Identifying potential microRNA biomarkers as predictors of recurrence in patients with triple negative breast cancer

MicroRNAs are small molecules that influence the activity of genes involved in cancer cell growth. The pattern of microRNAs in triple negative breast cancer may predict how the disease will progress and may be a potential target for new drugs.

The challenge

Triple negative breast cancer can be particularly aggressive and most commonly affects younger, pre-menopausal women. It is essential that we understand how and why this type of cancer forms, which will enable researchers to develop new ways to treat it. In order to do this, researchers need to identify biological characteristics, such as microRNAs, that are specific to triple negative breast cancer.

Aim:	To determine whether microRNAs can be used to predict prognosis and can act as a target for drugs in triple negative breast cancer.
Researcher:	Professor Hiltrud Brauch, Institute for Clinical Pharmacology (IKP) Stuttgart
Funding:	IKP Stuttgart
Tissue:	95 Triple Negative, post-menopausal, Paraffin-embedded breast cancer samples

The science behind the project

Dr Brauch will be investigating the role of microRNAs in triple negative breast cancer. MicroRNAs are small molecules that control which genes are switched on and off, a process which can influence the growth of cancer cells.

Research into ER-positive breast cancer has shown that increased levels of specific microRNAs can indicate a better response to treatment. Initial studies by Dr Brauch, using cancer cells grown in the lab, have suggested that triple negative breast cancer cells do not have the same sets of microRNAs as those that are ER-positive. Using triple negative tissue samples from the Breast Cancer Now Tissue Bank, Dr Brauch will analyse the levels of microRNAs from post-menopausal patients to determine whether there is a link between different sets of these molecules and how the cancer will progress. This will then be repeated using samples from pre-menopausal women.

What difference will this project make?

Finding a link between microRNAs and outcomes in triple negative breast cancer may lead to the development of a new test which would enable doctors to give a more accurate prediction of a patient's outlook and risk of relapse. It may also be possible to develop new, highly specific drugs which target the microRNAs, providing a desperately needed further treatment option alongside chemotherapy and radiotherapy.