

Wnt proteins.

Journal: Cold Spring Harb Perspect Biol

Publication Year: 2012

Authors: Karl Willert, Roel Nusse

PubMed link: 22952392

Funding Grants: Guiding the developmental program of human embryonic stem cells by isolated Wnt factors, WNT signaling and the control of cell fate decisions in human pluripotent stem cells.

Public Summary:

This review article summarizes the current understanding of Wnt proteins which are potent stem cell growth factors and regulators.

Scientific Abstract:

Wnt proteins comprise a major family of signaling molecules that orchestrate and influence a myriad of cell biological and developmental processes. Although our understanding of the role of Wnt signaling in regulating development and affecting disease, such as cancer, has been ever increasing, the study of the Wnt proteins themselves has been painstaking and slow moving. Despite advances in the biochemical characterization of Wnt proteins, many mysteries remain unsolved. In contrast to other developmental signaling molecules, such as fibroblast growth factors (FGF), transforming growth factors (TGFbeta), and Sonic hedgehog (Shh), Wnt proteins have not conformed to many standard methods of protein production, such as bacterial overexpression, and analysis, such as ligand-receptor binding assays. The reasons for their recalcitrant nature are likely a consequence of the complex set of posttranslational modifications involving several highly specialized and poorly characterized processing enzymes. With the recent description of the first Wnt protein structure, the time is ripe to uncover and possibly resolve many of the remaining issues surrounding Wnt proteins and their interactions. Here we describe the process of maturation of Wnt from its initial translation to its eventual release from a cell and interactions in the extracellular environment.

Source URL: <https://www.cirm.ca.gov/about-cirm/publications/wnt-proteins>