



DEUTSCHE ZENTREN DER  
GESUNDHEITSFORSCHUNG

## Virtual DZG Symposium for Early Career Scientists Single Cell Analysis- 10-11 November 2022

### Day 1: November 10

- 15:00-15:05 Welcome and Introduction  
*Herbert Schiller & Christos Samakovlis (DZL)*
- 15:05-15:30 HIRI Keynote Talk: Profibrotic cellular phenotypes in COVID-19  
*- Emmanuel Saliba*  
*Session 1 Chair: Lorenzo Bonaguro (DZNE)*
- 15:30-16:00 DZNE Keynote Talk: Swarm Learning for decentralized and confidential clinical machine learning – *Joachim Schultze (DZNE)*
- 16:00-16:05 Spatial and longitudinal analysis of cell-type specific transcriptome and epigenetic changes in prion disease models - *Jenny Russ (DZNE)*
- 16:05-16:10 Uncovering Mechanisms of Selective Neuronal Subtype Vulnerability through Single Cell Analysis - *Joshua Thomas (DZNE)*
- 16:10-16:20 Discussion
- 16:20-16:30 Break  
*Session 2 Chair: Dennis Nurjadi (DZIF)*
- 16:30-17:00 DZIF Keynote Talk: Single-cell phylogeny reconstruction: definition, solutions, and potential applications – *Mohammad Hadi Foroughmand Araabi (DZIF)*
- 17:00-17:05 The impact of single cell technologies on AAV gene therapy  
*- Conradin Baumgartl (DZIF)*
- 17:05-17:10 Deep in silico exploration of cell-to-cell communication based on single cell transcriptomics - *Pascal Gottmann (DZD)*
- 17:10-17:20 Discussion
- 17:20-17:30 Break  
*Session 3 Chair: Theodoros Kapellos (DZL)*
- 17:30-18:00 DZL Keynote Talk: Integrating datasets to build a reference human lung cell atlas  
*- Malte Lücken (DZL)*
- 18:05-18:10 Specific cellular perturbation patterns in lung inflammation after nanoparticle inhalation - *Lianyong Han (DZL)*
- 18:10-18:15 Evidence for multiple origin and fate of Cthrc1pos myofibroblast during fibrosis formation and resolution in young mice - *Arun Lingampally (DZL)*
- 18:15-18:25 Discussion
- End of day 1**



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### Day 2: November 11

- 14:55-15:00 Welcome and Introduction  
*Herbert Schiller & Christos Samakovlis (DZL)*  
*Session 4 Chair: Esteban Arrieta-Bolaños (DKTK)*
- 15:00-15:30 **DKTK** Keynote Talk: Spatial omics at single-cell resolution to improve pathology and drug target identification” - *Nikolaus Rajewsky (DKTK)*
- 15:30-15:35 Human Lung Multi-omic Cell Atlas, a resource to advance translational lung cancer research - *Mei-Ju May Chen (DKTK & DZL)*
- 15:35-15:40 Application of single cell RNA sequencing to characterize transient cell populations and molecular signalling during respiratory differentiation of human pluripotent stem cells - *Anna Kuleshova (DZL)*
- 15:40-15:50 Discussion
- 15:50-16:00 Break  
*Session 5 Chair: Jacqueline Ratter-Rieck (DZD)*
- 16:00-16:30 **DZD** Keynote Talk: Building integrated single cell atlases and their promise for clinical applications – *Fabian Theis (DZD)*
- 16:30-16:35 Extra-cellular matrix and the formation of bone marrow adipocyte and osteocyte progenitor cells – *George Soultoukis (DZD)*
- 16:35-16:40 Paternal mitochondrial function influences offspring metabolism – *Melisa Gómez-Velázquez (DZD)*
- 16:40-16:50 Discussion
- 16:50-17:00 Break  
*Session 6 Chair: Simone-Franziska Glaser (DZHK)*
- 17:00-17:30 **DZHK** Keynote Talk: Single-cell genomics approaches to heart failure – *Henrike Maatz (DZHK)*
- 17:30-17:35 The lncRNA landscape of cardiac resident macrophages and identification of Schlafen1nc as a regulator of macrophage migratory function - *Anne Dueck (DZHK)*
- 17:35-17:40 Accurate and robust integration of single cell transcriptomics data in mice and man through an orthologue integration pipeline - *Mariano Ruz Jurado (DZHK)*
- 17:40-17:50 Discussion
- 18:00-18:30 Meet-the-Expert Session**



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### Keynote Speaker Affiliation

Dr. Mohammad Hadi Foroughmand **Araabi**, Senior Scientist, Computational Biology of Infection Research, Helmholtz Centre for Infection Research, Braunschweig, (DZIF)

Dr. Malte **Lücken**, Group Leader, Computational Cellular Health Group, Institute of Lung Health & Immunity, Institute of Computational Biology, Helmholtz Munich, (DZL)

Dr. Henrike **Maatz**, Senior Scientist, Genetics and Genomics of Cardiovascular Disease Lab, Max Delbrück Center, Berlin, (DZHK)

Prof. Nikolaus **Rajewsky**, Director of the Berlin Institute for Medical System Biology, Head of the Group Systems Biology of Gene Regulatory Elements, Max-Delbrück-Center for Molecular Medicine, (DKTK)

