**PhD student discovers breast cancer’s ‘Achilles heel’**

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Cardiff University PhD student Luke Piggott has identified a weakness in breast cancer cells which could help prevent the disease from spreading.  
  
Luke and colleagues at the University’s School of Biosciences have discovered a laboratory method to block breast cancer cells from seeding new tumours.

The Cardiff team’s long-term goal is now to trial the method on breast cancer in the body.  
  
Only a small proportion of the cells in a tumour are responsible for spreading cancer around the body and for disease relapse.

These cells, known as cancer stem cells, are highly drug-resistant.

However, the Cardiff team has managed to switch off breast cancer stem cells’ resistance to the anti-cancer agent TRAIL.

TRAIL had not previously been seen as a breast cancer treatment, as it is blocked by a protein in the cells called c-FLIP.

The Cardiff team has suppressed the effect of c-FLIP, making the cancer stem cells sensitive to TRAIL.

With this method, the scientists achieved a 98 per cent reduction in secondary tumours.

Importantly, they also showed that repeat treatment is equally effective in eliminating cancer stem cells if they re-appear.  
  
Luke’s paper on the findings has just been published in the journal Breast Cancer Research.

His supervisor, Dr Richard Clarkson, said: "We believe we have found a crucial ‘Achilles heel’ in breast cancer stem cells.

We can almost completely shut down their ability to spread the disease through the body through secondary tumours.

Our success with repeat treatments is also important, offering hope that we can reduce relapse rates of the disease.   
  
"These are very promising results but so far we have only seen this method work on cells in the laboratory.

We need a lot more work to establish how best to suppress C-FLIP in patients and whether this can eliminate cancer stem cells in tumours in the breast."  
  
Luke’s PhD studentship is funded by the cancer charity Tenovus through a support programme for early career cancer researchers.

Research Grants Officer, Dr Anita Howman said: "Tenovus funded research is continuing to further our knowledge of how cancers form and create new drugs for some of the hardest to treat cancers.

We are delighted to support Luke’s PhD studentship which has made an innovative discovery that will potentially benefit many people affected by breast cancer.  
  
"One of Tenovus' proudest achievements is the early career research scientists we have helped to support and train through our PhD studentship funding programme which have benefitted close to 200 students.

We now have nine active PhD studentships throughout Wales, with a further ten due to start in September.

These projects not only aim to find new ways to detect and treat cancer, they also help to nurture the next generation of world class cancer researchers. "  
  
The research was also funded by Breast Cancer Campaign. Dr Lisa Wilde, Director of Research at the charity said: "Over 12,000 people still die each year from breast cancer in the UK, mainly as a result of the disease spreading to other parts of the body.

This research is an important early step in understanding the role cancer stem cells play in this process and could help us develop desperately needed new treatments to halt breast cancer spread in its tracks."   
  
Cardiff University has established the European Cancer Stem Cell Research Institute to investigate the potential of treatments targeting cancer stem cells.

The Director, Professor Alan Clarke, said: "Luke’s results highlight the key role played by cancer stem cells in the spread and relapse of breast cancer.

His study is further evidence for the Institute’s belief that it is vital to eliminate cancer stem cells if we are to be completely successful in treating all types of cancer."  
  
**ENDS**  
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