FZD5 Prevents Epithelial-mesenchymal Transition In Gastric Cancer

Dan Dong
Lei Na
Kailing Zhou
Zhuo Wang
Yu Sun
Qianqian Zheng
Jian Gao
Chenghai Zhao
Wei Wang

Video Byte

Keywords: FZD5, epithelial-mesenchymal transition, ELF3, gastric cancer, cancer, PKC, EMT, Frizzled, Cell Communication and Signaling

Posted Date: October 16th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-978917/v1>

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
[Read Full License](#)

Abstract

The epithelial-mesenchymal transition (EMT), where cells become less polarized and take on stem-cell-like properties, is critical to the metastasis of many types of cancer. One protein family with a major role in this process is the Frizzled (FZD) family. FZD proteins are G-protein-coupled receptors that function as receptors for Wnt ligands. But while FZD2, FZD4, FZD7, FZD8, and FZD10 have been demonstrated to mediate cancer cell EMT, a new study shows that FZD5 may play a different role. Using in silico analysis of cancer gene databases, researchers found that FZD5 can prevent EMT in gastric cancer. Experiments with human gastric cancer cell lines showed that FZD5 maintains an epithelial-like phenotype and is negatively regulated by the transcription factors SNAI2 and TEAD1. Downstream of FZD5 was the epithelial-specific factor ELF3, which was linked via protein kinase C. FZD5 signaling required its co-receptor, LRP5, and Wnt7b acted as a putative ligand for FZD5. Although these results remain to be confirmed in vivo, they point to a unique role for the FZD family protein FZD5 in blocking EMT, making it an ideal target for inhibiting metastasis in patients with gastric cancer.