Mitosis gets harder thanks to new gene discovery

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A biological process taught to every pupil studying science at high school has just become a little more complicated thanks to a new discovery published today.

Scientists from the University of Bath have found that a protein called RASSF7 is essential for mitosis, the process by which a cell divides in two.

In research published in the journal *Molecular Biology of the Cell*, the scientists have shown that the protein is essential for building the microtubules that allow the two halves of the cell to slide apart.

“What makes mitosis so interesting is that it is one of the biological processes that everyone remembers from their days at school,” said Dr Andrew Chalmers from the University’s Department of Biology & Biochemistry.

“As well as being one of Nature’s most important processes, our interest in mitosis stems from the fact that if you want to kill cancer cells, then stopping them from dividing is a useful way of doing this.

“Several cancer treatments block cell division by targeting microtubules, Taxol is a well known example. It is even possible that RASSF7 might be a future drug target”.

During the different phases of mitosis the pairs of chromosomes within

the cell condense and attach to microtubule fibres that pull the sister chromatids to opposite sides of the cell.

The cell then divides in cytokinesis, to produce two identical daughter cells.

RASSF7 is the latest of a battery of proteins involved in managing the complex process of mitosis.

“During mitosis, the chromosomes containing the DNA are pulled apart in two halves by an array of microtubules centred on the centrosomes,” said Dr Chalmers.

“Without the RASSF7 protein, the microtubules do not develop properly and cell division is halted.

“This is the first functional study of this protein, and we hope to extend our knowledge of how it works in the future.”

The research was funded by the Medical Research Council.

The work was carried out in Dr Chalmers laboratory by Dr Victoria Sherwood and two final year undergraduate project students from the University, Ria Manbodh and Carol Sheppard.

Dr Sherwood will now continue her research on cancer at a new job at the Lund University
Clinical Research Centre, Sweden.

Source: University of Bath