MedicalXpress

Scientists uncover potential drug target to nip cancer in the bud

November 8 2013

Scientists at A*STAR have discovered an enzyme, Wip1 phosphatase, as a potential target to weed out the progression of cancer. Although studies in the past have revealed that this enzyme plays a critical role in regulating the budding of tumours, scientists have for the first time unearthed a mechanism for its mode of action.

The research was conducted by Dr Dmitry Bulavin and his team at A*STAR's Institute of Molecular and Cell Biology (IMCB), with their findings published in the 14 October 2013 issue of the prestigious scientific journal, *Cancer Cell*.

The team discovered that Wip1 phosphatase is a key factor that causes point mutations to sprout in human cancers. These types of mutations stem from errors that are made during DNA replication in the body, causing one base-pair in the DNA sequence to be altered.

These mutations can cause cancers to take root, or to become resilient to treatment. By using drugs to inhibit the action of Wip1 phosphatase, cancer growth can be stunted and tumours can be cured without developing resistance. This is a ground-breaking finding that sheds light on how mutations in cancer can potentially be wiped out with drugs, allowing cancers to be treated and eliminated effectively, preventing relapses of tumour growth.

Dr Dmitry Bulavin said, "Our work on Wip1 phosphatase for over a decade has now revealed several key features of this molecule. Our

current findings strongly support the use of an anti-Wip1 drug for cancer treatment in order to reduce a high frequency of mutations in the genome, which is one of the main drivers of tumour relapses."

Prof Hong Wan Jin, Executive Director of IMCB, said, "Dmitry has been the pioneering driver in the mechanistic study of Wip1 phosphatase, and this discovery is monumental in providing novel understanding on the role of Wip1 in cancer at the genomic and systems levels. I am confident that his team at IMCB can further their work in cancer research to offer new approaches for potential drugs against this target."

More information: The research findings described in this media release can be found in the 14 October online issue of *Cancer Cell*, under the title, "Wip1 controls global heterochromatin silencing via ATM/BRCA1-dependent DNA methylation" by Doria Filipponi et al.

Provided by Agency for Science, Technology and Research (A*STAR), Singapore