Dr. Emmanuel **Saliba**, Head of the Group Single-Cell Analysis, Helmholtz Institute for RNA-based Infection Research (HIRI), Würzburg

Prof. Joachim **Schultze**, Director Systems Medicine, Head of the Group Clinical Single Cell Omics, Bonn, (DZNE)

Prof. Fabian **Theis**, Director, Helmholtz Institute of Computational Biology, Munich, (DZD)

### Short Talk Speaker Affiliation

Conradin **Baumgartl**, Section Viral Vector Technologies, Center for Integrative Infectious Diseases Research, University of Heidelberg, German Center for Infectious Diseases (DZIF), Heidelberg, Germany

Mei-Ju May **Chen**, Division of Cancer Epigenomics, German Cancer Research Center (DKFZ), German Center for Lung Research (DKTK & DZL), Heidelberg, Germany

Dr. Anne **Dueck**, Institute of Pharmacology and Toxicology, Technical University Munich, Munich, Germany, German Centre for Cardiovascular Research (DZHK), Munich Heart Alliance, Munich, Germany

Dr. Melisa **Gómez-Velázquez**, Institute of Experimental Genetics, Helmholtz Zentrum München, German Research Center for Environmental Health Neuherberg, German Center for Diabetes Research (DZD)

Dr. Pascal **Gottmann**, Department of Experimental Diabetology, German Institute of Human Nutrition Potsdam-Rehbrücke (DIFE), Germany, German Center for Diabetes Research (DZD)

Lianyong **Han**, Institute of Lung Health and Immunity (LHI), Comprehensive Pneumology Center, Helmholtz Zentrum Munich, Neuherberg, Germany; German Center for Lung Research (DZL), Munich, Germany

Mariano Ruz **Jurado**, Institute of Cardiovascular Regeneration, German Center for Cardiovascular Research (DZHK), Frankfurt, Germany

Anna **Kuleshova**, Leibniz Research Laboratories for Biotechnology and Artificial Organs (LEBAO), Department of Cardiac, Thoracic, Transplantation and Vascular Surgery, Hannover Medical School, Department of Respiratory Medicine, Hannover Medical School, and Biomedical Research in End-stage and Obstructive Lung Disease Hannover (BREATH), German Center for Lung Research (DZL), Hannover, Germany

Arun **Lingampally**, Cardio-Pulmonary Institute (CPI) and Department of Pulmonary and Critical Care Medicine and Infectious Diseases, Universities of Giessen and Marburg Lung Center (UGMLC), German Center for Lung Research (DZL)

Dr. Jenny **Russ**, Deutsches Zentrum für Neurodegenerative Erkrankung in der Helmholtz Gemeinschaft (DZNE), Bonn, Germany



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Dr. George **Soultoukis**, Department of Adipocyte Development and Nutrition (ADE), German Institute of Human Nutrition (DIfE), Potsdam-Rehbrücke, Deutsches Zentrum für Diabetesforschung (DZD)

Joshua **Thomas**, Deutsches Zentrum für Neurodegenerative Erkrankungen (DZNE), Dresden, Germany

#### **Chair Affiliation**

Dr. rer. nat. Esteban **Arrieta-Bolaños**, Institute for Experimental Cellular Therapy, University Hospital Essen & German Cancer Consortium (DKTK)

Dr. rer. nat. Lorenzo **Bonaguro**, Genomics and Immunoregulation, Life and Medical Sciences Institute, Universität Bonn (DZNE)

Dr. Simone-Franziska **Glaser**, Institute of Cardiovascular Regeneration, Johann Wolfgang von Goethe University, Frankfurt (DZHK)

Dr. Theodoros **Kapellos**, Junior group leader, Institute for Lung Health and Immunity, Helmholtz Zentrum München (DZL)

Professor Dr. med. Dennis **Nurjadi**, Klinik für Infektiologie und Mikrobiologie, Universitätsklinikum Schleswig-Holstein, Campus Lübeck (DZIF)

Dr. Jacqueline **Ratter-Rieck**, Research Group Inflammation, German Diabetes Center, Leibniz Center for Diabetes Research at the Heinrich Heine University, Düsseldorf (DZD)

#### **Scientific Organizing Committee**

Prof. Christos Samakovlis, Professor of Molecular Pneumology, Cardio Pulmonary Institute, Justus Liebig Universität Giessen, Universities of Giessen and Marburg Lung Center Giessen (DZL)

Dr. Herbert Schiller, Deputy Director of the Institute of Lung Health and Immunity, Head of the Research Program Cell Circuits in Systems Medicine of Lung Disease, Helmholtz Comprehensive Pneumology Center Munich, (DZL)

#### **Management Committee: DZG Working Group “Early Career Scientist Development”**

DZL Academy: Dr. Birgit Teucher, Prof. Silke Meiners, Prof. Rory Morty

DZD Next: Dr. Brigitte Fröhlich, Dr. Leonie Herrmann

Young DZHK: Dr. Romy Hribal

DZIF Academy: Dr. Nadja Käding

DKTK School of Oncology: Esther Mantey, Dr. Nadine Ogrissek

DZNE Career Center: Dr. Silke Thul