Press release

GermanStemCellNetwork

2019 German Stem Cell Network (GSCN) Award Winners 5. September 2019

Discover the potential of stem cells

Stem cells have the potential to form somatic cells, to renew themselves, to be genetically modified for therapeutic use - and to develop into tumors and cancers upon genetic abberations. Again in 2019 the GSCN is awarding scientific awards to researchers in Germany who study the details of these processes in different organ systems. Their common goal is to precisely understand the molecular processes in stem cells in order to modify them genetically and subsequently use them for therapies of diseases.

- The **"GSCN 2019 Young Investigator Award"** goes to **Dr. Nico Lachmann** from the Institute for Experimental Hematology at Hannover Medical School (MHH).
- The **"GSCN 2019 Female Scientist Award"** goes to **Prof. Dr. Ana Martin-Villalba** from the German Cancer Research Center (DKFZ) in Heidelberg.
- The **"GSCN 2019 Publication of the Year Award"** goes to **Dr. Germán Camargo Ortega** (Cell System Dynamics Group, ETH Zurich) and **Prof. Dr. Magdalena Götz** (Director of the Institute for Stem Cell Research at Helmholtz Zentrum München and Chair of Physiological Genomics at the Biomedical Centre of LMU) for the publication **"The centrosome protein Akna regulates neurogenesis via microtubule organization"**, 2019, in the journal *Nature* (Camargo Ortega, G et al., 2019, *Nature* 567, 113-117, doi: 10.1038/s41586-019-0962)

About the awardees:

Dr. Nico Lachmann receives the "GSCN 2019 Young Investigator Award" for his outstanding research work as a young scientist. Early on, he combined methods for the genetic modification of stem cells in order to provide genetically improved cells for novel therapies. Dr. Lachmann was particularly fascinated by macrophages, an important cell type in the immune system. The focus on macrophages has changed considerably in recent years and Dr. Lachmann has contributed significantly to the current understanding of macrophages. In his work, he has used different stem cells in order to use macrophages as a new and promising cell-based treatment approach for different diseases. By using both multipotent and induced pluripotent stem cells (iPSC), Dr. Lachmann has used macrophages to uncover the development of different diseases. In addition, he created new systems for the generation of blood cells from iPSCs and demonstrated the long-term therapeutic benefit and regenerative potential of stem cell-based macrophages in the organ system lung.

Dr. Nico Lachmann currently works at the Institute for Experimental Hematology (IEH) at the MHH and is a member of the Cluster of Excellence "From Regenerative Biology to Reconstructive Therapy; REBIRTH". Since 2015 he is the independent group leader of the working group "Translational Hematology of Congenital Diseases" at the IEH and the REBIRTH Cluster of Excellence in Hannover as well as a consultant of the "Transitional Pulmonary Science Center" at the Cincinnati Children's Hospital Medical Center. After studying life sciences and biomedicine, he worked as a postdoc at the Hannover Medical School (MHH) and at the Max Planck Institute for Molecular Biomedicine in Münster.

Link: Nico Lachmann, REBIRTH

Prof. Dr. Ana Martin-Villalba receives the "GSCN 2019 Female Scientist Award" for her outstanding achievements in the biology of neuronal stem cells. Her laboratory at the German Cancer Research Center (DKFZ) in Heidelberg aims to understand the mechanisms of neuronal plasticity that underlie the malignant transformation in neurooncology and are essential for the reconstruction of the central nervous system (CNS) following injuries in regenerative medicine. Martin-Villalba focuses on the

understanding of stem cell decision processes in the adult brain. What are the differences in the healthy, injured and aging brain? How does the decision to differentiate a stem cell into a specific nerve cell work in detail? This decision forms the basis for the contribution of stem cells to brain function and repair in injuries and neurodegenerative disorders. Wrong decisions can cause malignant changes that lead to brain tumors. To study stem cells in the CNS of a living organism, Martin-Villalba has adopted a multidisciplinary approach that combines genetically engineered mouse models with injury and cancer models and cutting-edge technologies in single cell analysis such as line tracking, epigenomics and transcriptomics. The cutting-edge research of her laboratory is reflected in two much-noticed publications in the prestigious journals Nature and Cell alone in 2019.

Prof. Dr. Ana Martin-Villalba studied medicine at the University of Murcia in Spain and in Leeds, Great Britain. She received her doctorate from the University of Heidelberg in 1998, where she studied the role of death ligands (CD95L, TNF and TRAIL) in apoptosis in the human brain after stroke. In 2006, Martin-Villalba became head of the Junior Group Molecular Neurobiology at the DKFZ. Since 2011, she has been Professor of "Neurobiology of Brain Tumors" at the University of Heidelberg and Head of the Department of Molecular Neurobiology at the DKFZ. Her work in the field of CNS regeneration was awarded an ERC Consolidator Grant in 2017. Her awards include the Paul Ehrlich and Ludwig Darmstädter Young Investigators Prize, the Heinz Maier-Leibnitz Prize of the German Research Foundation and the Walther and Christine Richtzenhain Prize.

Link: Lab Martin-Villalba

Dr. Germán Camargo Ortega and **Prof. Dr. Magdalena Götz** received the "GSCN 2019 Publication of the Year Award" for their discovery of the important role of the protein Akna in the decision of the stem cell whether and how it differentiates further. Together with the other co-first authors Dr. Sven Falk and Dr. Pia A. Johansson Camargo Ortega observed that the protein Akna controls the behavior of neural stem cells via a mechanism that might also be important for the formation of metastases. The scientists isolated cells that either renew themselves and form further neural stem cells or differentiate and form nerve cells. They found that the protein Akna was found in much higher concentrations in the stem cells that developed into nerve cells. If it was less present, the stem cells remained in the niche, whereas higher protein concentrations increased the detachment of the stem cell from its niche and thus promoted differentiation into a neural cell. The scientists were particularly surprised by the position of the protein on the centrosome, a small organelle inside the cell that is responsible for the organization of the cytoskeleton and cell division. The researchers were able to show that Akna anchors the cell scaffold in the form of microtubules. This can weaken the connections to the neighboring cells and promote detachment and migration from the stem cell niche. This identified mechanism via the Akna protein can play a central role in various medically relevant processes.

Publication: Camargo Ortega G, Falk S, Johansson PA, Peyre E, Broix L, Sahu SK, Hirst W, Schlichthaerle T, De Juan Romero C, Draganova K, Vinopal S, Chinnappa K, Gavranovic A, Karakaya T, Steininger T, Merl-Pham J, Feederle R, Shao W, Shi SH, Hauck SM, Jungmann R, Bradke F, Borrell V, Geerlof A, Reber S, Tiwari VK, Huttner WB, Wilsch-Bräuninger M, Nguyen L, and Götz M (2019) **„The centrosome protein Akna regulates neurogenesis via microtubule organization“**, 2019, *Nature* 567, 113–117, DOI: 10.1038/s41586-019-0962-

Link: https://www.nature.com/articles/s41586-019-0962-4

The three GSCN awards are endowed with 1,500 Euros each, and the award winners will give a lecture at the Presidential Symposium on Tuesday, 24 September at this year's GSCN Stem Cell Conference from 23 – 25 September 2019 in Berlin.
The GSCN was founded in 2013 and aims to better network, support and disseminate its results and research to a broad public. For more information, please visit www.gscn.org or contact:

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