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Inhibitors, Screening Libraries, Proteins

TGF-beta/Smad

Transforming growth factor beta

Transforming growth factor-beta (TGF- β) is a member of a superfamily of pleiotropic proteins that regulate multiple cellular processes such as growth, development and differentiation. The intracellular effectors of TGF-beta signalling, the Smad proteins, are activated by receptors and translocate into the nucleus, where they regulate transcription. Although this pathway is inherently simple, combinatorial interactions in the heteromeric receptor and Smad complexes, receptor-interacting and Smad-interacting proteins, and cooperation with sequence-specific transcription factors allow substantial versatility and diversification of TGF-beta family responses. Other signalling pathways further regulate Smad activation and function.

In addition, TGF-beta receptors activate Smad-independent pathways that not only regulate Smad signalling, but also allow Smad-independent TGF-beta responses. Aberrant TGF- β signaling is associated with a variety of diseases, such as fibrosis, cardiovascular disease and cancer. Hence, the TGF- β signaling pathway is recognized as a potential drug target.