicase During Viral Infection*

5:10 PM – 5:30 PM	**Martina Schroeder**, Maynooth University Ireland, Ireland *Regulation of mRNA Translation by the Human DEAD-box Helicase DDX3X in Virus-infected Cells.*
6:00 PM – 8:00 PM	**CONFERENCE DINNER**

Thursday, July 3, 2025

8:30 AM – 1:00 PM	**REGISTRATION**
9:00 AM – 10:50 AM	***Session 7: Replication coupled processes***
9:00 AM – 9:25 AM	**Caroline Kisker**, University of Würzburg, Madison, Germany *TBA*
9:25 AM – 9:50 AM	**James Keck**, University of Wisconsin, Madison, USA *Structural mechanisms of DNA replication restart*
9:50 AM – 10:10 AM	**Ignacio Mir Sanchis**, Umeå University, Sweden *The Arms Race Between Phages and Their Parasites: From MCM-like Helicases to Homologous Recombination Inhibition*
10:10 AM – 10:30 AM	**Rafael Fernandez-Leiro**, Spanish National Cancer Research Center (CNIO), Spain *A Dedicated Motif Facilitates DNA Synthesis by Human Mitochondrial DNA Polymerase Gamma Holoenzyme*
10:30 AM – 10:50 AM	**Morgan Jones**, MRC Laboratory of Molecular Biology, USA *Setting the Pace: How a Largely Unstructured Protein Accelerates the Eukaryotic Replisome*
10:50 AM – 11:05 AM	**COFFEE BREAK**
11:05 AM – 12:55 PM	***Session 8: Helicases in Cross-regulation of Processes and Phase Transition***
11:05 AM – 11:30 AM	**Konstantinos Tripsianes**, Masaryk Univ., Czech Republic *RECQ4 Conformational Flexibility Modulates Distinct Functions and Coacervation with G-quadruplexes*
11:30 AM – 11:55 AM	**Karsten Weis**, ETH, Zürich, Switzerland *Title: TBA*
11:55 PM – 12:15 PM	**Maria Hondele**, Biozentrum, University of Basel, Switzerland

		Exploring Biomolecular Condensation in Bacteria: The E. coli Ribosome Biogenesis Factor CsdA Forms Nucleoid-Associated Foci at Cold Temperatures
12:15 PM –	12:35 PM	**Cornelia Kilchert**, JLU Giessen, Germany *Dbp2 Drives 3'-end Processing Factor Release to License mRNPs for Nuclear Export*
12:35 PM –	12:55 PM	**Francesca Pisani**, IBBC – CNR, Italy *Nuclear and Cytoplasmic Functions of DDX11, The Warsaw Breakage Syndrome DNA Helicase*
12:55 PM –	13:15 PM	**FAREWELL (Organisers)**