

Scientists reveal 'protector' gene behind 50-fold increase in number of bowel tumours

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(PhysOrg.com) -- Cancer Research UK scientists have shown that deleting a single gene can increase the average number of tumours in the bowel by 50-fold, according to research published in *PNAS* today.

The scientists, based at the University of Dundee, removed a gene called GSTP (enzyme glutathione transferase Pi) from mice already genetically predisposed to the development of tumours in the [small intestine](#).

The absence of GSTP led to a 50-fold increase in the number of tumours called adenomas crucially, in the same region of the bowel as the human cancer is found. Adenomas are benign, pre-cancerous tumours.

The profound change in tumour incidence appeared to be related to increased inflammation in the bowel.

It is already known that the GST family of [genes](#) protect the body against harmful chemicals. In previous studies by the same team an absence of GSTP in mice led to increased tumour development in the lung and skin following exposure to environmental chemicals such as those found in tobacco smoke. But this study shows that GSTP can also protect against cancer in other ways.

Lead author, Professor Roland Wolf, a Cancer Research UK scientist based in the Biomedical Research Institute at the University of Dundee said, 'These data provide fascinating new insights into a gene which can affect the development of [bowel cancer](#) possibly by affecting

inflammatory responses.'

Study co-author Dr Colin Henderson, another Dundee-based Cancer Research UK scientist commented, 'We are very excited that this research will help us study how bowel cancer could be prevented and allow new treatments to be tested.'

Bowel cancer is the third most common cancer in the UK - each year more than 37,500 people are diagnosed with the disease, more than 100 people every day.

Dr Lesley Walker, Cancer Research UK's director of cancer information said, 'Bowel cancer is the second most common cause of cancer death in the UK after lung cancer.'

'We already know that at least 10 per cent of bowel cancers in the UK are related to being overweight or obese. We know a diet with lots of red and processed meat will increase the chances of developing bowel cancer whereas a fibre-rich diet reduces the risk.'

'Some studies suggest that GSTP levels could be boosted by chemicals found in vegetables like broccoli. If this can be confirmed in humans, it could suggest another way of reducing the risk of bowel cancer.'

More information: Markedly enhanced colon tumorigenesis in ApcMin mice lacking glutathione S-transferase Pi. Kenneth J. Ritchie et al. *Proceedings of the National Academy of Sciences.*

Provided by University of Dundee

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