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Joint Press Release of the Dietmar Hopp Foundation and the German Cancer Research Center

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Five years of successful stem cell research at HI-STEM

The Heidelberg Institute for Stem Cell Technology and Experimental Medicine (HI-STEM) at the German Cancer Research Center (DKFZ) is celebrating its fifth anniversary and looking back on five successful years. HI-STEM, a nonprofit institute, was founded in 2008 as a public-private partnership between the DKFZ and the Dietmar Hopp Foundation. Its aim is to conduct innovative basic research on stem cells as a basis for the development of new therapies and diagnostic methods for cancer patients.

In October 2008, the German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ) and the Dietmar Hopp Foundation teamed up to found the Heidelberg Institute for Stem Cell Technology and Experimental Medicine (HI-STEM). The aim of this public-private partnership is to promote the use of results obtained in stem cell research for cancer medicine. The Dietmar Hopp Foundation, as a shareholder, initially contributed €7.5 million for a five-year period to the nonprofit HI-STEM institute. Another €5 million was contributed by the Federal Ministry of Education and Research (BMBF) when the Rhine-Neckar Metropolitan Region cluster “Cell-based and Molecular Medicine” won top regional ranking in the “Leading-Edge Cluster Competition” launched by the German government. In October 2012 Dietmar Hopp visited the DKFZ to gain an impression of the institute’s successful work and subsequently prolonged his support by another five years. As a result, the total sum invested by the Dietmar Hopp Foundation into HI-STEM will amount to €15 million for the years 2009-2018. The German Cancer Research Center (DKFZ), as the second shareholder, is contributing an equal amount and providing state-of-the-art laboratory rooms as well as an internationally competitive infrastructure for the innovative institute.

The mission of HI-STEM is to investigate cancer stem cells in detail, to develop innovative approaches for cancer diagnosis and treatment, and thus to increase the chances of survival for cancer patients. A special focus is placed on patients whose disease is in an advanced stage. “Our common goal is to offer effective therapies for people who are in a hopeless situation,” says Hopp. “As a founder, I am very pleased with HI-STEM’s achievements so far. This led to our decision in 2012 to extend the collaboration to 10 years.”

Professor Otmar D. Wiestler, Chairman of the Management Board and Scientific Director of DKFZ, actively brought stem cell research to the DKFZ. “Cancer cells and stem cells have amazing things in common. An important aim was therefore to recruit an internationally renowned stem cell researcher to the DKFZ. The success of HI-STEM impressively demonstrates that we made the right choice with the recruitment of Andreas Trumpp, who was working in Lausanne at the time.”

Trumpp has led HI-STEM as Managing Director since its establishment, while also heading the Division of Stem Cells and Cancer at DKFZ. Yet another of Trumpp’s functions is to coordinate the program “Stem Cells in Oncology” in the German Consortium for Translational Cancer Research (DKTK). Since November 2013, he has additionally served as Acting President of the newly founded German Stem Cell Network (GSCN). “HI-STEM has developed in an excellent way over the past five years,” says Trumpp. “In March 2009 we

started out with only six scientists in an empty lab; since then we have grown continuously to achieve our present size of over 50 employees. We were able to recruit five highly talented young research group leaders from top international research institutes for HI-STEM, and have obtained important results that we have published in leading international journals. HI-STEM has already secured its first patent in stem cell technology; three more have been filed and are currently being reviewed.”

The researchers of HI-STEM are focusing on so-called tumor stem cells, which are believed to be the origin of most tumors. Unlike the majority of tumor cells, tumor stem cells reside in protected niches and only rarely divide. Therefore, they are less sensitive to conventional cancer treatments and are often responsible for cancer recurrence and metastasis in the wake of treatments that initially appear successful. Trumpp and his co-workers discovered that they could activate dormant stem cells using various chemical messengers, making them susceptible to subsequent chemotherapy.

In addition, the HI-STEM team discovered metastasis-inducing stem cells in the blood of breast cancer patients. Since the number of such cells correlates with a patient's chance of survival, the ability to detect them may enhance diagnostic methods. The scientists are now trying to inhibit the cells' activity using new substances. In first talks, representatives of the pharmaceutical industry have shown strong interest in the approach.

Another of the scientists' accomplishments has been the development of new biomarkers that can be used to classify patients with pancreatic cancer into several groups. This characterization is based on the fact that the tumors originate from different types of tumor stem cells and thus differ considerably in terms of their prognosis and response to therapy.

Finally, the scientists discovered how healthy blood stem cells undergo a transformation that turns them into leukemia-inducing tumor stem cells: The loss of a specific tumor suppressor gene in blood stem cells causes them to leave the bone marrow and migrate into the spleen, where they augment the production of leukemia cells.

Further research projects are addressing tumor stem cells from tumors of the kidney, ovaries, and lungs. The HI-STEM researchers are now collaborating with partners from Heidelberg University Hospital, the National Center for Tumor Diseases (NCT) Heidelberg and industry to investigate how this body of knowledge can be used to enhance methods of diagnosis and therapy.

The Dietmar Hopp Foundation was founded in 1995 in order to support and sponsor the implementation of ambitious, not-for-profit projects. The majority of the foundation's assets consists of SAP shares contributed by Dietmar Hopp from his private property. Up until today, the Dietmar Hopp Foundation, as one of the largest foundations in Europe, has distributed some € 375 million. The main activities focus on the Rhine Neckar Metropolitan Region, to which Dietmar Hopp feels very connected and grateful: „Here is where I was born and where I found the key to my success. And I consider it a pleasant duty to show my gratitude and give some of this back to my home region”. The foundation's aim is to support and sponsor projects in the four areas of Sport, Medicine, Education and Social Affairs, whereby the focus is on youth sport sponsoring. The background for this orientation is Dietmar Hopp's personal experience concerning the positive effect of sport on his development as a youngster. The second focus is on sponsoring medical research projects at top level, e.g. in the areas of cancer research and paediatrics. While Social Affairs concentrates on the needs of the older generation, the Education segment supports and sponsors institutions for young people – from kindergartens to universities. Corresponding applications can be submitted to the foundation's office in St. Leon-Rot. The sponsoring criteria are available for download on the website of the Dietmar Hopp Foundation. The Dietmar Hopp Stiftung is member of the Bundesverband Deutscher Stiftungen, the Verein Zukunft Metropolregion Rhein-Neckar as well as the Sportregion Rhein-Neckar e.V.

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The German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ) with its more than 2,500 employees is the largest biomedical research institute in Germany. At DKFZ, more than 1,000 scientists investigate how cancer develops, identify cancer risk factors and endeavor to find new strategies to prevent people from getting cancer. They develop novel approaches to make tumor diagnosis more precise and treatment of cancer patients more successful. The staff of the Cancer Information Service (KID) offers information about the widespread disease of cancer for patients, their families, and the general public. Jointly with Heidelberg University Hospital, DKFZ has established the National Center for Tumor Diseases (NCT) Heidelberg, where promising approaches from cancer research are translated into the clinic. In the German Consortium for Translational Cancer Research (DKTK), one of six German Centers for Health Research, DKFZ maintains translational centers at seven university partnering sites. Combining excellent university hospitals with high-profile research at a Helmholtz Center is an important contribution to improving the chances of cancer patients. DKFZ is a member of the Helmholtz Association of National Research Centers, with ninety percent of its funding coming from the German Federal Ministry of Education and Research and the remaining ten percent from the State of Baden-Württemberg.

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