3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone (800) 325-5832 (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

Anti-Fatty Acid Synthase
antibody produced in rabbit, affinity isolated antibody

Product Number **F9554**

Product Description

Anti-Fatty Acid Synthase is developed in rabbit using as immunogen a synthetic peptide corresponding to amino acids 1982-1999 of mouse fatty acid synthase, conjugated to KLH via an N-terminal added cysteine residue. The immunizing peptide is conserved in rat, and differs from the human sequence by three amino acids. The antibody is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-Fatty Acid Synthase specifically recognizes fatty acid synthase by immunoblotting (270 kDa). Staining of the fatty acid synthase bands in immunoblotting is specifically inhibited by the immunizing peptide.

Fatty acid synthase (FAS, FASN) is a multifunctional protein that plays an essential role during embryo-genesis and a key role in energy homeostasis in adult animals.[1,2] Its main function is to catalyze the synthesis of palmitate from acetyl-CoA and malonyl CoA, in the presence of NADPH.[1-3] In addition to functioning as the carbon source for fatty acid synthesis by FASN, malonyl-CoA is now recognized as an important signaling molecule involved in metabolic fuel sensing and appetite control.[4] In prokaryotes and plants, FAS consists of an acyl carrier protein and seven structurally independent monofunctional enzymes. In animals, however, all the enzymatic activities of these components are organized in one polypeptide chain of 2500 amino acids.[5,6] The mammalian protein consists of two identical multifunctional polypeptides, in which three catalytic domains in the N-terminal section (β-ketoacyl synthase, malonyl/acetyl tansferase, and dehydrase) are separated by a core region of about 600 residues from four C-terminal domains (enoyl reductase, β-ketoacyl reductase, acyl carrier protein, and thioesterase).[6]

FAS has been shown to be overexpressed in various types of human cancer, including prostate, breast, ovary and others.[7-10] Although the exact mechanism of overexpression of the FAS gene in tumor cells is not well understood, some correlations are useful for exploring therapeutic strategies. For example, expression of the tumor suppressor gene PTEN in prostate cancer has a significant inverse correlation with FAS expression.[7]

In breast cancer, a molecular link between FAS and the HER2 oncogene was identified. HER2 is a breast cancer marker that is overexpressed in 30% of breast and ovarian cancer. FASN inhibitors were found to suppress overexpression of HER-2 protein at the transcriptional level through upregulation of the PEA3 transcription repressor at the HER2 promoter.[9]

Components

Supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

Antibody Concentration: ~1 mg/mL

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. Storage in “frost-free” freezers is also not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilutions should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: a working antibody concentration of 0.5-1 µg/mL is recommended using lysates of rat hepatocytoma FAO cells.

Immunoblotting: a working antibody concentration of 0.5-1 µg/mL is recommended using lysates of mouse myoblast C2 cells.

Note: In order to obtain the best results using various techniques and preparations, we recommend determining the optimal working dilutions by titration.

References

1. Chirala, S.S., *et al*., *Proc. Natl., Acad. Sci. USA*, **100**, 6358-6363 (2003).
2. Rufo, C., *et al*., *J. Biol. Chem*., **276**, 21969-21975 (2001).
3. Wakil, S.J., *Biochemistry*, **28**, 4523-4530 (1989).
4. Ruderman, N., and Prentki, M., *Nature Rev. Drug Discov*., **3**, 340-351 (2004).
5. Jayakumar, A., *et al*., *Proc. Natl. Acad. Sci. USA*, **92**, 8695-8699 (1995).
6. Asturias, F.J., *et al*., *Nature Struct. Biol*., **12**, 225-232 (2005).
7. Bandyopadhyayay, S., *et al*., *Oncogene*, **24**, 5389-5395 (2005).
8. De Schrijver, E., *et al*., *Cancer Res*., **63**, 3799-3804 (2003).
9. Menendez, J.A., *et al*., *Proc. Natl., Acad. Sci. USA*, **101**, 10715-10720 (2004).
10. Zang, D., *et al*., *Mol. Cell Proteom*., **4**, 1686-1696 (2005).

NV,KAA,MAM 07/06-1