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New procedure revolutionizes early detection of breast cancer

PARK INNOVAARE, Villigen (CH): GratXray is developing a new imaging method for breast imaging, aiming to create the new gold standard in mammography.

PARK INNOVAARE – Swiss start-up company GratXray is developing a new imaging method for detecting breast cancer. The method makes it possible to depict the breast in its natural state and provides precise 3D images with unprecedented contrasts. Developed by Professor Dr. Marco Stampanoni and his team at the Paul Scherrer Institute (PSI) and ETH Zürich (ETHZ), the procedure will improve breast imaging and is expected to become the new gold standard. GratXray is confident that, with the support of PARK INNOVAARE, it will be able to make the procedure ready for the market in the next three and a half years.

Breast cancer is the most common form of cancer in women worldwide and the second most common form of cancer altogether. The World Health Organization (WHO) reported approximately 1.67 million new cases in 2012. In Switzerland more than 5900 women are diagnosed with breast cancer every year; 1400 of them lose the fight against it. This makes breast cancer the most common cause of cancer-related death in Switzerland. To improve the prognosis and the chances of healing, early detection is essential. Since today's mammography methods are often painful and the merely two-dimensional images also often result in indecisive diagnoses, radiological research has a great need for improved methods of diagnostic breast imaging.

Precise diagnosis with more comfortable, pain-free method

With current mammography methods, the patient's breast is subjected to strong compression to achieve a sufficient level of tissue image quality. This is often painful for the patients. "Our procedure will give all women access to pain-free, efficient, precise breast imaging. We intend for this system to overcome many limitations of the current imaging systems. We are convinced this will allow us to set a new gold standard in the early detection of breast cancer in a few years," explains Dr. Martin Stauber, CEO of GratXray.

Sensitive imaging thanks to a new CT system

Behind the technology of GratXray AG is a novel "grating interferometry-based phase-contrast computer tomography system" (GIBCT). In contrast to conventional X-rays, where only the absorption of the radiation can be measured, GI-based breast imaging also captures the



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refraction and scattering of the X-rays. These images provide complementary information and unprecedented contrasts in three-dimensional image quality. The technology is particularly well suited for soft tissue, but also works with breast implants or after reconstructive surgery. Compared to today's mammography methods, which can be problematic in the case of implants, this new technology is completely safe.

Spin-off established at PARK INNOVAARE

"The team wanted to put the technology in a clinical device. In light of the tremendous medical added value and the fact that the market is perfectly ready to roll, we were ultimately convinced we could build a successful start-up. PARK INNOVAARE is providing us with great support in business-relevant areas and helping us establish valuable contact with potential investors and business partners," Dr. Stauber says about founding the spin-off last July.

Great interest worldwide

The interest in this method shown by breast radiologists worldwide has been huge: none of the breast screening methods currently in use is truly satisfactory. "We are already in very close contact with individual radiology centers to ensure that our development corresponds to clinical needs and routines," Dr. Stauber explains. The technology has been tested and verified in the laboratory so far. In the next two years, GratXray AG will be developing the first prototype at the Paul Scherrer Institute in cooperation with leading engineering companies. After that, the device will be ready for certification and the market.

With GI-based breast imaging, patients are scanned while lying face down on an examination table. Underneath the table is the computed tomography system, which makes an image of the breast. With the new method, the level of radiation exposure is the same as with conventional mammography, but the image provides significantly more information for the diagnosis.

You can find further Information on GratXray [here](#) and on the team [here](#).

Detailed technical description of the GIBCT system is available [here](#).

Download photos of GratXray [here](#) (password: gratxray2017).

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PARK INNOVAARE is the innovation site at the Paul Scherrer Institute PSI. Here, innovations in the fields of Accelerator Technology, Advanced Materials & Processes, Human Health and Energy are the focus of attention. Centered on providing the best services for industrial research groups and spin-offs at our location, we bring together innovators with a creative drive from large corporations, SMEs and research institutions from Switzerland and abroad. Our objective is to connect the right people with each other and thus quickly turn innovations into marketable products and solutions.

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