GSK-3α Antibody

**Background:** Glycogen synthase kinase-3 (GSK-3) was initially identified as an enzyme that regulated glycogen synthesis in response to insulin (1). GSK-3 is a ubiquitously expressed serine/threonine protein kinase that phosphorylates and inactivates glycogen synthase. GSK-3 is a critical downstream element of the PI3 kinase/Akt cell survival pathway, and its activity can be inhibited by Akt-mediated phosphorylation at Ser21 of GSK-3α and Ser9 of GSK-3β (2,3). GSK-3 has been implicated in the regulation of cell fate in Dictyostelium, and is a component of the Wnt signaling pathway required for Drosophila, Xenopus and mammalian development (4). GSK-3 has been shown to regulate cyclin D1 proteolysis and subcellular localization (5).

GSK-3α regulates the production of amyloid-β peptides, a major component of the plaques that accumulate with progression of Alzheimer's disease. Administration of therapeutic concentrations of lithium, a GSK-3 inhibitor, attenuates amyloid-β production by specifically inhibiting the cleavage of amyloid precursor protein (APP) by γ-secretase, blocking accumulation of amyloid-β peptides in the brains of mice that overproduce APP (6).

**Specificity/Sensitivity:** GSK-3α Antibody detects endogenous levels of total GSK-3α protein. It does not cross-react with recombinant GSK-3β.

**Source/Purification:** Polyclonal antibodies are produced by immunizing animals with a synthetic peptide (KLH-coupled) derived from the sequence of human GSK-3α. Antibodies are purified by protein A and peptide affinity chromatography.

**Background References:**