Biosketches of the speaker at the 6th iCANx Minisymposium

Prof. Dr. Gergana Dobreva (University Heidelberg, Medical Faculty Mannheim, Germany)

„At the Crossroads of Epigenetics, Genome Integrity, and Metabolism in Cancer Development and Progression“

Prof. Dr. Gergana Dobreva is Professor of Cardiovascular Genomics and Epigenomics at Heidelberg University's Medical Faculty in Mannheim. She completed her PhD in Biochemistry at the Ludwig Maximilian University (LMU) in Munich and conducted her postdoctoral research at the LMU, the Max Planck Institute, and the Technical University of Munich. She later led an Emmy-Noether Junior Research Group at the Max Planck Institute for Heart and Lung Research. In 2012, she became Professor at the Goethe University Frankfurt, and since 2017, she is full professor in Mannheim.

The main interest of her group is understanding the mechanisms regulating cell identity and plasticity during development and in disease settings, with a particular focus on the crosstalk between cell metabolism, mechanical forces and epigenetics.

Selected recent literature (3 selected publications):

1. etik-Elsherbiny N, Elsherbiny A, Setya A, Gahn J, Tang Y, … **Dobreva G.** RNF20-mediated transcriptional pausing and VEGFA splicing orchestrate vessel growth. **Nat Cardiovasc Res.** 2024.

2. Keles M, Grein S, Froese N, Wirth D, Trogisch FA, … **Dobreva G**, Wieland T, Heineke J. Endothelial derived, secreted long non-coding RNAs *Gadlor1* and *Gadlor2* aggravate cardiac remodeling. **Mol Ther Nucleic Acids**. 2024.

3. Bolesani E, Bornhorst D, Iyer LM, Zawada D, Friese N, … **Dobreva G**, Moretti A, Zelaráyan LC, Abdelilah-Seyfried S, Zweigerdt R. Transient stabilization of human cardiovascular progenitor cells from human pluripotent stem cells in vitro reflects stage-specific heart development in vivo. **Cardiovasc Res.** 2024

Prof. Dr. med. Thorsten Zenz (University Hospital Zurich, Switzerland)

„Cancer pathway connectivity resolved by drug perturbation and RNA sequencing “

Prof. Dr. Thorsten Zenz is a senior physician leading the lymphoma program at the University Hospital Zurich. In 2015, he became full professor at the University of Heidelberg and Division Head at the German Cancer Research Center in 2017. For his work on precision medicine in leukemia and lymphoma, he received multiple academic prizes including the Hans-Jochen-Illiger prize (Cancer Research).

His current research focuses on understanding the molecular and genetic causes of blood cancers, particularly lymphomas and leukemias, and translating these findings into clinical therapies. His team uses high-throughput drug screening and omics-profiling to explore drug responses and develop new treatment strategies for blood cancers, with a strong emphasis on precision medicine.

Selected recent literature (3 selected publications):

1. ICGC/TCGA Pan-Cancer Analysis of Whole Genomes Consortium. Pan-cancer analysis of whole genomes. **Nature**. 2020.

2. Alexandrov LB, Kim J, Haradhvala NJ, Huang MN, Tian Ng AW, … **PCAWG Consortium**. The repertoire of mutational signatures in human cancer. **Nature**. 2020.

3. Gröbner SN, Worst BC, Weischenfeldt J, Buchhalter I, Kleinheinz K, … . The landscape of genomic alterations across childhood cancers. **Nature**. 2018.

Dr. Maria Llamazares Prada (dkfz Heidelberg, Germany)

„tba“

Dr. Maria Llamazares-Prada is a distinguished researcher at the German Cancer Research Center (DKFZ) in Heidelberg, Germany, where she leads the Lung Cancer Epigenomics Group within the Division of Cancer Epigenomics. Her research focuses on the epigenetic mechanisms underlying lung cancer and chronic obstructive pulmonary disease (COPD). In collaboration with international colleagues, Dr. Llamazares-Prada has identified early epigenetic changes in lung fibroblasts of COPD patients, providing new insights into disease pathogenesis and potential therapeutic targets. A key project is the development of the Human Lung Cell Methylation Atlas, which aims to define DNA methylomes and transcriptomes of normal lung, non-small cell lung cancer (NSCLC), and tumor-adjacent normal (TAN) cell populations. The atlas will serve as a comprehensive resource aimed at advancing the molecular characterization of lung cancer and facilitating biomarker development.

Selected recent literature (3 selected publications):

1. Alborzinia H, Flórez AF, Kreth S, Brückner LM, Yildiz U, … **Llamazares-Prada M**, Reiling JH, Fischer M, Amit I, Selbach M, Herrmann C, Wölfl S, Henrich KO, Höfer T, Trumpp A, Westermann F. MYCN mediates cysteine addiction and sensitizes neuroblastoma to ferroptosis. **Nat Cancer**. 2022.

2. Schwartz U, **Llamazares Prada M**, … Jurkowska RZ. High-resolution transcriptomic and epigenetic profiling identifies novel regulators of COPD. **EMBO J**. 2023.

3. Pohl ST, **Llamazares Prada M**, Espinet E, Jurkowska R. Practical Considerations for Complex Tissue Dissociation for Single-Cell Transcriptomics. **Methods Mol Biol**. 2023.

Prof. Dr. Frank Winkler (University Hospital Heidelberg, Germany)

„Cancer Neuroscience of brain tumors and beyond: new concept for pathobiology and therapy“

Prof. Dr. Frank Winkler leads the "Experimental Neurooncology" research group at the University of Heidelberg, based at the German Cancer Research Center. He also serves as the managing senior physician at the Department of Neurology. Following a two-year tenure at Harvard 20 years ago, he pioneered innovative methods for the functional study of brain tumors, which played a key role in establishing the field of "Cancer Neuroscience." Prof. Winkler was awarded the German Cancer Prize in 2022 and the BIAL Award in Biomedicine in 2024 in recognition of his groundbreaking work.

His research centers on translational and preclinical studies in brain tumors, exploring brain tumor networks and their therapeutic disruption. Additionally, he investigates the reciprocal interactions between normal brain tissue, primary brain tumors, and brain metastases, with a focus on advancing prevention and therapeutic strategies.

Selected recent literature (3 selected publications):

1. Heuer S, **Winkler F**. Glioblastoma revisited: from neuronal-like invasion to pacemaking. **Trends Cancer**. 2023.

2. **Winkler F**, Venkatesh H S, Amit M, Batchelor T, Demir I E, Monje M. Cancer neuroscience: State of the field, emerging directions. **Cell** 2023.

3. Karreman MA, Bauer AT, Solecki G, Berghoff AS, Mayer CD, … **Winkler F**. Active remodeling of capillary endothelium via cancer cell-derived MMP9 promotes metastatic brain colonization. **Cancer Res** 2023.