

Study discovers genetic pathway impacting the spread of cancer cells

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In a new study from Lawson Health Research Institute, Dr. Joseph Torchia has identified a new genetic pathway influencing the spread of cancer cells. The discovery of this mechanism could lead to new avenues for treatment.

Regular cell division is regulated by methylation, a series of chemical changes. Methylation modifies DNA to ensure cells divide at a healthy, balanced rate. In cancer, the methylation process is unbalanced, causing cells to resist regulation and divide uncontrollably.

Research suggests changes in genetics play a role in this process, yet little is known about the mechanism. In a new study led by Dr. Torchia and his colleagues, a hormone called Transforming Growth Factor Beta (TGF- β) is starting to show the answers. Using genetic sequencing, they analyzed the effects of TGF- β on DNA methylation to reveal a never-before-seen pathway.

When TGF- β comes into contact with a cell it activates the tumor-suppressing gene, which stops the cells from dividing. According to Dr. Torchia's group, ZNF217, a cancer-causing gene, can interfere with this process by binding to the DNA. This prevents the tumour-suppressing genes from activating, and the cells continue to divide.

These results characterize the dynamic processes underlying cell division, suggesting genetic influencers must be balanced to keep [cell division](#) under control. Most importantly, they provide hope for new

cancer therapies.

"This link between methylation and TGF- β has never been shown before," Dr. Torchia says. "If we understand how methylation is regulated, and identify the machinery that's involved, we may be able to target some of the machinery therapeutically and turn these genes back on to fight the [cancer](#)."

The full study is published in *Molecular Cell*.

Provided by Lawson Health Research Institute

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