PVT1 signals androgen-dependent transcriptional repression in prostate cancer

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Video Byte

Keywords: LincRNA PVT1, prostate cancer, PVT1 knockdown, genome-wide transcriptional repression, tumor suppressor genes, PVT1, cancer, Cell Communication and Signaling

Posted Date: February 25th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-276048/v1>

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Abstract

Prostate cancer is the second-most diagnosed cancer in men worldwide. Development of prostate cancer relies on androgen receptor (AR), a transcription factor that induces the activation or repression of prostate-specific genes. A recent study examined the role of a previously unexplored factor in regulating AR activity. Long intergenic non-coding RNA PVT1 is associated with AR in prostate cancer cells, but its involvement in downregulating gene expression has not been examined. Using a prostate cancer cell line, researchers silenced PVT1 expression. They found that in androgen-stimulated cells, PVT1 knockdown altered the expression of hundreds of genes. A total of 160 genes were upregulated after PVT1 silencing that are typically repressed by AR, including a set of tumor suppressor genes and 121 of the genes affected by PVT1 knockdown were correlated with prostate cancer aggressiveness in the patient cohort. PVT1 was also found to be associated with EZH2, a component of the PRC2 gene repressor complex involved in the response to androgen stimulation. While future studies will focus on elucidating the precise epigenetic mechanisms used by PVT1 in regulating tumor-related genes these results suggest that PVT1 plays a role in inhibiting tumor suppressor genes, affecting the aggressiveness of prostate cancer.