



## Help fund cutting-edge research into how breast cancer cells become invasive

Dr Gilbert Fruhwirth will identify changes that occur in breast cancer cells when they lack oxygen, and how this makes them more invasive and more likely to spread throughout the body. This could eventually lead to new treatments to control breast cancer spread.

### The challenge

When breast cancer spreads to other parts of the body, it sadly becomes incurable. We need to understand what causes breast cancer cells to become invasive and spread throughout the body, and ultimately save lives.

<b>Aim:</b>	Understanding how breast cancer cells change in response to low oxygen	A black and white portrait of Dr Gilbert Fruhwirth, a man with curly hair and glasses, wearing a suit and tie.
<b>Researcher:</b>	Dr Gilbert Fruhwirth	
<b>Where:</b>	King's College London	
<b>Research Theme:</b>	Secondary breast cancer	
<b>Grant ref:</b>	2015NovSP658	
<b>Duration:</b>	12 months	

### The science behind the project

Breast cancer cells are sometimes exposed to a lack of oxygen, known as 'hypoxia', which makes cells more aggressive and invasive. Dr Gilbert Fruhwirth believes that hypoxia leads to permanent changes in breast cancer cells which makes them more likely to spread throughout the body. However, it is currently unclear exactly what these changes are, and how they allow breast cancer cells to migrate.

For this innovative project, Dr Fruhwirth has modified breast cancer cells in the lab so they label themselves when they are exposed to hypoxia – they literally change colour when looked at under a special microscope. By implanting these cells into mice, he will be able to study whether hypoxia makes them more likely to spread throughout the body.

Because the cells that have been exposed to hypoxia are now labelled, Dr Fruhwirth will be able to separate them from other cells, and investigate in detail what changes have occurred in them.

### What difference will this project make?

Dr Fruhwirth will identify changes that occur in breast cancer cells when they are exposed to hypoxia that might make them more likely to migrate throughout the body. Ultimately his research could help find ways to prevent and control the spread of breast cancer and so improve the chances of survival for patients.