

## Press Release

1321

10 June 2013

### PLASMA FLASH INSIDE PLASTIC BAG

#### FRAUNHOFER AWARD CEREMONY: MINISTER WANKA HONOURS BRAUNSCHWEIG RESEARCHERS

**High honours for Braunschweig research team: A group of scientists that includes researchers at the Helmholtz Center for Infection Research (HZI) is this year's recipient of the Fraunhofer Society's highly renowned Award for Human-Centered Technology.**



© Fraunhofer / Dirk Mahler

From left to right.: Dr. Henk Garritsen, Dr. Werner Lindenmaier (HZI), Dr. Michael Thomas (IST), Dr. Kristina Lachmann (IST) und Dr. Kurt Dittmar (HZI).

Federal Minister for Education and Research Johanna Wanka was present for the award ceremony which took place on the occasion of the Fraunhofer Society's Annual Conference in Hannover. Recipients of the award endowed with 50,000 Euros are HZI scientists Kurt Dittmar and Werner Lindenmaier together with their colleagues Michael Thomas and Kristina Lachmann of the Fraunhofer Institute for Surface Engineering and Thin Films (IST) and Henk Garritsen of the Städtisches Klinikum Braunschweig. This interdisciplinary team has developed a method using plasma flashes to treat plastic bags so that human cells that are contained within them can be cultured under sterile conditions.

The body's own cells can be used to fight a number of rather serious diseases. For instance, physicians are using stem cells obtained from the patients' or a healthy donor's blood to treat leukemia. Culturing these cells is a highly involved process as they have to be cultured in the same way that drugs are produced: Under GMP (short for "Good Manufacturing Practice") conditions. Typically, this does require using specialized lab equipment. Contaminations that might happen during "feeding" of the cells represent a constant threat in cell cultures: They can be a serious potential threat to the patient as well as render these very precious cells useless.

The hope is that the Braunschweig invention will streamline the process for culturing sensitive cells: The scientists who were working on this project have come up with a method for using bags like the ones commonly used in blood transfusions and IVs. At the IST, plasma flashes were used to modify the inner surfaces of the plastic bag in such a way that human cells are able to grow adherently inside the bags. The cells that were obtained from healthy subjects were made available by the Städtisches Klinikum; Dittmar and Lindenmaier at the HZI examined the actual stem cell cultures.

“In contrast to traditional cell culture containers, we don’t even have to open the bag in order to supply the cells with nutrients,” Werner Lindenmaier explains. “Instead, cells and the nutrient medium can be introduced into the bag using a special protocol called ‘sterile docking.’ This way, bacterial contamination essentially becomes a non-issue. The researchers are using the bags primarily for purposes of culturing certain types of blood cells, although the system has proved rather versatile: “Through slight modifications during the process of production we were able to adapt the bag system to other types of cells,” Kurt Dittmar says. “We already succeeded at culturing bone, cartilage, and even neural tissue stem cells inside the bag.”

#### **The Helmholtz Centre for Infection Research (HZI)**

Scientists at the Helmholtz Centre for Infection Research in Braunschweig, Germany, are engaged in the study of different mechanisms of infection and of the body’s response to infection. Helping to improve the scientific community’s understanding of a given bacterium’s or virus’ pathogenicity is key to developing effective new treatments and vaccines.

<http://www.helmholtz-hzi.de>