Thymidylate Synthase (D5B3) XP® Rabbit mAb

Background: The methylation of deoxyuridine monophosphate (dUMP) to deoxythymidine monophosphate (dTMP) is an essential step in the formation of thymine nucleotides. This process is catalyzed by thymidylate synthase (TS or TYMS), a homodimer composed of two 30 kDa subunits. TS is an intracellular enzyme that provides the sole de novo source of thymidylate, making it a required enzyme in DNA biosynthesis with activity highest in proliferating cells (1). Being the exclusive source of dTMP, investigators have concluded that TS is also an important target for anticancer agents such as 5-fluorouracil (5-FU) (1-5). 5-FU acts as a TS inhibitor and is active against solid tumors such as colon, breast, head, and neck. Research studies have demonstrated that patients with metastases expressing lower levels of TS have a higher response rate to treatment with 5-FU than patients with tumors that have increased levels of TS (5). Researchers continue to investigate TS expression in different types of cancers (6-10).

Levels of thymidylate synthase can be modulated in vitro by treatment with various drugs, such as 5-FU and lapatinib. 5-FU treatment induces the formation of two distinct bands, one at 35 kDa and another at 38 kDa, while lapatinib treatment results in a decrease in thymidylate synthase expression (11,12).

Specificity/Sensitivity: Thymidylate Synthase (D5B3) XP® Rabbit mAb detects endogenous levels of total thymidylate synthase protein.

Source/Purification: Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human thymidylate synthase protein.

Recommended Antibody Dilutions:
- Western blotting: 1:1000
- Immunohistochemistry (Paraffin): 1:200†
- Flow Cytometry: 1:100
- Immunofluorescence: 1:50
- ELISA-Peptide: 1:1000

Recommended Complementary Products:
- SignalStain® Boost IHC Detection Reagent:
  - Citrate ≥DRAQ5® (fluorescent DNA dye)

For product specific protocols please see the web page for this product at www.cellsignal.com. Please visit www.cellsignal.com for a complete listing of recommended complementary products.

For Research Use Only. Not For Use In Diagnostic Procedures.

Storage: Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. Do not aliquot the antibody.

*Species cross-reactivity is determined by western blot.

** Anti-rabbit secondary antibodies must be used to detect this antibody.
Western blot analysis of extracts from various cell lines using Thymidylate Synthase (D5B3) XP® Rabbit mAb (upper) or β-Actin (D6A8) Rabbit mAb (lower) #8457.

Flow cytometric analysis of HCC827 cells (blue) and HeLa cells (green) using Thymidylate Synthase (D5B3) XP® Rabbit mAb.

Immunohistochemical analysis of paraffin-embedded human lymphoma using Thymidylate Synthase (D5B3) XP® Rabbit mAb.

Immunohistochemical analysis of paraffin-embedded mouse spleen using Thymidylate Synthase (D5B3) XP® Rabbit mAb.

Background References: