



Help support research into developing a new model to study breast cancer and find new drug targets

Dr Giamas will develop a new model to study breast cancer cells that mimics the environment of the breast, and then use this model to identify new targets for drugs to treat the disease.

The challenge

Breast cancer cells do not grow in isolation but are surrounded by non-cancerous cells and tissues (referred to as the tumour's 'microenvironment'). To gain a better understanding of the mechanisms that enable breast cancer to progress and therefore identify new drug targets, we need to be able to study breast cancer cells in the context of their microenvironment.

Aim:	To develop a new cell model to study the tumour and its microenvironment in order to identify new drug targets.	A portrait of Dr Georgios Giamas, a man with short dark hair and a beard, wearing a blue plaid shirt, looking slightly to the right of the camera.
Researcher:	Dr Georgios Giamas, University of Sussex	
Funding:	Non-Breast Cancer Now funding (Action Against Cancer)	
Tissue:	20 aliquots of fibroblasts from tumour (all subtypes) 20 aliquots of fibroblasts from tumour surround (all subtypes) 20 tumour explants (all subtypes)	

The science behind the project

The non-cancerous cells and tissues that form the tumour's microenvironment have a key role in interacting with cancer cells and influencing their behaviour, such as the ability to spread to other sites in the body. Using samples from the Breast Cancer Now Tissue Bank, Dr Giamas's team will develop a new model to study breast cancer cells, which incorporates the microenvironment to closely replicate the conditions in which cancer develops within the breast. Cells from different breast cancer subtypes (triple negative, ER+/HER2+, ER-/HER2+, ER+/HER2-) will be grown alongside fibroblasts, a type of cell from the microenvironment, allowing the two cell types to interact.

Dr Giamas will then use this model to study the roles of two groups of proteins, kinases and phosphatases, which control many different cellular processes, including survival, growth, invasion and the formation of new blood vessels. Ultimately, this study aims to identify new proteins, involved in the progression of breast cancer, which can potentially be targeted by drugs alongside with already established treatments.

What difference will this project make?

Drugs that target kinases and phosphatases are known to benefit patients, however cancers often develop resistance to these drugs; identifying new drug targets may enable scientists to overcome these resistance mechanisms, leading to more effective treatments which give patients a better chance of overcoming the disease.