STATs in cancer inflammation and immunity: a leading role for STAT3

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Commensurate with their roles in regulating cytokine-dependent inflammation and immunity, signal transducer and activator of transcription (STAT) proteins are central in determining whether immune responses in the tumour microenvironment promote or inhibit cancer. Persistently activated STAT3 and, to some extent, STAT5 increase...
tumour cell proliferation, survival and invasion while suppressing anti-tumour immunity. The persistent activation of STAT3 also mediates tumour-promoting inflammation. STAT3 has this dual role in tumour inflammation and immunity by promoting pro-oncogenic inflammatory pathways, including nuclear factor-κB (NF-κB) and interleukin-6 (IL-6)–GP130–Janus kinase (JAK) pathways, and by opposing STAT1- and NF-κB-mediated T helper 1 anti-tumour immune responses. Consequently, STAT3 is a promising target to redirect inflammation for cancer therapy.

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