www.innocyto.com.cn

InnoCyto Inc.

15375 Barranca Pkwy, Suite I-103
Irvine, CA 92618
Email: info@innocyto.com
Phone: 1-949-418-7543

Human Notum Protein (C-His)

Catalog Number:	605901, 605902
Size:	25 ug, 100 ug
Target Name:	Notum, Palmitoleoyl-protein carboxylesterase NOTUM
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	ELISA, BLI
Format:	Liquid, Purified
Expression Host:	CHO
Species:	Human
Accession Number:	Q6P988
Sources:	Recombinant Human Notum (Ser20-Ser496) with C-terminus His tag was expressed in CHO cells
Molecular Weight:	This protein has a predicted molecular weight of 54.5 kDa. Under DTT-reducing conditions, the protein migrates at approximately 50-60 kDa on SDS-PAGE.
Affinity Tag:	C-His
Purity:	>95% based on SDS-PAGE under reducing condition
Formulation:	1xPBS buffer, pH7.4, 0.22 μm filtered
Endotoxin level:	Not tested
Protein Concentration:	25μg size is bottled at 0.2mg/mL concentration. 100 μg size is supplied at a lot-specific concentration.
Storage and Handling:	Briefly centrifuge the vial upon receipt. An unopened vial can be stored at 4°C for up to 2 weeks, or at -20°C or below for up to six months. The protein may be further diluted to 0.1 mg/mL using 0.22 μm-filtered PBS buffer (pH 7.4). For long-term storage, the diluted stock solution should be aliquoted and stored at ≤ –70°C to minimize freeze-thaw cycles. If additional dilution is required, carrier proteins such as FBS or BSA should be added to maintain protein stability.

BACKGROUND INFORMATION

Notum is a secreted carboxylesterase enzyme that functions as a key regulator of the Wnt signaling pathway, a vital system that governs embryonic development, tissue regeneration, and cellular homeostasis. Its primary role is to deactivate Wnt proteins by enzymatically removing a palmitoleate group—a lipid modification required for Wnt's binding to its receptor, Frizzled. Through this process, Notum fine-tunes the intensity and duration of Wnt signaling, preventing excessive pathway activation that can lead to abnormal growth or differentiation.

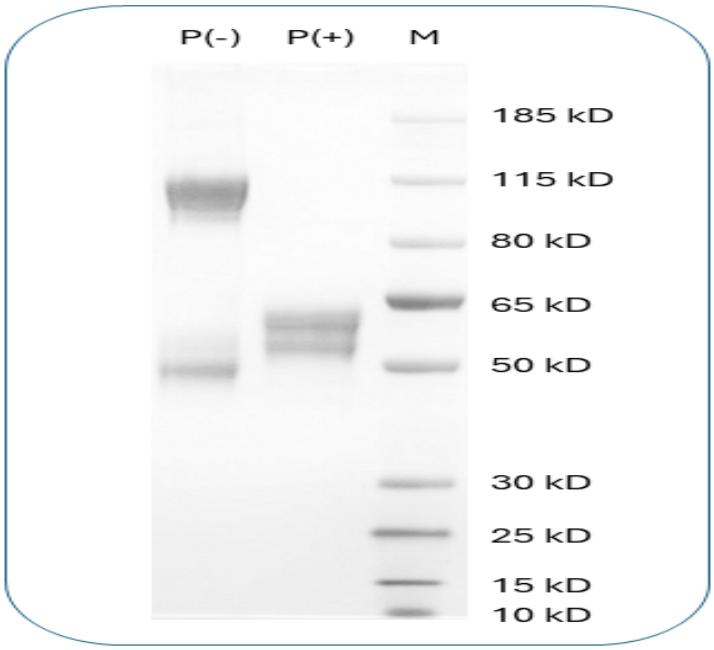
Structurally, Notum belongs to the α/β-hydrolase fold enzyme family, characterized by a central β-sheet core flanked by α-helices.

The active site includes a conserved catalytic triad typically composed of serine, histidine, and aspartate residues. These residues coordinate to mediate hydrolysis of the ester bond linking the lipid moiety to the Wnt protein. High-resolution crystal structures of Notum have revealed a hydrophobic pocket near the active site that accommodates the palmitoleate chain, and a flexible "lid" region that moves to facilitate substrate access. The enzyme also exhibits calcium-binding sites that stabilize its tertiary structure and enhance catalytic efficiency.

Notum's ligands include both the endogenous Wnt lipids and a growing number of small-molecule inhibitors designed to target its catalytic pocket. These inhibitors often mimic the lipid substrate or covalently modify the active-site serine to block enzymatic activity. Such compounds have proven useful in experimentally manipulating Wnt activity and hold potential as drug candidates for disease modulation.

Dysregulation of Notum is implicated in several human diseases. Overactivity of Notum suppresses Wnt signaling, contributing to degenerative conditions such as osteoporosis, osteoarthritis, and neurodegeneration. Conversely, underexpression or inhibition of Notum is linked to excessive Wnt pathway activation in cancers, including colorectal, liver, and pancreatic tumors. Recent research indicates that selective Notum inhibition may restore regenerative capacity in aged tissues and stimulate bone formation, offering therapeutic promise for age-related disorders. Thus, Notum has emerged as a compelling pharmacological target: its modulation could either attenuate oncogenic signaling in tumors or enhance regenerative signaling in degenerative diseases.

PRODUCT DATA



Purified Human Notum Protein (C-His) on SDS-PAGE under reducing (P+) and non-reducing (P-) conditions. The purity of the purified protein appears to be greater than 95% based on reducing condition.

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