



New awards by the German Stem Cell Network (GSCN)

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Eavesdropping on the conversation of stem cells

Stem cells communicate at the molecular level – within the cell and with other cells. Stem cell scientists understand this "conversation" of cells more and more, and can begin to grasp the mysteries of the cells. This year, the German Stem Cell Network (GSCN) honors with its scientific awards three researchers who are deeply involved with cellular communication – in the development of liver cells from pluripotent stem cells, the epigenetic information in the aging process, and the regeneration processes in the axolotl. These three researchers' goal is to understand the molecular processes in such detail that they can be manipulated in the lab in order to develop cell-based therapies for yet incurable diseases.

A panel of experts from the German Stem Cell Network (GSCN) has now selected the award winners:

The "**GSCN 2017 Young Investigator Award**" goes to [Dr. Francesco Neri](#) from the Leibniz Institute on Aging - Fritz-Lipmann-Institute (FLI) in Jena.

The "**GSCN 2017 Female Scientist Award**" goes to [Prof. Elly Tanaka](#) from the Institute for Molecular Pathology IMP in Vienna and the TU Dresden.

The "**GSCN 2017 Publication of the Year Award**" goes to [Dr. J. Gray Camp](#) and [Prof. Barbara Treutlein](#) (Max Planck Institute for Evolutionary Anthropology, Leipzig), together with Dr. Keisuke Sekine and Prof. Takanori Takebe (Cincinnati Children's Hospital Medical Center). The award honors the publication "Multilineage communication regulates human liver bud development from pluripotency" in the journal *Nature* (Camp, JG et al., 2017, *Nature* 546, 533-538, doi: 10.1038/nature22796).

"We want to encourage young stem cell researchers and especially women scientists to get involved in this dynamic field of research. The awards honor outstanding achievements in the stem cell field," emphasizes Prof. Ulrich Martin, President of the GSCN and Head of Leibniz Research Laboratories for Biotechnology and Biotechnology Artificial Organs (LEBAO) at the Hannover Medical School (MHH). The three GSCN awards are endowed with 1,500 euros each, and the prizewinners will give a lecture at the Presidential Symposium on 12 September at this year's GSCN Stem Cell Conference from 11 - 13 September 2017 in Jena.

About the award winners:

Dr. Francesco Neri receives the "GSCN 2017 Young Investigator Award" for his excellent research as a junior scientist. He explores the damage caused by aging processes in organ and tissue functions. As humans and other mammals age, the risk of developing diseases such as cancer rises. There is increasing evidence that genetic and epigenetic factors influence the functionality and homeostasis of adult stem cells in old age and promote the selective advantage of dominant stem cell clones, which eventually leads to cancer development. Especially DNA methylation (a stable and hereditary epigenetic modification) is associated with age-related diseases and cancer. Neri researches the epigenetic changes of aging stem cells and their function in the formation of clonal dominance and neoplastic changes.

Dr. Francesco Neri was awarded the Sofja Kovalevskaya Prize of the Alexander von Humboldt Foundation. His junior research group on the "epigenetics of aging" exists at the FLI in Jena since 2016. The epigeneticist from Tuscany studied molecular biology in Siena (Italy), received a PhD in biotechnology and has been involved in research in Nijmegen (Netherlands) and Turin (Italy).

Link: www.leibniz-fli.de/de/forschung/forschungsgruppen/neri/

Prof. Dr. Elly Tanaka receives the "GSCN 2017 Female Scientist Award" for her outstanding achievements in the investigation of fundamental processes in the regeneration of tissues and body parts in animal models. She focuses on the regenerative capacity of the axolotl (Mexican salamander), which regenerates extremities and repairs spinal cord injuries and even brain injuries by re-growing the required cells. The research of the Tanaka Group aims to elucidate the mechanisms that are responsible for the regrowth of the limbs. These findings serve as a model for the regeneration capacity of vertebrates. Key questions are the identity of the stem cells involved and the signals that activate stem cells after injuries.

Professor Elly Tanaka studied biochemistry at Harvard University and received her PhD in Marc Kirschner's lab at the University of California, San Francisco. As a postdoctoral student, she joined Jeremy Brockes at University College, London. In 1999, Tanaka became a group leader at the Max Planck Institute of Molecular Cell Biology and Genetics in Dresden. In 2008, she became professor at the TU Dresden. From 2013 to 2016, she was a Max Planck Fellow and from 2014 to 2016, she headed the DFG Center for Regenerative Therapies Dresden (CRTD). Since 2016, she has been at the Research Institute for Molecular Pathology (IMP) in Vienna and has been a "Honorarprofessor" at the TU Dresden.

Link: www.imp.ac.at/research/research-groups/elly-tanaka/research/

J. Gray Camp and **Keisuke Sekine** have discovered how single cells work together and use their genomes to develop into human liver tissue. The results were published by an international research team led by **Takanori Takebe** (Cincinnati Children's Hospital Medical Center) and **Barbara Treutlein** (Max Planck Institute for Evolutionary Anthropology, Leipzig). In the current study, the researchers employ the technology of single-cell RNA sequencing for their analyses. With this method, they observed the alteration of individual cells when combined in a three-dimensional micro-environment with vascular cells, connective tissue cells, and liver cells that communicate with each other. The researchers developed a complete set of active transcription factors, signaling molecules and receptors for each of these cell types, before and after their combination to form liver tissue. The single-cell RNA sequencing aided the researchers in comparing the three-dimensional liver tissue produced from stem cells in the laboratory with naturally occurring human fetal and adult liver cells. The study is a milestone towards the production of healthy, human liver tissue from pluripotent stem cells using biotechnology. The publication is the "GSCN 2017 Publication of the Year Award".

Publication: Camp JG *, Sekine K *, Gerber T, Loeffler-Wirth H, Binder H, Gac M, Canton S, Kageyama J, Dam G, Seehofer D, Belicova L, Bickle M, Barsacchi R, Okuda R, Yoshizawa E, Kimura M, Ayabe H, Taniguchi H, Takebe T *, Treutlein B *. & Quot; Multilineage communication regulates human liver bud development from pluripotency. & Quot; 2017, *Nature* 546, 533-538. * Equal contribution

Link: [Publication in Nature](#)

Link: [Press Release MPG](#)

The GSCN was founded in 2013 and aims to better network, support and disseminate its results and research to a broad public. The promotion of young academics and the presentation of outstanding female scientists as women's advancement are a special consideration at the GSCN.

For more information, please visit www.gscn.org. For further questions, please contact:

Stefanie Mahler
Director of Communications GSCN
stefanie.mahler@mdc-berlin.de
T. 030 9406 2483

Daniel Besser
Managing Director
d.besser@mdc-berlin.de
T. 030 9406 2488