

Healthcare industry BW

Protecting the liver from oxygen stress

The Emmy Noether junior research group in the Department of Surgery at the University Hospital of Heidelberg is to be funded with €1.2 million over the next five years. The group will focus on how liver damage can be prevented.

Oxygen deprivation can lead to catastrophic consequences: If a donor liver is not supplied with sufficient blood during transport or transplantation, this can lead to serious tissue damage and the organ will then fail in the new body. How can such damage be prevented? What are the molecular basics behind it? A newly-established junior researcher group in the Department of Surgery at the University Hospital of Heidelberg, headed by Dr. Martin Schneider, will look at these questions. The group will be funded through the Emmy Noether Programme of the German Research Foundation (DFG) with a total of €1.2 million over the next five years. The programme is named after the outstanding German mathematician of the 20th century, Emmy Amalie Noether.



Dr. Martin Schneider, Dept. of Surgery, University Hospital Heidelberg. Photo: private

It is the objective of the funding programme to bring back outstanding junior researchers to Germany by supporting them in achieving independence at an early stage in their scientific career and give them the possibility of quickly gaining the qualifications for a university teaching career.

Dr. Martin Schneider spent the last three years in Belgium doing excellent research and is returning to Heidelberg where he also did his resident training. Schneider finds that Heidelberg provides him with optimal conditions for combining research with the training to become surgeon. The 31-year-old also fulfils the further prerequisites of an Emmy Noether scholarship – a fast-track university career, an excellent doctorate and several publications in renowned scientific journals.

Ideal infrastructure in Heidelberg

“The infrastructure in Heidelberg is ideal for making the findings gained in biomedical research directly available for surgical application,” said Dr. Schneider explaining that this gives him the right conditions to be able to combine clinical activities with laboratory work, to work in cooperation with research groups of the Transplant Centre, other departments of the University Hospital and the German Cancer Research Centre as well as to plan clinical trials within the framework of the Heidelberg-based study centre of the German Society of Surgery.

“So far there are only a few future surgeons who have succeeded in receiving support through the Emmy Noether Programme,” said Professor Dr. Markus Bühler, executive director of the Department of Surgery. “We will support Dr. Schneider as much as we can and give him the time and scope he needs to successfully supervise his group of researchers.”

Oxygen sensors control the adaptation of cells to the oxygen supply

The junior researcher group is focusing primarily on liver damages caused by the defective oxygen supply of cells and tissues. “This damage may occur, for example, after transplantation, but also after other types of liver surgery, as the result of blood poisoning or alcoholic fatty liver,” explains Dr. Martin Schneider.

Cells possess oxygen sensors with which they adapt their metabolism to fluctuations in the oxygen supply. During his time at the Flanders Interuniversity Institute for Biotechnology in Belgium, Dr. Schneider was able to show that “in knock-out mice that are unable to produce the oxygen sensor PHD1, muscles with decreased perfusion are not affected in the same way. The metabolism of these mice adapts to the lack of oxygen. In Heidelberg, Schneider will now examine whether the inhibition of PHD1 prevents organs from being damaged through restriction in the oxygen supply. PHD1 would then potentially be a suitable target for the development of new drugs.

Emmy Noether: outstanding mathematician of the 20th century

Emmy Amalie Noether, born on 23rd March 1882, is regarded as the best mathematician of the 20th century. She developed the Noether theorems that describe the law of conservation of energy, momentum and angular momentum. These theorems are the basis of mathematical physics. In addition, Emmy Noether was one of the first German scientists to habilitate (1919 in Göttingen). In 1930, Emmy Noether went to the USA where she taught at the Women’s College Bryn Mawr and in Princeton. She died in 1935 during an operation.

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