Novel Monoclonal Anti-NonPhosphoSer9 Glycogen Synthase Kinase 3 Beta Antibodies

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Technology description

Executive Summary

Glycogen synthase kinase 3beta (GSK3beta) is a serine/threonine kinase initially described for its role in regulating glycogen synthesis by phosphorylating and inactivating glycogen synthase following insulin exposure. This enzyme is expressed ubiquitously and is a critical downstream effector of the PI3K/AKT cell survival pathway. GSK3beta is widely studied across many fields of biology as it is involved in several cellular processes including cell proliferation, development, cancer, diabetes, inflammation, bipolar disorder and several neurodegenerative diseases. All of the currently commercially available antibodies are specific for the inactive (i.e. phosphorylated) Ser9GSK3 enzymes. MSU researchers have generated novel antibodies that recognize GSK3beta at Ser9 when this site is not phosphorylated. This makes the active enzyme directly assayable.

Description of Technology

Four in-hand stable cell lines, ready for licensing, produce novel monoclonal anti-nonphosphoSer9 GSK3beta antibodies (npS9 GSK3beta, mouse IgG1), with no cross reactivity against GSK3alpha. The clones and matching antibodies are: clone 15C2 and npS9 GSK3 beta4, clone 12B2 and npS9 GSK3 beta3, clone 1D1 and npS9 GSK3 beta2, as well as clone 1B3 and npS9 GSK3 beta 1. The antibody recognizes human, mouse, and rat GSK3beta, and is, due to high sequence homology, predicted to work across most species. It shows linear reactivity with different levels of active recombinant GSK3beta.

Application area

Western Blotting, dot blotting, immunohistochemistry, immunofluorescence, ELISA
Clinical applications in diagnosis-based assays

Advantages

Only antibodies to recognize the active non-phospho Ser9 Gycogen Synthase Kinase 3beta (npS9 GSK3beta)
Direct measure of GSK3beta activity from lysate samples
Reactive in human and rat

Institution

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