A tumor suppressor in the gastrointestinal tract

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Recql5 is a member of the mammalian RecQ helicase family. Genetic mutations that result in loss of RecQ helicase activity give rise to disorders that are associated with cancer predisposition and premature aging, such as Bloom, Werner, and Rothmund-Thomson syndromes. This class of enzymes is best known for their role in maintaining the integrity of the genome to prevent oncogenic mutations.

A research article to be published on March 28, 2010 in the World Journal of Gastroenterology addresses this question. A research group at Case Western Reserve University examined whether this helicase actually has a role in tumor suppression in the GI tract but this could not be assessed by a simple study of straight Recql5 knockout mice because of the potential inherent limitation of modeling GI tumorigenesis in mice. This group therefore conducted a study by introducing the Recql5 mutation into Apcmin mice, an established model for assessing the impact of various factors on tumorigenesis in the GI tract. They found that indeed, Recql5 mutation had an important impact on tumorigenesis in the GI tract.

This new finding therefore has identified Recql5 as a tumor suppressor in the mouse GI tract. Moreover, since mouse Recql5 and its human counterpart are highly conserved, these findings have also raised the possibility that RECQL5 may also have a role in human GI malignancies. Moreover, Recql5 expression was recently shown to be an important determinant in sensitivity to camptothecins, a class of anticancer drugs that are currently used to treat human colon cancer

patients. Thus, RECQL5 may be an important candidate for a colon cancer biomarker.

The fundamental knowledge regarding the molecular basis of oncogenesis provides invaluable information that is vital for the identification and development of novel biomarkers, drug targets or more effective treatments for cancer patients. In particular, dysfunction in DNA damage response and repair is a common feature in many human cancers, including colon cancers. Significantly, this feature of cancer could potentially be exploited for the development of novel diagnoses and/or treatments.

More information: Hu Y, Lu X, Luo G. Effect of Recql5 deficiency on the intestinal tumor susceptibility of Apcmin mice. World J Gastroenterol 2010; 16(12): 1482-1486, www.wjgnet.com/1007-9327/full/v16/i12/1482.htm

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