

Molecular basis of the oncogenic potential of interleukin-6 and Stat3

» Prof. Dr. Friedemann Horn

Keywords

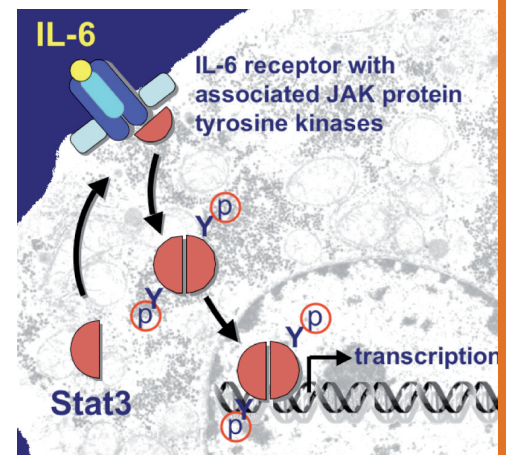
- Molecular Oncology
- Cytokine Signal Transduction
- Control of Transcription
- Noncoding RNA

The transcription factor Stat3 is the major signal transducer of interleukin-6 and related cytokines. It was first identified and characterised by the research group as the inducer of acute-phase proteins in hepatocytes. Later studies revealed its involvement in the regulation of a multitude of processes in various cells and tissues.

In addition, Stat3 has turned out to be constitutively activated in many malignancies. The activation of Stat3 has turned out to be essential for the induction of transformation by many oncoproteins. Stat3 acts both proliferative and anti-apoptotic in tumour cells, and this effect was attributed to its ability to induce

cell cycle regulators like cyclin D or anti-apoptotic proteins of the Bcl-2 family. However, recent data have raised doubts that the induction of such proteins sufficiently explains the strong survival effect observed upon Stat3 activation.

The team of Prof. Dr. Friedemann Horn recently demonstrated that Stat3 induces the anti-apoptotic microRNA-21 through a phylogenetically highly conserved enhancer and that this miRNA strongly contributes to its oncogenic potential. Additional noncoding RNAs targeted by Stat3 are currently under investigation for their role in oncogenesis and for their diagnostic and/or therapeutic potential.



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