

Stem cell study reveals complexity of glue molecule's role in cancer

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A protein molecule that 'glues' cells together and so has a key role in cancer is also responsible for many other important functions of cells, a new study has found.

University of Manchester scientists say their unexpected findings are important because they could lead to a better understanding of why some [cancer cells](#) are difficult to eradicate in patients and lead to new [cancer](#) treatments.

The research – published in *PLoS One* today – looked at the role of the cell-adhesion molecule E-cadherin in embryonic stem (ES) cells. As well as the expected findings associated with changes in adhesion, the team found that the protein may also regulate up to 25% of the genes within cells.

"E-cadherin is a 'glue' that keeps cells together in the body – without it we would not develop beyond a bundle of cells a few days after conception," said Dr Chris Ward, who led the study in the University's School of Dentistry.

"E-cadherin is also important during cancer progression from benign to malignant states, with loss of this molecule leading to increased movement of the cells which can lead to secondary tumours within the body.

"Whilst E-cadherin has been studied intensively there has been no

research that has identified all of the genes that E-cadherin regulates. Our lab has carried out profiling of ES cells lacking E-cadherin and found this protein is responsible for regulating up to 25% of the genes within cells.

"As well as the expected findings associated with changes in cell adhesion, we found that E-cadherin exerts an effect on a diverse range of biological functions within the cell. This unexpected result demonstrates that E-cadherin, often viewed as no more than a cell 'glue', is an important part of regulating the biology of ES cells."

The group found that E-cadherin regulates genes associated with, amongst other things, cell proliferation, cell death, metabolism of fats and sugars and the deciphering of messages received by cells from outside.

Since loss of E-cadherin is implicated in higher death rates in cancer patients and a more aggressive tumour type, the group has suggested that this molecule may have a much more important role to play in preventing tumour development.

Dr Ward added: "Essentially, abnormal regulation of E-cadherin can lead to a significant change in a cell and this may be one of the reasons why such cells are difficult to eradicate in cancer patients. Further investigation of specific changes in these [cells](#) may lead to the development of novel treatments for cancer."

Provided by University of Manchester

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