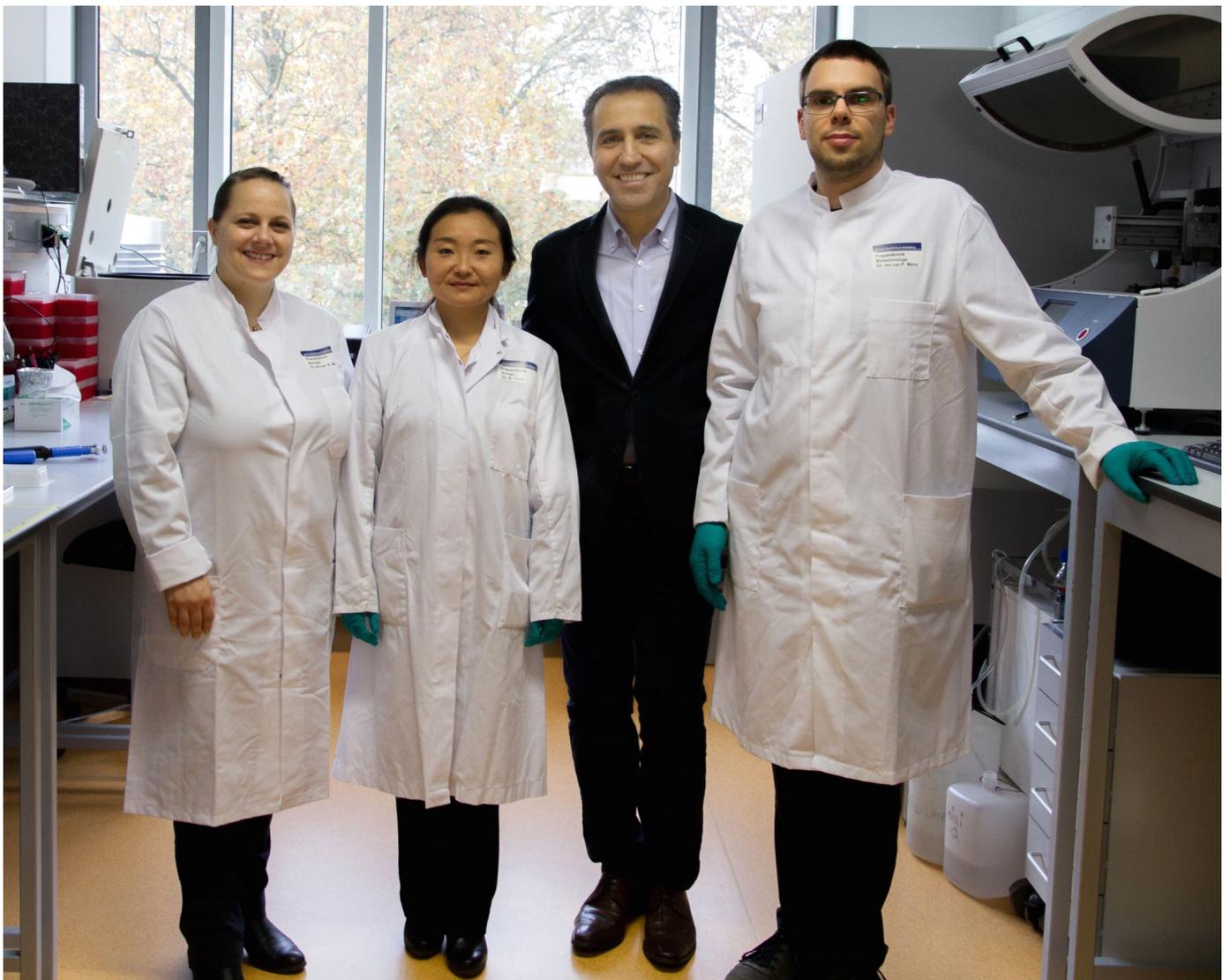


## Healthcare industry BW

# MammaScreen – blood test for early detection of breast cancer

**The MammaScreen team from the University of Heidelberg Women's Hospital has developed a blood test for diagnosing breast cancer. This new test can detect breast cancer at a very early stage. It works on women of all ages with tumours of any type and size.**



The MammaScreen team: Dr. Ruth Merkle, Dr. Rongxi Yang, Dr. Hamid Emminger und Dr. Patrick R. Merz (from left to right)

© entermedia.de

Dr. Rongxi Yang has been carrying out research at the University of Heidelberg Women's Hospital for around ten years. The molecular biologist is also head of a team of researchers working together on the MammaScreen project. The project has led to the development of a blood test for the accurate and early detection of breast cancer. Breast cancer continues to be the most common cancer in women. 12% of all women are affected some time during their lives. 95% of patients survive when it is detected at an early stage. It is therefore of prime importance to be able to diagnose the disease early and quickly.

