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Review

Investigational therapies targeting signal transducer and activator of transcription 3 for

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10.1517/13543784.2015.1020370

[Matteo Santoni](#) MD^{*a}, [Francesco Massari](#)^b, [Marzia Del Re](#)^c, [Chiara Ciccarese](#)^b, [Francesco Piva](#)^d, [Giovanni Principato](#)^d, [Rodolfo Montironi](#)^e, [Daniele Santini](#)^f, [Romano Danesi](#)^c, [Giampaolo Tortora](#)^b & [Stefano Cascinu](#)^a

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Abstract

Introduction: Signal transducer and activator of transcription 3 (STAT3) mediates the expression of a variety of genes in response to cell stimuli and thus plays a key role in several cellular processes such as cell growth and apoptosis. Deregulation of the STAT3 activity has been shown in many malignancies, including breast, head and neck, prostate, pancreas, ovarian and brain cancers and melanoma. Thus, STAT3 may represent an ideal target for cancer therapy.

Areas covered: The authors review recent data on the role of STAT3 in tumor initiation and progression, as well as the ongoing clinical trials in cancer patients. The content includes information derived from trial databases, regulatory authorities and scientific literature.

Expert opinion: Targeting STAT3 activation leads to the inhibition of tumor growth and metastasis both *in vitro* and *in vivo* without affecting normal cells; this suggests that STAT3 could be a valid molecular target for cancer therapy. Extensive clinical research is trying to find anti-STAT3 agents with high single-agent activity. The identification and development of novel drugs that can target deregulated STAT3 activation effectively is both a scientific and clinical challenge that needs to be addressed in the near future.

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Author affiliations

- ^{a 1}Polytechnic University of the Marche Region, Medical Oncology, AOU Ospedali Riuniti, via Conca 71, 60126 Ancona, Italy +39 0715964263; +39 0715964269;
- ^{b 2}University of Verona, Azienda Ospedaliera Universitaria Integrata, Medical Oncology, Verona, Italy
- ^{c 3}University of Pisa, Department of Clinical and Experimental Medicine, Pisa, Italy
- ^{d 4}Polytechnic University of Marche, Department of Specialistic Clinical and Odontostomatological Sciences, Ancona 60131, Italy
- ^{e 5}Polytechnic University of the Marche Region, School of Medicine, Section of Pathological Anatomy, AOU Ospedali Riuniti, Ancona, Italy
- ^{f 6}University Campus Bio-Medico, Medical Oncology Department, Rome, Italy

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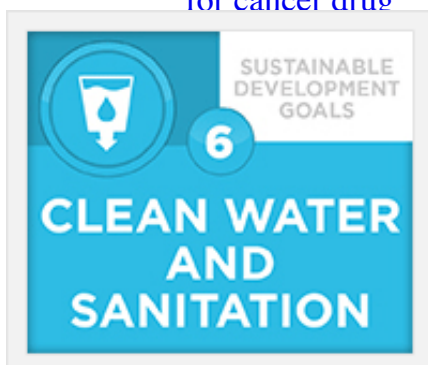
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