

## **Boost for new cancer therapies**

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Scientists have revealed the critical role a key enzyme plays in helping cells divide in what could prove an important breakthrough for new cancer therapies.

Cells divide to form two identical cells as part of the body's natural development and replenishment processes but when cells divide in an abnormal manner, tumours can develop.

Research has shown that an enzyme called 'Polo kinase' is involved in normal cell division but that it also goes into overdrive in cancer helping cells to multiply in an uncontrolled way.

Clinical trials on drugs that block the actions of Polo kinase started in the United States last year but the complete picture of how the enzyme assisted the cell-division process has not been clear until now.

Writing in the highly respected science journal, Nature, a team of researchers from the Universities of Manchester and Newcastle-upon-Tyne have described a new way in which the enzyme works.

"Enzymes are proteins that speed up or 'catalyse' the body's chemical reactions such as those required for normal cell division," explained Professor Andrew Sharrocks, lead researcher in Manchester's Faculty of Life Sciences.

"As its name suggests, the enzyme we have studied is from a group known as kinase enzymes which use a particular chemical – a phosphate



– to catalyse the reactions that lead to cell division.

"Our study has identified a new target protein that uses these phosphate groups to switch on genes and alter the properties of cells.

"When the actions of enzymes like Polo kinase go unchecked, cells divide in an uncontrolled manner to form tumours. However, if we block their activity using chemical inhibitors the cells can no longer divide and the cancer cannot grow and spread."

The identification of a new key step in which Polo kinase functions confirms the choice of this enzyme as a target for anti-cancer drug development and will spur on efforts in this direction.

Indeed, as scientists now have a much greater understanding of the mechanisms involved, it might enable them to either develop more effective drugs or suggest different situations in which the drug can be used.

"Kinase inhibitors are proving to be very effective at killing off rogue cells and trials on patients elsewhere have been promising with fewer toxic effects than current cancer treatments," said Professor Sharrocks.

"Our research on Polo kinase will help with this line of drug development and hopefully produce more effective kinase-blocking chemicals that will one day treat patients with different types of cancer."

Source: University of Manchester

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