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First Max Planck Center for Regenerative Biomedicine opens in China

Researchers at the new Max Planck – GIBH Joint Center for Regenerative Biomedicine in Guangzhou plan to generate nerve, cardiovascular and lung cells from reprogrammed stem cells

Healing damaged cells and organs and developing induced pluripotent stem cells (iPS) for clinical use – these are the aims of the new Max Planck Center in Guangzhou, China. The Max Planck – GIBH Joint Center for Regenerative Biomedicine brings together leading researchers from two German Max Planck Institutes and outstanding scientists from the Guangzhou Institutes of Biomedicine and Health of the Chinese Academy of Sciences. The cooperation will enable vital progress to be made in the further development of iPS technology, and provide crucial impetus for regenerative medicine and drug research. The Max Planck – GIBH Joint Center for Regenerative Biomedicine was officially opened at a conference on 20 December by its two Directors Hans Schöler and Duanqing Pei and the German Consul General Helmut Lüders.

The development of iPS technology has opened new doors for regenerative biomedicine, which has experienced a major boost as a result. The technology enables patients' own cells to be reversed to an embryonic state, reproduced on an almost infinite scale and transformed into all of the different types of cells found in the body. This means that researchers can now study diseases and develop new drugs in the petri dish. The work of the new Max Planck Center is focused on brain, cardiac and lung cells.

"Through the new Max Planck Center we can make crucial progress in the development of iPS technology and optimize differentiation processes in nerve, cardiac and lung cells so that they provide the best possible disease models for study in the petri dish. These are crucial preconditions for the advancement of regenerative medicine and drug research," says Hans Schöler, Director at the Max Planck Institute for Molecular Biomedicine in Münster and one of the two Co-Directors of the new Center.

The first Max Planck Center in China pools the scientific expertise of Hans Schölers, of Thomas Braun and Werner Seeger, both Directors of the MPI for Heart and Lung Research in Bad Nauheim, and of Duanqing Pei from the Guangzhou Institutes of Biomedicine and Health of the Chinese Academy of Sciences, and their associated Hong Kong laboratory group.

"The Max Planck Centre will be a hub for international cooperation with China and offer outstanding Asian scientists the opportunity to contribute their expertise in application-oriented stem cell research and regenerative biomedicine to the research in Germany," says Hans Schöler explaining the advantages of the new Max Planck Center. "We hope that the networking opportunities provided by the new Max Planck Center will enable us to carry out cutting-edge scientific research."

Max Planck Centers are a crucial extension of the Max Planck Society's international cooperation. The Max Planck Centers elevate the quality of scientific cooperation projects with first-class international partners in pioneering areas of research to a completely new level. They create platforms for the pooling of the knowledge, experience and expertise of the participating Max Planck Institutes and their international partners and combine complementary methods and skills to create added scientific value.

Ralf Jauch, deputy director of the Max Planck Center, appreciates that the Max Planck Center promotes the exchange of and training activities for junior scientists: "As a graduate of an International Max Planck Research School, I am particularly looking forward to an acceleration of the student exchange between our institutions."

Max Planck Centers also promote the exchange and further training of junior scientists. They also attract scientists from other disciplines as associated partners and encourage the shared use of research infrastructure and submission of joint applications for third-party funding. The Max Planck – GIBH Joint Center for Regenerative Biomedicine has been planned for an initial five-year period. There are now 15 Max Planck Centers operating worldwide.

The research focus of the new Max Planck Center

iPS technology is at the heart of the research carried out at the new Max Planck Center. A great deal of work has been done on induced pluripotent stem cells since 2012. The advantage of this technology is that it enables the patient's own cells to be reproduced on an almost infinite scale and transformed into all of the different types of cells in the body. As a cell model for diseases in the petri dish, iPS cells can provide insights into both the emergence of diseases and potential treatment mechanisms.

The researchers at the new Max Planck Center would like to study in detail how nerve, cardiac muscle and lung cells can be generated in the petri dish, as good differentiation protocols are essential for iPS-based disease research and the associated potential drug development. Another objective is to transfer the findings of the iPS research to regenerative medicine. This involves completing the leap from the petri dish to the damaged tissue, studying mechanisms in the tissue that can stimulate cells to regenerate, and examining how iPS cells can be used for transplants. The scientists also aim to identify regulatory molecules that could offer therapeutic benefits for different cardiac and lung diseases.

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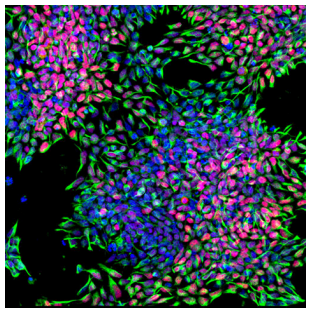
Opening of the new Max Planck Center

Professor Duanqing Pei (Guangzhou Institutes of Biomedicine and Health (GIBH) of the Chinese Academy of Sciences) and Professor Hans Schöler (Max Planck Institute for Molecular Biomedicine) unveal the plate of the Max Planck – GIBH Joint Center for Regenerative Biomedicine.

Credit: Max Planck – GIBH Joint Center for Regenerative Biomedicine



Neural stem cells from iPS cells

Fluorescence microscopic image of human neural stem cells derived from iPS cells.

Credit: MPI Münster