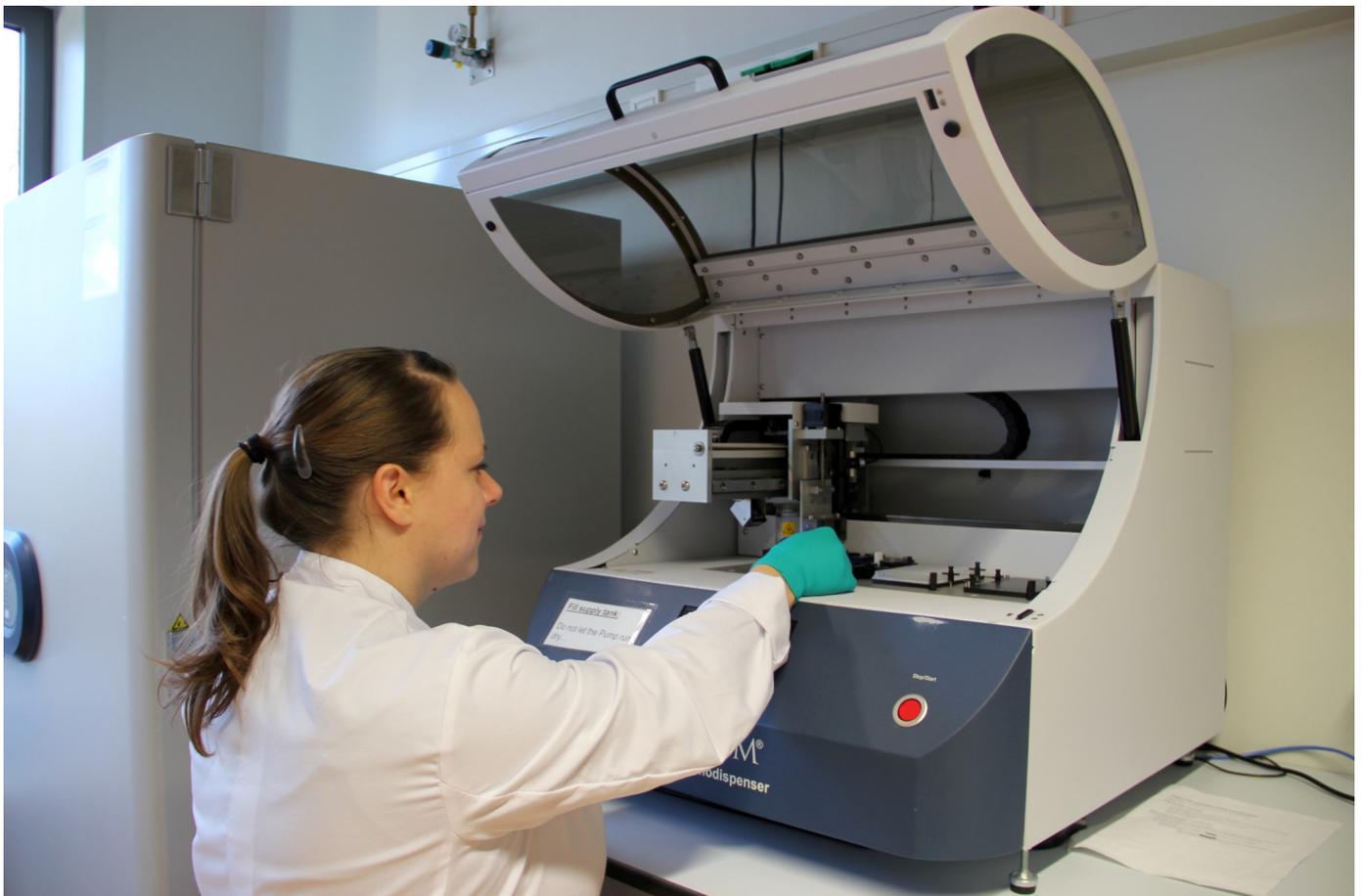
Mammography is regarded as the "gold standard" for the detection of breast cancer. The accuracy of mammography is nevertheless limited. According to data collected by the Breast Cancer Surveillance Consortium (BCSC) between 2004 and 2008, mammography fails to detect 16% of all breast cancers.<sup>1</sup> "The method is not recommended for young women because of the high density of their breast tissue. In addition, some women will not undergo mammography for cultural reasons," explains Dr. Ruth Merkle, who is in charge of the project's R&D activities. The new laboratory test might therefore greatly improve the situation for these women.

