BACKGROUND

The Wnt family of genes, encoding at least 19 lipid-modified signaling proteins that act through autocrine and paracrine mechanisms to influence many developmental and cellular processes. They have been implicated in regulating both adipogenic and myogenic differentiation as well as osteoblastogenesis through the canonical beta-catenin and noncanonical pathways. In the absence of Wnt signaling, beta-catenin is phosphorylated by glycogen synthase kinase (GSK), leading to rapid degradation. Wnt ligands bind to transmembrane receptors of the Frizzled family, leading to inactivation of GSK within the complex, thereby stabilizing b-catenin, allowing translocation to the nucleus where it regulates T-cell factor (TCF)/leukocyte enhancing factor-dependent gene transcription.

Wnt10B has been demonstrated to inhibit adipogenic differentiation both in C2C12 myoblasts and preadipocytes, because Wnt10b abundance decreases in muscle as a function of age. It suggested that altered Wnt10b activity contributes to increased intramyocellular lipid accumulation that accompanies aging. Wnt10B specifically controls adipogenic potential in myoblasts and regenerating muscle, whereas other Wnt family members influence myogenic potential. Recently it was shown that a C256Y mutation abrogated the ability of WNT10B to activate canonical WNT signalling and block adipogenesis, which may be linked to obesity.[1] In addition, it was demonstrated that Wnt10b primarily increases bone mass by stimulating osteoblastogenesis.[2] WNT10B also plays a role in regulation of cell proliferation. Wnt10 alone inhibits cell growth. However it acts synergistically with the fibroblast growth factor (FGF) to stimulate cell growth. WNT10B is bifunctional, one function of which is involved in beta-catenin/Tcf activation, and the other function is related to the down-regulation of cell growth through a different mechanism. It is suggested that FGF switches WNT10B from a negative to a positive cell growth regulator.[3]

The expression of Wnt family genes is tightly regulated. Elevated expression levels of human *WNT2*, *WNT5A*, *WNT7B*, and *WNT10B* genes have been detected in proliferative lesions of human breast tissues. The *WNT2* gene is overexpressed in human colorectal carcinoma. *WNT5A* is up-regulated in lung, colon, and prostate cancers, as well as melanomas. The unscheduled expression of Wnt family genes is a significant event in oncogenesis. Comparative genomics analyses revealed that double API-binding sites in the 5'-flanking promoter region and NF-KB-binding site in regulatory region of human WNT10B gene. Since TNF-alpha up-regulated expression of WNT10B and TNFa signaling through TNFR1 and TRADD/RIP/TRAF2 complex activates JUN kinase (JNK) and IkappaB kinase (IKK) signaling cascades, conserved AP1- and NF-KB-binding sites explain the mechanism of TNFa-induced WNT10B up-regulation. TNFa-WNT10B signaling loop is the negative feedback mechanism of adipogenesis to prevent obesity and metabolic syndrome. On the other hand, TNFa-WNT10B signaling loop is implicated in carcinogenesis. Inhibitors of TNFa-WNT10B signaling loop could be utilized for the prevention or treatment of cancer associated with chronic inflammation.[4]

References:
1. Christodoulides, C. et al: Diabetologia 49:678-84, 2006
2. Bennett, C.N. et al: J. Bone Miner. Res. 22:1924-32,2007
3. Yashikawa, H. et al: Mol. Biol. Cell 18:4292-303, 2007
4. Masuki, K. & Masaru, K.: Int. J. Mol. Med. 19:699-703, 2007

TECHNICAL INFORMATION

Source:
WNT10B Antibody is a mouse monoclonal antibody raised against purified recombinant human WNT10B fragments expressed in *E. coli*.

Specificity and Sensitivity:
This antibody detects endogenous WNT10B proteins without cross-reactivity with other family members.

Storage Buffer: PBS and 30% glycerol

Storage:
Store at -20°C for at least one year. Store at 4°C for frequent use. Avoid repeated freeze-thaw cycles.

APPLICATIONS

Application:	*Dilution:
WB	1:1000
IP	n/d
IHC	1:200
ICC	1:200
FACS	1:200

**Optimal dilutions must be determined by end user.*

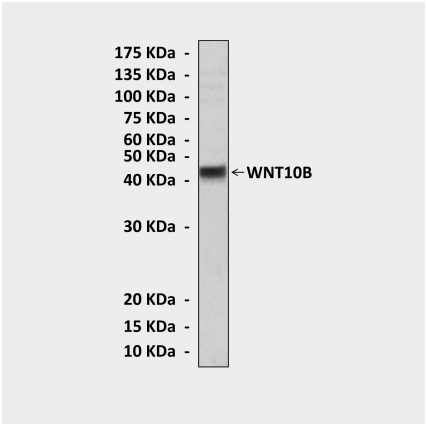
CELL APPLICATIONS, INC.

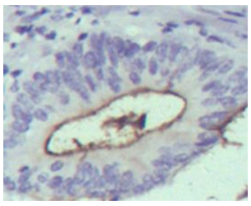
WNT10B Antibody

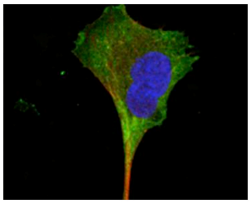
Cat. No. CP10247

Applications:	**WB, IHC, ICC, FACS**
Detected MW:	**43 kDa**
Species & Reactivity:	**Human, Mouse**
Isotype:	**Mouse IgG1**

QUALITY CONTROL DATA







Top: Western Blot detection of WNT10B proteins in HeLa cell lysate using WNT10B Antibody. **Middle:** This antibody stains paraffin-embedded human rectum cancer tissue in immunohistochemical analysis. **Bottom:** It also stains PANC-1 cells in confocal immunofluorescent testing (WNT10B Antibody: Green; Actin filaments: Red; DRAQ5 DNA dye: Blue).