

Scientists discover how body fights to control spread of cancer

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Scientists at the University of Liverpool have found how two molecules fight in the blood to control the spread of cancer cells.

Researchers discovered that a large protein, which forms a protective shield around cancer cells and prevents them from causing secondary tumours, is attacked by a small protein that exists in the blood.

In diseases such as breast, lung and colorectal cancer, infected cells lose growth control and eventually form tumours at these sites. If caught early these tumours can be effectively removed surgically. However, when the cancer cells have invaded the blood, the effectiveness of surgery is reduced.

Cancerous cells that have entered the blood, however, are still prevented from causing further disease by the protective shield of a protein called MUC1 in which the cancerous cells are eventually destroyed by our immune system. Scientists have now discovered how this protective shield is broken down, allowing cancer to spread throughout the body.

Dr Lu-Gang Yu, from the University's School of Clinical Sciences, explains: "MUC1 on the cell surface prevents the cancer cells from attaching to the blood vessel wall which causes secondary tumours. We have discovered that a small protein called galectin-3, attacks MUC1 and breaks up its protective shield, forcing large areas of the cancer cell to become exposed. The exposed areas of the cell allow the cancer to attach to the blood vessel wall. The cancer cells then eventually penetrate the

blood wall to form tumours at secondary sites.

"The attachment of cancer cells to the blood vessel wall is one of the key steps in the spread of cancer. It has been known for a few years that galectin-3 concentration is significantly higher in the blood of cancer patients than in healthy people but until now scientists did not know whether this increase played any role in the spread of cancer. Our study indicates that galectin-3 may play a critical role and may have significant implications for future developments of drugs for the treatment of the disease."

Dr Yu's work is published in the *Journal of Biological Chemistry*.

Source: University of Liverpool

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