Rongxi Yang worked on breast cancer during her post-doctoral studies. When her mother was diagnosed with breast cancer several years ago, she was determined to become involved in the fight against this life-threatening disease. She identified biomarkers in the blood of patients that could be used to detect breast cancer at a very early stage, potentially even before it can be localised in the tissue. Since then, she has been specifically focused on the further development of the test method.

## MammaScreen blood test detects breast cancer-specific biomarkers

On the one hand, the blood test identifies breast cancer-induced DNA methylation in immune cells. Methylation is a process by which methyl groups are added to nucleotides, which are the building blocks of nucleic acids. On the other hand, the test also captures the deregulation of microRNA (miRNA) expression in the blood. miRNA molecules are just 21 to 23 nucleotides long and do not encode proteins. However, they play a role in gene regulation. "miRNAs and methylations are always present, including in healthy bodies. But there are certain patterns that only occur in cancer patients," says Merkle. The researchers compared the blood of women who had been diagnosed with breast cancer with that of healthy women in order to identify breast cancer biomarkers. The blood samples came from the University of Heidelberg Women's Hospital, which is actively supporting the project. The team was able to identify 15 different biomarkers that can be used to detect even the smallest tumours in patients' blood.

The particular advantage of this method is that the test produces results within a very short time. According to Merkle, the uncertainty while patients wait for biopsy results can be very stressful. "With the new biomarker test, results will be available the next day," Merkle points out. The method is also much less unpleasant for patients in terms of application. "Only a few millilitres of blood are needed for diagnosis," says Merkle. Patients therefore simply go to their doctors to have a blood sample taken. According to a study by MammaScreen, the test provides correct results in over 98 percent of all cases. This is far more precise than mammography, which only has around 75 percent accuracy.



Dr. Ruth Merkle examining the altered, breast cancer-related methylation pattern using a mass spectrometer.  
© BIOPRO

## Laboratory kit will be placed on the market within the next two years

In April 2016, the German Federal Ministry of Economics and Energy and the European Union (EXIST start-up grant) granted the researchers funding for the establishment of a start-up company. MammaScreen was also awarded the EIT Health Summit Prize in the BioTech category in Barcelona in November 2016. Yang's MammaScreen blood test also won the Claudia von Schilling Foundation's Breast Cancer Research Junior Award 2016 which came with a purse of 10,000 euros.

Over the next two years, the funds will be used to develop and certify a laboratory kit for use in blood laboratories. Merkle explains that laboratories will not need additional laboratory equipment. As the test does not require any highly specialised laboratory or personnel it will be inexpensive.

However, the researchers need to bring partners on board to be able to produce the laboratory kit commercially. The start-up project is therefore on the lookout for suitable cooperation partners or investors and would like to get in touch with interested parties.

### Further reading:

1 [http://www.bccs-research.org/statistics/performance/screening/2009/rate\\_age.html](http://www.bccs-research.org/statistics/performance/screening/2009/rate_age.html)

22-Feb-2017

Jasmin Dabrowski

© BIOPRO Baden-Württemberg GmbH

---

## Further information

Dr. Ruth Merkle

Phone: +49 (0)6221 56-38886

E-mail: ruth.merkle(at)med.uni-heidelberg.de

► [MammaScreen project](#)

---

## The article is part of the following dossiers



Cancer therapy and cancer diagnostics

diagnostics

cancer

breast  
cancer

blood

microRNA

in vitro test  
systems