

Wnt3a Surrogate Protein, Human (HEK293, Fc)

Cat. No.:	HY-P70453B
Synonyms:	Wnt3a Surrogate, Human (HEK293, Fc)
Species:	Human
Source:	HEK293
Accession:	/
Gene ID:	/
Molecular Weight:	66-72 kDa.

PROPERTIES

Biological Activity	Measured by its ability to induce Topflash reporter activity in HEK293T human embryonic kidney cells. The ED ₅₀ for this effect is <62 ng/mL.
Appearance	Solution
Formulation	Supplied as a 0.2 µm filtered solution of 25 mM Tris-HCl, 500 mM NaCl, pH 8.2.
Endotoxin Level	< 0.01 EU/µg as determined by LAL test.
Reconstitution	N/A.
Storage & Stability	Stored at -80°C for 1 year. It is stable at -20°C for 3 months after opening. It is recommended to freeze aliquots at -80°C for extended storage. Avoid repeated freeze-thaw cycles.
Shipping	Shipping with dry ice

DESCRIPTION

Background

Wnt is a secreted glycoprotein comprising 19 human proteins that signal through both canonical and non-canonical pathways. Wnts are involved in developmental morphology, stem cell maintenance, and wound healing, and can travel long distances or attach to the surface of exosomes. Among them, Wnt3a is an important molecule that can activate the Wnt/β-catenin signaling pathway and participate in various physiological and pathological processes, such as embryonic development, tissue repair, and tumor progression. Wnt3a also plays a role in cardiomyogenesis, skeletal muscle development, nervous system formation, and migration and invasion of trophoblast cells^{[4][5]}.

1. The Wnt family includes: Wnt1, Wnt2, Wnt2b (Wnt13), Wnt3, Wnt3a, Wnt4, Wnt5a, Wnt5b, Wnt6, Wnt7a, Wnt7b, Wnt8a, Wnt8b, Wnt9a (Wnt14), Wnt9b (Wnt14b), Wnt10a, Wnt10b, Wnt11 and Wnt16.

2. Wnt canonical pathway: also known as Wnt/β-catenin pathway.

3. Wnt non-canonical pathway: including Wnt-planar cell polarity pathway (Wnt-PCP pathway) and Wnt-calcium pathway (Wnt-Ca²⁺ pathway).

4. Introduction to Wnt3a: It is an important molecule in the process of cell signal transduction and development, and is highly conserved. Wnt3a interacts with Frizzled receptors, induces the accumulation of β-catenin, and activates the Wnt/β-

catenin signaling pathway. Wnt3a also stimulates migration and invasion of trophoblasts.

Wnt3a function: In embryonic development, Wnt3a is involved in the formation of embryonic axis and directed cell differentiation; in adult tissues, Wnt3a is related to the regulation of stem cell self-renewal and cell fate determination, and is also related to the occurrence and development of certain tumors. For example, Wnt3a promotes or inhibits tumor progression through the canonical Wnt signaling pathway. Wnt3a is also associated with post-injury remodeling and cell expansion, and upregulation of WNT3a improves repair. Wnt3a also plays an important role in organ formation. It can promote cardiomyogenesis by increasing T cell-specific transcription factor (TCF)-dependent transcription and inducing cardiac-specific markers, bone morphogenetic proteins (BMPs) and myosin heavy chain (MHC). Studies have shown that Wnt3a induces myogenesis in differentiated body muscle groups, activates myogenic differentiation antigen (MyoD) expression, and promotes skeletal muscle development. Wnt3a activates the atypical protein kinase Cloys (pKCiota) and induces a punctate distribution of pKCiota in neurites and cytoplasm, with a particularly strong signal at the centrosome. Wnt3a plays a crucial role in the maintenance and differentiation of neuromesoderm stem cells. Thus, Wnt3a is involved in the formation of the nervous system.

REFERENCES

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 - [2]. Chen H, et al. Development of Potent, Selective Surrogate WNT Molecules and Their Application in Defining Frizzled Requirements. *Cell Chem Biol*. 2020 May 21;27(5):598-609.e4.
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