



## Help support cutting-edge research to understand the role of hormones in breast development

Dr Clarke will study healthy breast tissue from the Breast Cancer Now Tissue Bank to find out how hormones coordinate breast cell growth and whether the presence of 'high risk' genes has an impact on normal breast development.

### The challenge

It is well known that hormones, such as oestrogen and progesterone, are implicated in the formation of the most common type of breast cancer. However, less is known about how hormones interact with each other and with other signalling molecules within breast cells during normal development.

<b>Aim:</b>	To understand how hormones, genetics and signalling molecules within cells interact in breast development	A portrait of Dr Rob Clarke, a middle-aged man with short grey hair, wearing a white lab coat, smiling at the camera. He is standing in a laboratory setting with various pieces of equipment and bottles visible in the background.
<b>Researcher:</b>	Dr Rob Clarke, University of Manchester	
<b>Funding:</b>	Breast Cancer Now Grants: 2014MayCR003 and MANCHESTER-QR-2011-102	
<b>Tissue:</b>	Tissue: 4080 frozen & paraffin embedded samples from 200 healthy breast tissue donors Cells: 100 samples of healthy breast epithelial cells 100 samples of high risk breast epithelial cells	

### The science behind the project

Hormones bind to breast cells, which activates different molecules within the cell to send signals that stimulate cell growth. In order to fully understand the role of hormones in the development of breast cancer, it is important to study how they influence normal breast development.

Dr Clarke will find out how the different hormones involved in normal breast development, (oestrogen, progesterone and growth hormone/prolactin) interact with each other and with other signalling molecules within breast cells to coordinate growth. To do this, Dr Clarke will use normal breast tissue and cell samples from the Breast Cancer Now Tissue Bank, taken from healthy women during breast reduction surgery and from those classified as 'high risk' during breast cancer risk-reducing mastectomies.

The team will also investigate whether the presence of 'high-risk' mutations in genes, such as BRCA1/2, have an effect on how the breast cells respond to hormones and internal signals during normal breast development.

### What difference will this project make?

Increasing our understanding of the role of hormones, signalling molecules and genetics in normal breast development may lead to the identification of new biological processes that can be targeted with drugs to reduce the risk of breast cancer occurring.