

# Secreted Frizzled Related Protein

Secreted frizzled-related proteins (Sfrps) are considered Wnt signalling antagonists but recent studies have shown that specific family members enhance Wnt diffusion and thus positively modulate Wnt signalling. Whether this is a general and physiological property of all Sfrps remains unexplored. It is equally unclear whether disruption of Sfrp expression interferes with developmental events mediated by Wnt signalling activation. Here, we have addressed these questions by investigating the functional consequences of Sfrp disruption in the canonical Wnt signalling-dependent specification of the mouse optic cup periphery.

Esteve et al. showed that compound genetic inactivation of [Sfrp1](#) and Sfrp2 prevents Wnt/ $\beta$ -catenin signalling activation in this structure, which fails to be specified and acquires neural retina characteristics. Consistent with a positive role of Sfrps in signalling activation, Wnt spreading is impaired in the retina of Sfrp1(-/-);Sfrp2(-/-) mice. Conversely, forced expression of Sfrp1 in the wing imaginal disc of *Drosophila*, the only species in which the endogenous Wnt distribution can be detected, flattens the Wg gradient, suppresses the expression of high-Wg target genes but expands those typically activated by low Wg concentrations. Collectively, these data demonstrate that, in vivo, the levels of Wnt signalling activation strongly depend on the tissue distribution of Sfrps, which should be viewed as multifunctional regulators of Wnt signalling <sup>1)</sup>.

<sup>1)</sup>

Esteve P, Sandonis A, Ibañez C, Shimono A, Guerrero I, Bovolenta P. Secreted frizzled-related proteins are required for Wnt/ $\beta$ -catenin signalling activation in the vertebrate optic cup. *Development*. 2011 Oct;138(19):4179-84. doi: 10.1242/dev.065839. PubMed PMID: 21896628.

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