TECHNOLOGY

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Monoclonal Antibodies to ING1 Isoforms

TECH ID #: 115.9

Background

The ING genes encode a family of at least seven proteins with conserved plant homeodomain (PHD)-type zinc fingers in their C-termini. The founding member, ING1, is capable of binding to and affecting the activity of histone acetyltransferase (HAT), histone deacetylase (HDAC), and factor acetyltransferase (FAT) protein complexes. Upon UV irradiation, ING1 and ING2 bind stress induced signaling phospholipids such as phosphatidylinositol 5-monophosphate and cause cell cycle arrest. ING1b interacts with proliferating cell nuclear antigen to promote DNA repair or induce apoptosis in cells to prevent tumorigenesis, depending upon the severity of DNA damage. ING proteins, which are down-regulated in a broad variety of cancer types, are able to restrict cell growth and proliferation, induce apoptosis, and modulate cell cycle progression, which strongly supports the notion that ING family proteins act as type II tumor suppressors. The ING proteins regulate chromatin structure through specific binding to histones H3 and H4 via their plant homeodomains (PHDs) and recruitment of HAT & HDAC complexes to particular regions of chromatin, thus playing central roles in reading of the "histone code".

Researchers at the University of Calgary have developed a panel of nine monoclonal antibodies (MAbs) against human and rodent ING1 proteins that specifically recognize the p33ING1b, p47ING1a and p24ING1c isoforms of ING1.

Areas of Application

- These antibodies are all effective in recognizing ING1 protein in ELISAs, Western blot assays and by indirect immunoluorescence

Competitive Advantages

- Combining different CAb monoclonal antibodies in a Western blot assay also allows detection of the very low levels of endogenous ING1 found in fibroblast cells in culture and the identification of at least two isoforms of ING1 in normal human diploid fibroblasts and established brain cancer cell lines

Stage of Development

- Available for licensing on a non-exclusive basis for research purposes

Intellectual Property Status

- U.S. 6,747,133

Publications

- Hybridoma. 2000 Apr;19(2):161-5
- Nat Genet. 1996 Dec;14(4):415-20