New Product Highlights

Phosphospecific monoclonal antibodies to β-Catenin: transmembrane signaling and gene expression markers

Cell adhesion is important during development, as well as in cell sorting, induction of cellular morphogenesis and maintenance of tissue integrity [1-3]. Calcium-dependent cell adhesion is mediated by the cadherins, a family of transmembrane glycoproteins that regulate homophilic interactions in cells. These interactions initiate a cascade of events that lead to the structural and functional reorganization of cells. Cadherin function involves both specific binding of extracellular domains at the cell surface and interaction with components of the cytoplasm. These components include α-, β- and γ-catenin (also called plakoglobin), all of which bind to the cytoplasmic domain of cadherins [4]. β-catenin (92-97 kDa) shares 70% sequence identity to a protein encoded by armadillo, a *Drosophila* segment polarity gene [5-8].

β-catenin binds to a diverse set of proteins including the presenilins, **epidermal growth factor receptor** (EGF-R, Prod. No. **E 2645**), the actin-binding protein fascin and the transcription factor Teashirt [9,10]. β-catenin is composed of a series of protein-protein interaction motifs that allow it to function as a scaffold. The amino terminal domain, containing the binding site for α-catenin and its phosphorylation sites, is recognized by glycogen synthase kinase-3β (GSK-3β). The carboxyl terminal region contains the transcriptional activation domain and the binding site for Teashirt [9,10]. β-catenin translocates into the nucleus, where it complexes with transcription factors of the LEF-1 family and thus regulates the expression of specific genes. By playing a dual function, i.e. a structural role in cell-cell junctions and a regulatory role in the nucleus, β-catenin can transduce changes in cell adhesion and junction formation to control transmembrane signaling and gene expression [1,11].

Sigma-RBI is pleased to offer two new phosphospecific monoclonal antibodies to β-catein that will be of interest to researchers studying cell adhesion and junction function. **Monoclonal anti-phospho-β-catenin (pSer^{33})**, Clone BC-76 (Prod. No. **C 2363**) was developed using a synthetic phosphorylated peptide corresponding to amino acids 32-45 (pSer^{33}) of human β-catenin. The antibody does not detect the nonphosphorylated or the Ser^{37} monophosphorylated protein. Monoclonal anti-phospho-β-catenin (pSer^{33}) recognizes human β-catenin phosphorylated at Ser^{33} (approximately 94 kDa). The antibody may be used in ELISA and immunoblotting applications. **Monoclonal anti-phospho-β-catenin (pSer^{33,37})**, Clone BC-22 (Prod. No. **C 4231**) was developed using a synthetic peptide corresponding to amino acids 32-45 (pSer^{33,37}) of human β-catenin. Monoclonal anti-phospho-β-catenin (pSer^{33,37}) reacts specifically with β-catenin dually phosphorylated at (pSer^{33,37}) [12]. The antibody does not detect the nonphosphorylated or the (pSer^{33}) monophosphorylated protein. Anti-phospho-β-catenin (pSer^{33,37}) recognizes human, rat, mouse and chicken β-catenin (approximately 94 kDa). It does not recognize phosphorylated plakoglobin despite the high homology in the phosphorylation site with β-catenin [12]. The product may be used in ELISA, immunofluorescence [12] and immunoblotting applications [12,13].

Monoclonal antibodies reacting specifically with β-catenin phosphorylated at Ser^{33} and Ser^{37} should prove to be extremely useful tools for determining the distribution and interactions of phosphorylated β-catenin and for defining the role of β-catenin phosphorylation in signal transduction.

Related Antibodies

C 2081	**Anti-Catenin** α (rabbit)
C 7082	**Monoclonal Anti-Catenin** β, Clone 6F9 (mouse)
C 7207	**Monoclonal Anti-Catenin** β, Clone 15B8 (mouse)
C 2206	**Anti-Catenin** β (rabbit)
G 6414	**Monoclonal Anti-Glycogen Synthase Kinase-3**β (GSK-3β), Clone GSK-4B (mouse)
G 7914	**Anti-Glycogen Synthase Kinase-3**β (GSK-3β) (rabbit)
G 6542	**Anti-phospho-GSK-3**β (pSer^{9}) (rabbit)
L 3275	**Monoclonal Anti-LEF-1** (All isoforms), Clone 1C3.1D10 (mouse)
L 4020	**Monoclonal Anti-LEF-1** (β-Catenin Binding Domain), Clone REMB1 (mouse)
L 7901	**Monoclonal Anti-LEF-1** (HMG DNA Binding Domain), Clone REMB6 (mouse)
L 4270	**Anti-LEF-1/TCF** (sheep)
L 3150	**Monoclonal Anti-LEF-1** (Transactivation Domain 236-242), Clone 3A12 (mouse)
L 3276	**Monoclonal Anti-LEF-1** (Transactivation Domain 256-276), Clone 1C3 (mouse)
P 8087	**Monoclonal Anti-Plakoglobulin** (Catenin γ), Clone 15F11 (mouse)
P 2732	**Monoclonal Anti-p120^{ctn}** (Catenin-related), Clone 6H11 (mouse)
T 5567	**Monoclonal Anti-TCF-1** (T-Cell Factor-1), Clone 7H3 (mouse)
T 5692	**Monoclonal Anti-TCF-3/4** (T-Cell Factor-3/4), Clone 6F12-3 (mouse)

References

1. Ben-Ze'ev, A. and Geiger, B., *Curr. Opin. Cell Biol.*, **10**, 629-639 (1998).
2. Edelman, G.M. and Crossin, K.L., *Annu. Rev. Biochem.*, **60**, 155-190 (1991).
3. Takeichi, M., *Science*, **251**, 1451-1455 (1991).
4. Nagafuchi, A. and Takeichi, M., *EMBO J.*, **7**, 3679-3684 (1988).
5. Peifer, M. and Polakis, P., *Science*, **287**, 1606-1609 (2000).
6. Korinek, V., et al., *Science*, **275**, 1784-1787 (1997).
7. Morin, P.J., et al., *Science*, **275**, 1787-1790 (1997).
8. Rubinfeld, B., et al., *Science*, **275**, 1790-1792 (1997).
9. Zhurinsky, J., et al., *J. Cell Sci.*, **113**, 3127-3139 (2000).
10. Simcha, I., et al., *Mol. Biol. Cell*, **12**, 1177-1188 (2001).
11. Shtutman, M., et al., *Proc. Natl. Acad. Sci. USA*, **96**, 5522-5527 (1999).
12. Sadot, E., et al., *J. Cell Sci.*, **115**, 2771-2780 (2002).
13. Amit, A., et al., *Genes Dev.*, **16**, 1066-1076 (2002).