

Study explores possible 'safe and effective' anti-cancer therapy

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(Medical Xpress) -- New findings discovered by an international research team, which includes a professor from Western University, may lead to a safe and effective anti-cancer therapy.

A report published online today in the journal *Cell Reports*, co-authored by Dr. Dean Betts of Western's Schulich School of Medicine & Dentistry and Dr. Lea Harrington of Montreal University's Institut de Recherche en Immunologie et en Cancérologie, provides important evidence that human cancer tumours rely on the maintenance of telomeres - or the protective ends of chromosomes - for growth only when the telomeres shrink in length.

Betts, a professor in Schulich's Department of Physiology and Pharmacology, says this better understanding of [cancer](#) cell growth may help in the development of anti-cancer drugs that specifically target telomeres.

"Like the plastic aglets used at the end of our shoelaces to prevent fraying, telomeres protect the ends of our chromosomes," explains Betts. "Most human cells lose a bit of each telomere every time it divides triggering cell death or arrest when a critically short telomere length is reached. Cancer cell survival depends on this maintenance and once realized, cancer cells become immortalized."

Until this study, it had not been tested directly whether or not telomere maintenance was required for generating human cancers. Betts says the findings, achieved by genetically removing telomerase at long telomere lengths from a human tumour cell culture, clearly demonstrate that telomerase, the enzyme required to maintain telomeres in most human cancers, is not required for generating human tumours when telomeres are long.

Betts, whose father recently underwent treatment

for lung cancer, says while radiation and chemotherapy kill various types of tumour [cells](#) containing active telomerase, the therapies also kill normal, healthy cell tissue outside the tumour.

"Telomerase therapy, in combination with traditional treatments that limit tumor progression, could help eradicate cancer faster and reduce side effects by having patients on radiation or chemotherapy for a shorter time," says Betts.

More information: The full report can be read at www.cell.com/cell-reports/fulltext/S2211-1247%2811%2900014-3

Provided by University of Western Ontario

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