

Gene plays major role in suppressing cancer

November 18 2013

Adelaide researchers have found that a specific gene plays an important role in suppressing lymphoma, a type of blood cell cancer.

The caspase-2 gene is related to a family of proteins that are essential for the self-destruction of [cells](#) in the body, a process known as apoptosis.

Caspase-2 was first discovered almost 20 years ago by Professor Sharad Kumar, Co-Director of the Centre for Cancer Biology within SA Pathology, Affiliate Professor in the University of Adelaide's schools of Medicine and Molecular and Biomedical Science, and Adjunct Professor at the University of South Australia's School of Pharmacy and Medical Sciences.

For the past two decades, Professor Kumar's laboratory has been investigating the processes by which cells commit suicide and the molecular machinery that determine whether a cell lives or dies. Cell death is essential to maintain the correct number of cells in the body and to delete cells that have been damaged and become potentially harmful.

"Cell death and survival are controlled by a large number of genes, and aberrations in these genes are often linked to diseases. For example, an inability for cells to evade apoptosis is a well-known hallmark of [cancer](#)," Professor Kumar says.

In new findings published today in the *Proceedings of the National Academy of Sciences*, Professor Kumar and his team, including University of Adelaide PhD student Joseph Puccini, have found in

laboratory studies that caspase-2 could prevent tumour formation.

"It does this by ensuring that cells predisposed to cancer maintain a healthy number of chromosomes," Professor Kumar says. "By some unknown mechanism, caspase-2 appears to prevent cells from losing and gaining copies of the chromosomes, which is a trait frequently observed in [tumour cells](#).

"This research not only provides new information on the development of cancer, it also defines how caspase-2 can potentially work as a tumour suppressor gene. This is an exciting finding and one that we're already investigating further," he says.

More information: Loss of caspase-2 augments lymphomagenesis and enhances genomic instability in Atm-deficient mice, www.pnas.org/cgi/doi/10.1073/pnas.1311947110

Provided by University of Adelaide

Citation: Gene plays major role in suppressing cancer (2013, November 18) retrieved 1 April 2023 from <https://medicalxpress.com/news/2013-11-gene-major-role-suppressing-cancer.html>

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