New Max Planck Center with South Korea deepens biomedical research

Scientists at the Max Planck Institutes for Medical Research in Heidelberg with its new departments based in Heilbronn, and for Neurobiology of Behavior – caesar in Bonn, and at the Institute for Basic Science at Yonsei University in Seoul will pool their expertise in future. The aim of the new Max Planck Center is to visualize cellular processes deep within human tissue and influence them in a targeted manner — without damaging the tissue.

- The new 'Max Planck – Yonsei IBS Center for Deep Tissue Nanoscale Control' will begin operations on August 1, 2025.
- The aim of the partnership is to develop new technologies at the interface of nanoscience, synthetic cell biology, and neuroscience. These are intended for use in areas such as immunotherapy. The research program is interdisciplinary and focused on long-term exchange.
- It is the second Max Planck Center with a partner in South Korea and one of four currently with Asian participation.

"This collaboration offers us the opportunity to solve a very challenging scientific problem that is of great importance in the field of medical research and its potential applications: the non-destructive investigation and manipulation of cellular processes deep within tissue from the outside," says Joachim Spatz, Managing Director at the Max Planck Institute for Medical Research. "The expertise of the Institute for Basic Science at Yonsei University is crucial in this regard. Our two new departments on the 'Bildungscampus' in Heilbronn will advance the center's research projects with visiting scientists from South Korea at our new location and then further develop them for potential medical applications as part of our 'First in Translation' concept."

"Gaining understanding of how the brain controls behavior requires tools that work deep in in the brain, without disrupting natural function, while the animal is free to behave. This collaboration makes that vision scientifically exciting," says Jason Kerr, Director at the Max Planck Institute for Neurobiology of Behavior – caesar in Bonn.

Focus on future topics in biomedicine

In establishing the center, the three partner institutions are opening up a forward-looking field of basic biomedical research. Their common goal is to develop technologies that will enable them to observe and manipulate cells and cellular processes beneath thick layers of tissue and in complex environments from outside the body. Traditional methods — such as those using light — reach their physical limits here, as light only penetrates a few millimeters into tissue. The new center therefore aims to use alternative approaches such as magnetic fields or ultrasound. At the same time, it seeks to prove that immune and nervous systems can be controlled from outside the body in order to open up new therapeutic possibilities.

Promoting young talent and exchange

The Center's structure also includes a structured program for reciprocal research visits to the participating locations. The aim is to create an interdisciplinary, international research environment in which young scientists are also specifically promoted.

About Max Planck Centers

Max Planck Centers are a central element of the Max Planck Society's internationalization strategy. Their scientists cooperate with first-class international partners in order to gain knowledge in pioneering research areas. As different as their research interests may be, all Max Planck Centers share a common goal: the centers of excellence flexibly combine knowledge and methods to create scientific added value. Max Planck Centers are always established for a period of five years, with an option to extend. There are currently 18 Max Planck Centers with partners in ten different countries.

About the Institute for Basic Science (IBS)

Founded in 2011 by the government of the Republic of Korea, the Institute for Basic Science (IBS) aims to advance the frontiers of basic science nationwide. As of July 2025, IBS comprises 8 research institutes and 33 research centers - spanning nine in physics, three in mathematics, five in chemistry, seven in life sciences, two in earth sciences, and seven interdisciplinary centers. IBS Research Centers are hosted by leading research-oriented universities across the country, while the IBS Headquarters in Daejeon houses 12 centers as well as administrative offices and core research facilities.

The Center for Nanomedicine is one of the Institute for Basic Science (IBS) research centers, established in 2015 and located at Yonsei University in Seoul under the leadership of Prof. Jinwoo Cheon. Pursuing the "Revolution of Future Medicine through Nanoscience," the center operates under the slogan "Center Without Barriers," focusing on fostering next-generation scientists and enhancing national competitiveness.

Press release

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Further information

- Max Planck Institute for Medical Research