New mechanism behind multiple myeloma cancer cell growth revealed

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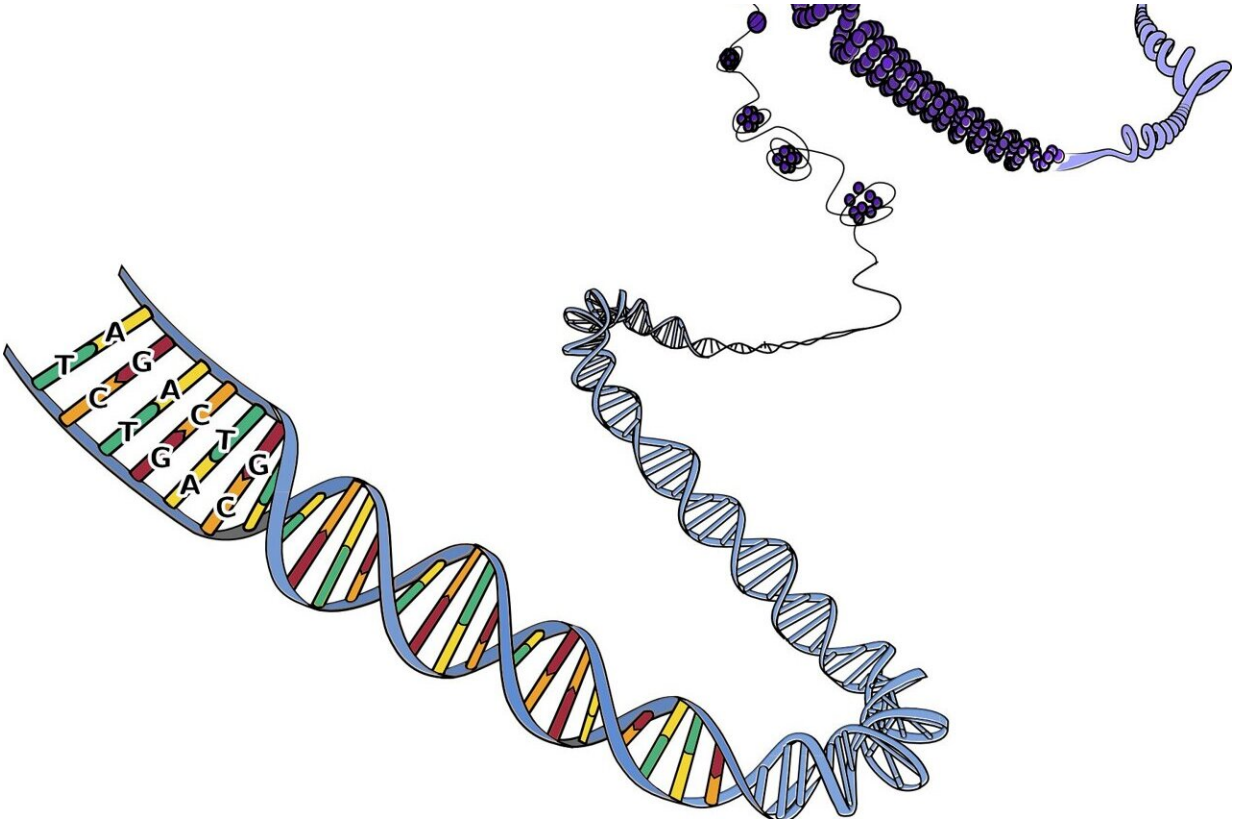

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Researchers from Uppsala University have revealed one of the mechanisms behind the growth of cancer cells in the blood cancer multiple myeloma. The study shows that the protein EZH2 interacts with

a specific RNA molecule to block genes that are important for tumor growth. The findings might contribute to the development of new treatments for multiple myeloma patients. The study has been published in the journal *Haematologica*.

Multiple myeloma is a type of blood cancer where immune cells grow in an uncontrolled way in the bone marrow. The disease is very difficult to treat and is still considered incurable, and thus it is urgent to identify new therapeutic targets in the cancer cells.

The research group behind the new study has previously shown that cultivated multiple myeloma cells had reduced growth and were even killed if they were treated with a substance that inhibited the EZH2 protein. In the new study the now show how EZH2 affects the growth of the cancer cells.

"Our previous findings suggested EZH2 as a target for clinical intervention since it can block the activity of genes that are important for cancer growth. But EZH2 cannot on itself bind to DNA so we assumed that it needs a 'guide' to help it find correct positions. One of these guides turned out to be a long non-protein coding RNA. As the name implies these RNAs are not coding for a protein but can possess other important functions in a cell," says Professor Helena Jernberg Wiklund, who led the study.

The new findings provide an increased understanding of the mechanisms for how EZH2 blocks the formation of proteins that control cancer cell growth, and affects the prognosis of multiple myeloma patients. This is essential knowledge for using targeting of EZH2 in the clinic.

"Our study also shows that global analysis of how non-coding RNAs act together with proteins to perform important functions in a cancer cell can provide a better view of what happens when cancer cells are exposed

to novel treatments. We believe that our results are relevant to both preclinical and clinical researchers, as a step towards finding new ways to treat patients with multiple myeloma," says Helena Jernberg Wiklund.

More information: Patrick Nylund et al, *PVT1* interacts with polycomb repressive complex 2 to suppress genomic regions with pro-apoptotic and tumour suppressor functions in multiple myeloma, *Haematologica* (2023). DOI: 10.3324/haematol.2023.282965

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