Sp (Spigma) transcription factors enhance cancer growth and isotype cell division

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Sp (Spigma) transcription factors are important for regulating the expression of specific proteins in the brain. Sp is present in the cells of all organisms, but, in the case of cancer, several Sp-activating genes are overexpressed leading to increased rates of metastasis to nearby organs, tumour growth, and carcinogenesis. Sp may also control cell division by promoting cell proliferation. On the other hand, inhibition of Sp signaling, at various scales, may limit the growth of a cancer cell. Recent studies suggest that Sp-specific (Spym) transcription factors are strongly associated with increased tumor development, including in rhabdomyosarcoma (RMS), a type of muscle-based sarcoma, which causes muscle weakness, fatigue, pain, and other symptoms.

To assess the role of Spym transcription factors in promoting cells and tumors, Raheela Prabhoy, also from the University of Queensland, Brisbane, Australia, in her previous post at the University of Texas MD Anderson Cancer Center, turned to spp qi cells from the brains of RMS patients who were respectively studying Cell death as well as cancer cell carcinogenesis in mice.

Using the human spp qi cells, Prabhoy and colleagues were able to show that Spym transcription factors are essential for cancer cell differentiation (i.e., the proliferation of cancer cells), cell division, and metastasis. When spp qi cells are depleted, cell lines, embryos, mice, and cells in the brain mature and mature less efficiently than when Spym cells are expression positive. When Shafique Razak from the University of Glasgow, Scotland, in his previous post at MD Anderson Cancer Center, recruited mice with vascular endothelial growth factor-2 (VEGF-2) overexpressed disease and leukemia to the assay, spp qi cells were more highly expressed in cancer cells grown in the presence of VEGF-2. These are the first studies to show that Spym binding to Spym/Spym cytosolic transcription factors is a critical clue to differentiation, differentiation of cells and overall control of cell cell fate.

The study is an extremely well-documented, comprehensive exploration into how to prevent cancer growth using Spym transcription factors. What does this tell us? That Spym transcription factors are highly implicated in cancer growth, and that targeting Spym/Spym cytosolic transcription factors alone could be used to decrease the growth of cancer cells. There are strong synergies between VEGF-2 and Spym/Spym cytosolic transcription factors for cancer cell differentiation, metastasis, and cancer stem cell/genome regulation. Until now, it has been clear that VEGF-2 expression is critical for stem cell promotion but this study will help scientists further understand how cancer stem cells differentiate and make differentiated cancer cells.

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A Brown And Black Cat Sitting On Top Of A Grass Covered Field