GERMAN CANCER RESEARCH CENTER
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“Searching for a Needle in a Needle Stack”
Hector Stiftung funds ultrasensitive mass spectrometer at DKFZ

Which structures of cancer-causing human papillomaviruses (HPV) are promising targets for developing a therapeutic vaccine? Which markers can be found in the blood of pancreatic cancer patients? Associate Professor (PD) Dr. Dr. Angelika Riemer and Dr. Christoph Rösli, junior research group leaders at the German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ), are studying these questions. The Hector Foundation II has now made a generous donation to fund a special instrument for such studies, an ultrasensitive mass spectrometer. Founder Dr. h.c. Hans-Werner Hector himself visited DKFZ to take a look at the € 500,000 instrument.

“As a junior scientist, it is not easy to finance an instrument for half a million euros through the usual external funding sources such as the German Research Foundation or the Federal Research Ministry,” says Christoph Rösli summing up the starting situation for him and his colleague, Angelika Riemer. For their research, they both need a mass spectrometer for detecting the smallest amounts of tiny protein molecules in a highly complex mixture – a needle in a needle stack. BioRN Cluster Management, an intermediary between various partners related to life sciences in the Rhine-Neckar region, opened the right door for them. “They made contact with the Hector Stiftung,” said Riemer. A telephone conversation with Hans-Werner Hector eventually brought the desired result.

Angelika Riemer develops a therapeutic HPV vaccine, which shall also help patients with an existing HPV infection. Currently available HPV vaccines are preventive, i.e. they protect against infection with the virus. However, they are ineffective once the virus has infected cells of the cervix, the anal area or the oral cavity. “We are looking for targets,” Riemer explains. “Infected cells present fragments of the virus they carry inside on their surface. The new mass spectrometer will enable us to identify those fragments.” Riemer plans to use these protein fragments for immunizing infected people, so their immune systems can recognize and eliminate virus-infected cells. Austrian-born Riemer, aged 36, already worked on therapeutic vaccines at Harvard Medical School in Boston, U.S.A.

Christoph Rösli, who heads a research group at the stem cell institute HI-STEM at DKFZ, focuses on pancreatic cancer. “Most recent findings indicate that there are at least three distinct patient groups which differ in the way they respond to therapy. Up to now, all patients have been given roughly the same treatment. If we knew which drugs work best for each group, we could make treatment a lot more effective,” he describes his research approach. Rösli and his team are studying malignant stem cells which they have isolated from pancreatic tumors and subsequently grown in cell culture. The scientists found the tumor stem cells from the different patient groups releasing different protein molecules to their environment to promote their own blood supply and tumor growth. Using the new mass spectrometer, Rösli aims to find out whether this also holds true for the situation in patients and whether these proteins are also released into the bloodstream. “We want to determine from a blood sampleprior to treatment who will benefit most from which drugs,” says 33-year-old Rösli, who is from Switzerland and previously worked at ETH Zurich.

“We owe a big thank to Hans-Werner Hector and his foundation,” said Prof. Dr. Dr. h.c. Otmar Wiestler, Chairman of the Management Board and Scientific Director of DKFZ, on the occasion of Hector’s visit. “If we want to compete for the world’s best scientists from the internationally most renowned research institutes, we have to offer top working conditions.

This includes providing the most advanced high-tech instruments." Hans-Werner Hector said: "Germany has no natural resources, our assets are smart brains. And we enjoy supporting them!"

Pictures for download are available at:

www.dkfz.de/de/presse/pressemitteilungen/2013/images/hector_01.jpg
Caption: Dr. h.c. Hans-Werner Hector, honorary senator and chairman of the board of the Hector Foundation II, PD Dr. Dr. Angelika Riemer, Dr. Christoph Rösli

www.dkfz.de/de/presse/pressemitteilungen/2013/images/hector_02.jpg
Caption: Uwe Bleich, member of the board of the Hector Foundation II, Prof. Dr. Peter Krammer, Dr. h.c. Hans-Werner Hector, honorary senator and chairman of the board of the Hector Foundation II, PD Dr. Dr. Angelika Riemer, Dr. Christoph Rösli, Prof. Dr. Dr. h.c. Otmar D. Wiestler, Horst-Bodo Schauer, member of the board of the Hector Foundation II

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